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Resolution Copper Mining LLC

Resolution Copper Project

Near West Tailings Storage Facility

Geotechnical Site Characterization Report

Volume 4 of 4 – Appendix VII

CANADA'S BEST MANAGED COMPANIES Platinum member

ISO 9001
ISO 14001
OHSAS 18001

M09441A18.730

October 2017

APPENDIX VII

Optical and Acoustic Televiewer Results

RESOLUTION COPPER

Structure Pick Definitions

MSStructureCode:
A numeric code that identifies whether a sign wave is a distinct small structure, part of a larger structure with a unique orientation.

Picks:

- 30: Structure Top
- 31: Discrete Structure
- 32: Structure Bottom. The Depth has been added to the "GEOLTO" value of the corresponding "Structure Top" structure.

MSTypeStructure:
Structure type based on evidence in Amplitude or OBI image.
Picks:

- BED: Bedding
- BREAKOUT: Start of a breakout zone
- BREAKOUTBOT: Bottom of a breakout zone
- CONTACT: Visible change in lithology, change in amplitude height
- FOL: Foliation
- FZ: Top of Fault zone
- FZBOT: Bottom of Fault zone
- LAY: undifferentiated layering
- SHR: Shear
- VOID: Opening, missing rock; this may be a fault
- WEAK: Openings are present but the wall rock hasn't completely been removed. This indicates a weaker zone.

MS_Open:
Picks based on 3-arm caliper, variations between average acoustic caliper and max acoustic caliper, visual observation in OBI and visibility in Travel Time and Amplitude, noting whether the structure is open or closed.

Picks:

- OPEN
- CLOSED
- UNCLEAR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-02	58.33	65.7	240.09	CLOSED	31	SHR
DH16-02	79.3	24.68	154.04	OPEN	31	SHR
DH16-02	79.36	83.66	64.72	OPEN	31	SHR
DH16-02	82.77	15.24	170.87	CLOSED	31	SHR
DH16-02	180.58	32.84	49.81	CLOSED	31	SHR
DH16-02	235.59	37.3	209.25	OPEN	31	SHR
DH16-02	236.1	15.47	217.05	OPEN	31	SHR
DH16-02	242.24	49.04	258.1	CLOSED	31	CLAST
DH16-02	243.42	44.56	31.26	OPEN	30	SHR
DH16-02	243.63	37.93	28.47	OPEN	32	SHR
DH16-02	244.11	60.63	86.02	CLOSED	31	CLAST
DH16-04	5.74	14.77	25.35	OPEN	31	SHR
DH16-04	6.37	44.1	7.65	CLOSED	31	SHR
DH16-04	6.54	45.8	354.91	OPEN	31	SHR
DH16-04	7.18	28.91	224.08	OPEN	31	SHR
DH16-04	9.08	53.72	97.11	CLOSED	30	WEAK
DH16-04	9.26	48.6	91.07	OPEN	32	WEAK
DH16-04	9.85	65.03	223.3	CLOSED	31	SHR
DH16-04	10.02	69.95	225.71	CLOSED	31	SHR
DH16-04	10.59	56.52	304.68	OPEN	31	SHR
DH16-04	12.95	43.47	93.98	OPEN	31	SHR
DH16-04	13.66	44.81	86.35	OPEN	31	SHR
DH16-04	17.21	53.02	331.1	OPEN	31	SHR
DH16-04	19.31	56.94	80.69	CLOSED	31	SHR
DH16-04	20.29	66.03	65.94	OPEN	31	SHR
DH16-04	22.5	19.54	63.62	OPEN	31	SHR
DH16-04	23.02	66.01	74.06	CLOSED	31	SHR
DH16-04	23.42	24.51	187.75	OPEN	31	SHR
DH16-04	24.18	29.5	250.59	OPEN	31	FZ
DH16-04	25	40.32	292.11	OPEN	31	FZBOT
DH16-04	27.62	34.94	287.35	CLOSED	31	SHR
DH16-04	28.69	41.94	269.69	OPEN	31	SHR
DH16-04	28.88	50.99	139.94	CLOSED	31	SHR
DH16-04	29.55	53.64	247.5	OPEN	31	SHR
DH16-04	30.73	56.42	123.37	CLOSED	30	WEAK
DH16-04	32.21	28.85	222.12	CLOSED	32	WEAK
DH16-04	33.79	47.82	133.4	CLOSED	30	WEAK
DH16-04	35.27	41.43	103.25	CLOSED	31	SHR
DH16-04	35.49	43.8	98.24	OPEN	31	SHR
DH16-04	36.39	40.64	95.85	CLOSED	31	SHR
DH16-04	36.73	42.42	85.2	OPEN	32	WEAK
DH16-04	38	53.09	269.1	CLOSED	31	SHR
DH16-04	38.89	38	112.87	CLOSED	31	SHR
DH16-04	39.84	42.51	129.05	CLOSED	31	SHR
DH16-04	40.76	66.98	222.24	CLOSED	31	SHR
DH16-04	40.77	33.72	118.49	OPEN	31	SHR
DH16-04	44.09	35.14	99.48	CLOSED	31	SHR
DH16-04	45.17	42.49	106.27	CLOSED	31	SHR
DH16-04	45.47	51.88	119.01	CLOSED	31	SHR
DH16-04	45.67	39.14	118.59	CLOSED	31	SHR
DH16-04	46.21	66.18	335.74	OPEN	31	SHR
DH16-04	48.4	48.5	99.66	CLOSED	31	SHR
DH16-04	49.56	29.46	112.75	CLOSED	31	SHR
DH16-04	49.73	39.13	122.39	CLOSED	31	SHR
DH16-04	50.25	42.51	91.96	CLOSED	31	SHR
DH16-04	52.08	60.51	111.35	CLOSED	31	SHR
DH16-04	52.48	40.44	112.9	OPEN	30	FZ
DH16-04	53.07	55.45	87.95	OPEN	32	FZBOT
DH16-04	53.65	44.18	78.9	CLOSED	31	SHR
DH16-04	54.19	46.66	70.97	CLOSED	31	SHR
DH16-04	55.44	58.78	228.31	CLOSED	31	SHR
DH16-04	55.58	69.46	209.83	OPEN	31	SHR
DH16-04	56.99	40.7	97.31	CLOSED	31	SHR
DH16-04	58.71	48.79	66.52	OPEN	31	SHR
DH16-04	59.21	48.04	258.74	CLOSED	31	SHR
DH16-04	61.92	50.77	135.87	CLOSED	31	SHR
DH16-04	62.94	38.81	170.75	CLOSED	31	SHR
DH16-04	63.53	41.35	111.89	CLOSED	31	SHR
DH16-04	64.51	44.82	136.08	CLOSED	31	SHR
DH16-04	65.68	36.59	117.59	CLOSED	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-04	66.6	42.53	100.01	CLOSED	31	SHR
DH16-04	67.44	75.3	250.32	CLOSED	31	SHR
DH16-04	68.62	44.92	135.16	CLOSED	31	SHR
DH16-04	68.94	33.21	122.22	CLOSED	31	SHR
DH16-04	69.39	44.82	138.92	CLOSED	31	SHR
DH16-04	70.48	38.24	116.17	CLOSED	30	WEAK
DH16-04	71.08	45.86	152.22	CLOSED	31	SHR
DH16-04	72.39	45.88	132.28	CLOSED	32	WEAK
DH16-04	73.41	32.09	116.09	CLOSED	31	BED
DH16-04	76.3	36.17	141.26	CLOSED	31	SHR
DH16-04	80.27	56.6	198.83	CLOSED	31	BED
DH16-04	80.32	37.35	129.46	CLOSED	31	SHR
DH16-04	80.65	39.77	112.07	CLOSED	31	BED
DH16-04	80.81	29.04	86.08	CLOSED	31	BED
DH16-04	81.41	41.53	169.03	OPEN	30	WEAK
DH16-04	81.85	28.91	121.17	OPEN	32	WEAK
DH16-04	81.94	45.61	98.66	CLOSED	31	BED
DH16-04	82.1	45.34	97.9	CLOSED	31	BED
DH16-04	82.2	63.27	230.89	CLOSED	31	SHR
DH16-04	82.41	44.7	107.6	CLOSED	31	BED
DH16-04	82.67	38.54	83.85	CLOSED	31	BED
DH16-04	82.67	43.11	204.33	OPEN	31	SHR
DH16-04	82.93	52.82	195.24	CLOSED	31	SHR
DH16-04	83.61	42.67	141.99	OPEN	30	WEAK
DH16-04	84.72	35.35	93.35	OPEN	30	SHR
DH16-04	84.82	40.72	95.42	OPEN	32	SHR
DH16-04	85.26	37.43	116.33	OPEN	32	SHR
DH16-04	85.98	47.3	119.9	CLOSED	31	BED
DH16-04	86.04	62.61	234.68	OPEN	31	SHR
DH16-04	86.18	40.81	119.94	CLOSED	31	BED
DH16-04	86.28	63.86	285.29	OPEN	31	SHR
DH16-04	86.43	41.44	129.55	CLOSED	31	BED
DH16-04	86.66	36.9	107.36	OPEN	31	BED
DH16-04	87.61	34.23	113.51	OPEN	31	SHR
DH16-04	87.87	33.78	28.11	OPEN	30	WEAK
DH16-04	87.95	38.38	127.49	CLOSED	31	SHR
DH16-04	88.79	53.69	282.73	OPEN	32	WEAK
DH16-04	89.31	32.75	155.96	OPEN	30	WEAK
DH16-04	90.23	38.8	99.34	OPEN	32	SHR
DH16-04	91.48	37.51	308.77	CLOSED	31	SHR
DH16-04	91.54	12.96	289.94	OPEN	31	SHR
DH16-04	92.64	82.3	52.13	UNCLEAR	31	SHR
DH16-04	94.43	62.71	253.01	OPEN	31	SHR
DH16-04	95.07	46.22	336.01	CLOSED	31	SHR
DH16-04	95.61	33.83	171.27	OPEN	30	WEAK
DH16-04	96.06	43.88	123.27	OPEN	32	WEAK
DH16-04	97.08	40.32	123.6	CLOSED	31	SHR
DH16-04	97.5	44.81	338.46	CLOSED	31	SHR
DH16-04	98.27	41.45	237.3	OPEN	31	SHR
DH16-04	98.62	47.02	221.11	OPEN	31	SHR
DH16-04	99.16	44.85	115.68	CLOSED	31	SHR
DH16-04	100.13	54.28	344.94	OPEN	30	WEAK
DH16-04	100.17	55.45	346.07	OPEN	31	SHR
DH16-04	100.96	49.63	186.7	OPEN	31	SHR
DH16-04	101.42	52.16	264.3	OPEN	31	SHR
DH16-04	101.71	54.28	272.88	OPEN	32	WEAK
DH16-04	102.22	41.99	59.9	CLOSED	31	BED
DH16-04	102.29	43.43	65.91	CLOSED	31	BED
DH16-04	102.43	45.19	59.71	OPEN	30	SHR
DH16-04	103.75	40.21	305.31	OPEN	32	SHR
DH16-04	104.9	35.64	62.56	OPEN	30	WEAK
DH16-04	105.86	54.56	63.19	UNCLEAR	31	SHR
DH16-04	106.62	51.28	57.57	UNCLEAR	31	SHR
DH16-04	106.64	50.38	223.44	CLOSED	31	SHR
DH16-04	106.98	34.27	85.72	CLOSED	32	WEAK
DH16-05	47.47	60.81	246.05	OPEN	31	SHR
DH16-05	48.87	52.92	146.7	CLOSED	31	SHR
DH16-05	50	45.14	205.74	OPEN	31	SHR
DH16-05	53.42	34.92	106.45	OPEN	31	SHR
DH16-05	59.95	32.13	38.11	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-05	61.44	32.01	32.72	CLOSED	31	SHR
DH16-05	63.89	61.48	302.18	CLOSED	31	SHR
DH16-05	64.53	54.57	76.87	OPEN	31	SHR
DH16-05	66.03	24.13	81.95	CLOSED	31	SHR
DH16-05	66.34	37.7	55.61	CLOSED	31	SHR
DH16-05	66.94	67.7	269.52	OPEN	31	SHR
DH16-05	67.55	47.6	268.72	CLOSED	31	SHR
DH16-05	69.84	59.52	316.09	CLOSED	31	SHR
DH16-05	70.03	58.01	330.85	CLOSED	31	SHR
DH16-05	70.24	56.2	337.16	CLOSED	31	SHR
DH16-05	71.77	47.29	73.39	OPEN	31	SHR
DH16-05	72.36	40.62	189.5	OPEN	31	SHR
DH16-05	72.86	44.5	87.73	OPEN	31	SHR
DH16-05	72.86	70.81	188.02	OPEN	31	SHR
DH16-05	73.81	41.98	68.46	OPEN	31	SHR
DH16-05	75.59	73.42	71.96	OPEN	31	SHR
DH16-05	75.85	43.51	67.96	CLOSED	31	SHR
DH16-05	76.64	30.2	55.63	CLOSED	31	SHR
DH16-05	77.34	46.75	210.65	OPEN	31	SHR
DH16-05	77.79	38.45	103.17	OPEN	31	SHR
DH16-05	78.01	44.25	105.76	CLOSED	31	SHR
DH16-05	78.65	47.32	28.76	CLOSED	31	SHR
DH16-05	79.26	29.78	86.39	OPEN	31	SHR
DH16-05	80.05	34.98	115.2	OPEN	31	SHR
DH16-05	80.51	42.04	95.99	OPEN	31	SHR
DH16-05	83.97	35.8	37.95	OPEN	31	SHR
DH16-05	84.35	34.21	44.2	OPEN	31	SHR
DH16-05	86.25	68.5	233.78	OPEN	31	SHR
DH16-05	87.61	75.56	228.96	CLOSED	31	SHR
DH16-05	87.62	54.19	271.34	CLOSED	31	SHR
DH16-05	88.71	72.08	25.52	OPEN	31	SHR
DH16-05	90.14	65.69	245.54	OPEN	31	SHR
DH16-05	90.26	47.91	258.56	UNCLEAR	31	SHR
DH16-05	90.9	37.09	325.51	CLOSED	31	SHR
DH16-05	92.03	51.57	220.53	OPEN	31	SHR
DH16-05	93.69	42.26	315.6	OPEN	31	SHR
DH16-05	97.24	17.2	211.34	CLOSED	31	SHR
DH16-05	97.65	65.5	220.65	OPEN	31	SHR
DH16-05	97.99	31.78	251.24	CLOSED	31	SHR
DH16-05	98.24	64.06	213.38	OPEN	31	SHR
DH16-05	98.58	38.91	19.62	CLOSED	31	SHR
DH16-05	99.18	14.7	344.3	CLOSED	31	SHR
DH16-05	100.37	47.17	255.59	CLOSED	31	SHR
DH16-05	101.15	34.27	26.26	CLOSED	31	SHR
DH16-05	103.96	35.82	317.63	OPEN	31	SHR
DH16-05	105.81	40.25	239.74	OPEN	31	SHR
DH16-05	105.96	77.67	353.87	UNCLEAR	31	SHR
DH16-05	107.73	25.78	182.41	CLOSED	31	SHR
DH16-05	108.44	19.19	311.41	CLOSED	31	SHR
DH16-05	109.47	46.53	341.28	OPEN	31	SHR
DH16-05	110	41.64	323.38	CLOSED	31	SHR
DH16-05	112.5	25.66	37.15	CLOSED	31	SHR
DH16-05	113.35	72.5	133.59	CLOSED	31	SHR
DH16-05	113.95	43.42	347.64	OPEN	31	SHR
DH16-05	114.3	36.03	344.7	CLOSED	31	SHR
DH16-05	114.88	68.19	269.38	OPEN	31	SHR
DH16-05	115.19	68.92	256.79	OPEN	31	SHR
DH16-05	117.1	38.81	359.03	UNCLEAR	31	SHR
DH16-05	118.51	39.7	62.66	CLOSED	31	SHR
DH16-05	119.37	36.38	319.58	OPEN	31	SHR
DH16-05	120	35.62	82.13	OPEN	30	BREAKOUT
DH16-05	124.64	82.35	38.43	OPEN	31	SHR
DH16-05	125.18	30.33	53.83	OPEN	32	BREAKOUTBOT
DH16-05	127.08	54.4	101.29	OPEN	31	SHR
DH16-05	127.16	74.05	61.46	CLOSED	31	SHR
DH16-05	129.04	27.53	25.54	CLOSED	31	SHR
DH16-05	132.88	77.72	36.46	OPEN	31	SHR
DH16-05	134.29	43.99	254.47	CLOSED	31	SHR
DH16-05	134.9	43.47	274.47	OPEN	31	SHR
DH16-05	135.43	33.61	95.83	OPEN	30	WEAK

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-05	135.9	74.43	211.59	OPEN	31	SHR
DH16-05	137.49	35.14	123.33	OPEN	32	WEAK
DH16-05	138.61	22.7	355.72	UNCLEAR	31	SHR
DH16-05	138.79	71.27	42.14	OPEN	31	SHR
DH16-05	139.85	41.93	136.98	CLOSED	31	SHR
DH16-05	140.6	37.61	304.83	CLOSED	31	SHR
DH16-05	140.91	33.17	138.85	OPEN	30	WEAK
DH16-05	142.57	56.52	132.61	OPEN	31	SHR
DH16-05	143.15	54.6	144.07	OPEN	31	SHR
DH16-05	143.35	53.22	206.14	OPEN	31	SHR
DH16-05	144.09	35.53	264.49	CLOSED	31	SHR
DH16-05	144.52	46.59	112.08	OPEN	31	SHR
DH16-05	145.15	38.67	213.72	CLOSED	32	WEAK
DH16-05	146.23	41.15	85.85	OPEN	31	SHR
DH16-05	146.59	41.42	194.3	OPEN	31	SHR
DH16-05	147.82	30.25	82.15	OPEN	31	SHR
DH16-05	148.34	55.42	194.48	CLOSED	31	SHR
DH16-05	149.07	61.72	211.62	OPEN	31	SHR
DH16-05	150.02	38.76	74.71	CLOSED	31	SHR
DH16-05	150.45	34.15	23.84	OPEN	31	SHR
DH16-05	150.84	41.87	353.03	OPEN	31	SHR
DH16-05	151.86	56.17	214.8	OPEN	31	SHR
DH16-05	152.28	32.27	81.28	OPEN	31	BED
DH16-05	152.99	34.77	66.2	OPEN	30	SHR
DH16-05	153.23	29.41	73.56	OPEN	32	SHR
DH16-05	153.67	32.54	82.29	CLOSED	31	BED
DH16-05	154.47	31.1	83.53	OPEN	31	BED
DH16-05	155.47	34.84	92.76	OPEN	31	BED
DH16-05	155.93	26.86	37.81	OPEN	31	SHR
DH16-05	157.47	34.64	81.11	OPEN	31	BED
DH16-05	159.56	39.87	101.55	CLOSED	31	SHR
DH16-05	162.35	69.07	228.92	CLOSED	31	SHR
DH16-05	163.54	52.94	189.68	OPEN	30	WEAK
DH16-05	165.9	54.85	302.47	OPEN	31	SHR
DH16-05	166.65	50.29	47.3	OPEN	31	SHR
DH16-05	170.06	53	276.56	CLOSED	31	SHR
DH16-05	170.55	40.79	165.62	OPEN	31	SHR
DH16-05	172.73	67.21	58.87	OPEN	32	WEAK
DH16-05	174.08	76.24	53.36	OPEN	31	SHR
DH16-05	174.51	51.15	93.43	OPEN	31	SHR
DH16-05	176.11	30.26	77.05	OPEN	30	WEAK
DH16-05	176.97	57.2	76.11	OPEN	31	SHR
DH16-05	177.18	42.73	67.35	OPEN	31	SHR
DH16-05	178.08	66.21	245.5	OPEN	32	WEAK
DH16-05	179.46	80.7	256.45	CLOSED	31	SHR
DH16-05	179.89	29.03	107.81	CLOSED	31	BED
DH16-05	180.83	53.22	18.49	CLOSED	31	SHR
DH16-05	181.31	35.63	103.23	CLOSED	31	BED
DH16-05	184.17	46.34	95.24	OPEN	31	BED
DH16-05	185.6	15.58	221.45	OPEN	31	SHR
DH16-05	185.68	29.16	76.99	OPEN	31	SHR
DH16-05	185.9	30.99	77.89	OPEN	31	SHR
DH16-05	186.52	30.78	82.9	OPEN	30	VOID
DH16-05	186.99	33.52	101.89	OPEN	32	VOID
DH16-05	187.26	37.76	112.95	CLOSED	31	BED
DH16-05	188.33	42.2	280.68	OPEN	31	SHR
DH16-05	189.08	42.94	125.21	OPEN	31	SHR
DH16-05	189.47	46.13	310.09	OPEN	31	SHR
DH16-05	190.66	35.66	106.69	OPEN	31	BED
DH16-05	191.25	34.75	105.32	OPEN	31	BED
DH16-05	191.61	29.52	105.9	OPEN	31	BED
DH16-05	193.4	54.42	124.46	OPEN	31	SHR
DH16-05	194.68	26.93	88.52	OPEN	31	SHR
DH16-05	195.46	31.98	3.87	OPEN	31	SHR
DH16-05	196.76	53.9	138.68	OPEN	31	SHR
DH16-05	196.81	40.37	132.33	OPEN	31	SHR
DH16-05	197.82	32.62	97.31	OPEN	31	SHR
DH16-05	198.59	33.07	88.28	OPEN	31	SHR
DH16-05	199.21	33.24	91.78	OPEN	31	SHR
DH16-05	199.9	20.4	319.8	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-05	200.95	59.42	291.18	OPEN	31	SHR
DH16-05	203.02	47.36	10.92	OPEN	30	WEAK
DH16-05	203.81	30.21	129.37	OPEN	31	SHR
DH16-05	204.03	24.18	12.87	OPEN	31	SHR
DH16-05	204.66	53.9	283.58	OPEN	31	SHR
DH16-05	204.96	35.21	123.83	OPEN	31	SHR
DH16-05	206.42	35.52	67.14	OPEN	31	SHR
DH16-05	206.69	57.77	122.59	OPEN	31	SHR
DH16-05	208.43	36.84	277.74	OPEN	32	WEAK
DH16-05	208.5	47.13	142.75	OPEN	31	SHR
DH16-05	209.77	43.65	57.48	OPEN	31	SHR
DH16-05	211.5	26.7	112.27	CLOSED	31	SHR
DH16-05	211.95	78.71	66.61	CLOSED	31	SHR
DH16-05	213.21	48.57	340.22	OPEN	30	WEAK
DH16-05	214.26	46.04	133.37	OPEN	32	SHR
DH16-05	214.76	46.35	129.28	CLOSED	31	BED
DH16-05	215.98	37.73	139.32	CLOSED	31	SHR
DH16-05	217.32	23.28	117.47	CLOSED	31	SHR
DH16-05	217.86	27.25	99.18	CLOSED	31	SHR
DH16-05	218.45	37.87	26.61	OPEN	31	SHR
DH16-05	218.63	36.07	126.41	OPEN	31	SHR
DH16-05	219.12	38.64	332.22	OPEN	31	SHR
DH16-05	219.25	19.12	154.83	OPEN	31	SHR
DH16-05	220.65	32.32	335.62	UNCLEAR	31	SHR
DH16-05	221.48	74.5	65	OPEN	31	SHR
DH16-05	222.09	42.64	319.3	OPEN	31	SHR
DH16-05	222.87	46.38	133.27	CLOSED	31	BED
DH16-05	223.45	42.14	129.99	CLOSED	31	BED
DH16-05	223.66	60.7	352.65	OPEN	30	WEAK
DH16-05	225.3	37.02	82.26	OPEN	31	BED
DH16-05	226.14	55.96	317.83	OPEN	32	WEAK
DH16-05	226.71	23.45	98.38	OPEN	31	SHR
DH16-05	228.16	44.68	156.97	OPEN	31	SHR
DH16-05	228.76	25.81	122.9	OPEN	31	BED
DH16-05	229.27	27.03	124.51	OPEN	31	BED
DH16-05	229.45	29.46	125.47	OPEN	31	BED
DH16-05	229.94	34.49	112.56	OPEN	31	SHR
DH16-05	230.64	37.16	263.44	OPEN	31	SHR
DH16-05	230.67	44.64	115.43	OPEN	31	SHR
DH16-05	231.12	42.64	278.4	OPEN	31	SHR
DH16-05	231.23	51.63	133.84	OPEN	31	SHR
DH16-05	231.48	42.49	122.61	OPEN	31	SHR
DH16-05	231.81	43.48	250.21	OPEN	31	SHR
DH16-05	232.61	36.78	282.96	OPEN	31	SHR
DH16-05	232.85	35.25	134.75	OPEN	31	SHR
DH16-05	233.63	40.58	282.05	OPEN	31	SHR
DH16-05	233.88	45.89	136.91	OPEN	31	SHR
DH16-05	234.34	39.53	136.42	CLOSED	31	SHR
DH16-05	234.85	72	307.73	OPEN	31	SHR
DH16-05	235.26	65.87	308.63	OPEN	31	SHR
DH16-05	236.48	29.58	130.35	OPEN	31	SHR
DH16-05	236.73	71.46	159.11	OPEN	31	SHR
DH16-05	236.79	30.78	88.27	OPEN	31	SHR
DH16-05	237.56	35.82	125.61	OPEN	31	SHR
DH16-05	238.08	36.34	129.03	CLOSED	31	SHR
DH16-05	238.12	57.76	274.52	OPEN	31	SHR
DH16-05	238.78	52.91	154.8	OPEN	31	SHR
DH16-05	239.03	40.13	143.73	OPEN	31	SHR
DH16-05	239.54	42.56	144.17	OPEN	31	SHR
DH16-05	239.99	57.84	345.24	OPEN	30	SHR
DH16-05	240.37	43.05	15.61	OPEN	32	SHR
DH16-05	241.01	44.65	148.44	CLOSED	31	SHR
DH16-05	241.41	32.33	115.04	OPEN	31	BED
DH16-05	241.78	26.62	99.5	OPEN	31	BED
DH16-05	242.32	72.28	317.89	CLOSED	31	SHR
DH16-05	243.47	34.48	142.29	CLOSED	31	BED
DH16-05	243.54	55.47	267.51	CLOSED	31	SHR
DH16-05	243.77	74.76	198.82	CLOSED	31	SHR
DH16-05	243.87	32.81	137.79	CLOSED	31	BED
DH16-05	244.89	38.98	138.41	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-09	35.45	16.73	282.72	CLOSED	31	WEAK
DH16-09	38.83	25.17	27.37	OPEN	30	SHR
DH16-09	39.16	34.36	14.25	OPEN	32	SHR
DH16-09	44.07	27.82	39.8	CLOSED	31	SHR
DH16-09	44.87	39.32	232.24	CLOSED	31	SHR
DH16-09	46.11	49.76	212.59	CLOSED	31	SHR
DH16-09	50.26	20.64	356.3	CLOSED	31	SHR
DH16-09	55.66	23.49	14.62	CLOSED	31	BED
DH16-09	63.95	17.1	17.54	CLOSED	30	SHR
DH16-09	64.52	47.46	24.29	CLOSED	32	SHR
DH16-09	69.34	48.31	25.61	OPEN	31	SHR
DH16-09	72.13	35	27.46	CLOSED	30	WEAK
DH16-09	73.33	43.22	22.11	CLOSED	32	WEAK
DH16-09	83.42	47.67	16.36	CLOSED	31	BED
DH16-09	87.15	84.61	93.15	CLOSED	31	WEAK
DH16-09	90.76	45.54	16.47	CLOSED	31	BED
DH16-09	92.79	60.79	251.35	CLOSED	30	FZ
DH16-09	93.71	73.19	253.75	CLOSED	32	FZBOT
DH16-09	96.41	37.63	178.56	OPEN	30	BREAKOUT
DH16-09	97.49	62.98	352.19	OPEN	32	BREAKOUTBOT
DH16-09	98.76	38.99	175.32	CLOSED	31	SHR
DH16-09	99.78	42.42	202.02	CLOSED	31	SHR
DH16-09	113.56	64.35	78.71	CLOSED	31	SHR
DH16-09	120.28	43.78	270.07	OPEN	30	BREAKOUT
DH16-09	122.15	52.44	305.01	OPEN	32	BREAKOUTBOT
DH16-09	125.4	45.36	290.89	CLOSED	31	BED
DH16-09	133.23	42.07	267.43	CLOSED	31	BED
DH16-09	154.65	24.51	186.34	CLOSED	31	SHR
DH16-09	155.68	28.67	179.82	OPEN	31	SHR
DH16-09	158.48	38.32	147.17	CLOSED	31	SHR
DH16-09	160.49	39.82	136.18	UNCLEAR	30	FZ
DH16-09	161.97	37.09	121.34	UNCLEAR	32	FZBOT
DH16-09	165.56	30.38	169.48	CLOSED	31	SHR
DH16-09	166.99	74.94	82.95	CLOSED	31	SHR
DH16-09	168	64.32	100.67	OPEN	31	SHR
DH16-09	168.7	35.17	180.83	CLOSED	31	SHR
DH16-09	169.09	26.8	203.09	CLOSED	31	SHR
DH16-09	172.14	73.68	250.03	CLOSED	31	SHR
DH16-09	173.23	73.11	250.11	CLOSED	31	SHR
DH16-09	176.19	56.38	248.1	OPEN	31	SHR
DH16-09	185.45	39.72	219.36	CLOSED	31	SHR
DH16-09	186.43	44.92	217.19	CLOSED	31	SHR
DH16-09	187.51	38.22	226.08	CLOSED	31	SHR
DH16-09	188.11	25.01	156.24	OPEN	30	FZ
DH16-09	188.91	30.16	158.57	OPEN	32	FZBOT
DH16-09	190.77	36.05	182.54	CLOSED	31	SHR
DH16-09	191.7	29.15	182.95	CLOSED	31	SHR
DH16-09	195.54	35.77	177.92	CLOSED	31	SHR
DH16-09	196.66	56.26	173.61	CLOSED	31	SHR
DH16-09	199.39	43.11	187.29	CLOSED	31	SHR
DH16-09	200.68	41.57	172.59	CLOSED	31	SHR
DH16-20	30.22	5.1	240.19	OPEN	31	SHR
DH16-20	31.37	36.37	205.69	OPEN	31	SHR
DH16-20	33.41	43.38	302.33	OPEN	31	SHR
DH16-20	33.74	57.03	130.38	OPEN	31	SHR
DH16-20	41.65	81.55	118.42	CLOSED	31	CONTACT
DH16-20	44.98	39.37	285.77	OPEN	31	SHR
DH16-20	45.35	42.5	285.29	CLOSED	31	SHR
DH16-20	46.16	74.1	104.1	CLOSED	31	CONTACT
DH16-20	48.12	60.3	100.32	CLOSED	31	CONTACT
DH16-20	48.97	55.26	113.55	CLOSED	31	CONTACT
DH16-20	51.58	38.39	305.96	CLOSED	31	CONTACT
DH16-20	53.15	55.72	97.03	CLOSED	31	SHR
DH16-20	54.05	15.3	134.51	OPEN	31	SHR
DH16-20	54.43	45.55	309.76	OPEN	31	SHR
DH16-20	54.65	11.93	320.76	OPEN	31	SHR
DH16-20	55.05	4.97	310.8	OPEN	31	SHR
DH16-20	55.43	19.83	325.67	OPEN	31	SHR
DH16-20	55.64	33.38	303.7	OPEN	31	SHR
DH16-20	56.01	49.69	300.9	CLOSED	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-20	56.4	57.86	292.13	CLOSED	31	SHR
DH16-20	56.77	64.94	282.23	CLOSED	31	SHR
DH16-20	57.49	52.28	65.69	OPEN	30	WEAK
DH16-20	57.89	49.14	77.33	OPEN	32	WEAK
DH16-20	58.53	34.03	45.33	OPEN	30	WEAK
DH16-20	58.85	42.4	65.63	OPEN	32	WEAK
DH16-20	59.11	49.45	41.38	OPEN	30	WEAK
DH16-20	59.46	48.33	53.95	OPEN	32	WEAK
DH16-20	61.07	36.26	81.33	CLOSED	31	SHR
DH16-20	61.28	53.32	78.55	CLOSED	31	SHR
DH16-20	62.91	29.76	302.87	CLOSED	30	CONTACT
DH16-20	63.37	61.85	89.37	CLOSED	31	SHR
DH16-20	63.71	51.74	100.89	CLOSED	31	SHR
DH16-20	65.08	49.75	84.99	CLOSED	31	SHR
DH16-20	65.35	60.81	89.65	CLOSED	32	WEAK
DH16-20	66.81	8.62	309.03	CLOSED	31	CONTACT
DH16-20	70.27	33.47	87.29	OPEN	31	SHR
DH16-20	70.89	26.43	94.48	UNCLEAR	31	SHR
DH16-20	72.38	52.49	67.16	OPEN	30	WEAK
DH16-20	73.45	50.46	75.73	OPEN	32	WEAK
DH16-20	73.82	43.12	73.9	CLOSED	31	BED
DH16-20	74.52	53.13	50	CLOSED	31	BED
DH16-20	75.93	51.24	86.43	CLOSED	31	SHR
DH16-20	76.76	49.04	86.66	CLOSED	31	SHR
DH16-20	77.77	29.45	312.11	CLOSED	31	SHR
DH16-20	78.36	33.86	117.92	OPEN	31	SHR
DH16-20	78.73	41.06	108.65	CLOSED	31	SHR
DH16-20	79.32	41.43	41.25	OPEN	31	SHR
DH16-20	79.94	38.77	43.58	CLOSED	31	SHR
DH16-20	80.9	28.92	24.18	CLOSED	31	SHR
DH16-20	81.26	42.4	102.49	OPEN	30	WEAK
DH16-20	81.81	38.63	57.02	OPEN	32	WEAK
DH16-20	82.08	40.11	80.89	CLOSED	31	BED
DH16-20	82.48	45.61	94.84	CLOSED	31	BED
DH16-20	82.69	45.33	89.92	CLOSED	31	BED
DH16-20	82.87	49.13	92.42	CLOSED	31	BED
DH16-20	83.02	47.29	99.31	CLOSED	31	BED
DH16-20	83.29	43.47	91.05	CLOSED	31	BED
DH16-20	83.68	42.79	101.71	CLOSED	31	BED
DH16-20	83.83	43.51	108.71	CLOSED	31	BED
DH16-20	84	43.55	84.19	CLOSED	31	BED
DH16-20	84.36	41.11	68.78	CLOSED	31	BED
DH16-20	84.56	34.97	22.84	OPEN	31	BED
DH16-20	85.1	42.56	47.34	CLOSED	31	BED
DH16-20	85.27	46.25	48.05	CLOSED	31	BED
DH16-20	85.54	42.16	79.22	CLOSED	31	BED
DH16-20	85.85	39.69	67.49	OPEN	31	SHR
DH16-20	85.99	41.82	58.64	OPEN	30	SHR
DH16-20	86.02	25.31	71.6	OPEN	32	SHR
DH16-20	86.18	37.53	7.03	CLOSED	31	SHR
DH16-20	86.53	52.09	33.27	OPEN	30	SHR
DH16-20	86.72	41.67	354.97	OPEN	32	SHR
DH16-20	86.91	35.59	97.98	OPEN	30	SHR
DH16-20	87.19	44.65	114.24	OPEN	32	SHR
DH16-20	87.38	46.36	115.74	CLOSED	31	BED
DH16-20	87.7	58.57	100.61	CLOSED	31	SHR
DH16-20	89.29	50.53	314.69	OPEN	31	SHR
DH16-20	89.49	42.64	304.27	CLOSED	31	SHR
DH16-20	89.67	45.55	109.02	CLOSED	31	SHR
DH16-20	90.51	47.58	81.93	OPEN	30	SHR
DH16-20	90.56	48.28	74.94	OPEN	32	SHR
DH16-20	90.7	45.05	87.74	CLOSED	31	BED
DH16-20	90.81	50.85	84.73	OPEN	30	SHR
DH16-20	90.99	47.89	98.11	OPEN	32	SHR
DH16-20	92.07	43.77	100.61	CLOSED	31	SHR
DH16-20	93.37	59.42	89.18	CLOSED	30	WEAK
DH16-20	95.22	40.92	68.6	OPEN	30	VOID
DH16-20	98.5	42.22	90.14	OPEN	32	VOID
DH16-20	98.83	49.79	76.15	OPEN	30	SHR
DH16-20	98.93	50.35	80.87	OPEN	32	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-20	101.01	46.56	113.96	OPEN	31	BED
DH16-20	101.13	43.62	111.02	OPEN	32	WEAK
DH16-20	101.84	51.44	96.74	CLOSED	31	BED
DH16-20	101.99	52.49	103.96	CLOSED	31	BED
DH16-20	102.14	55.31	100.97	CLOSED	31	BED
DH16-20	102.42	51.67	110.26	CLOSED	31	BED
DH16-20	102.63	49.88	106.18	OPEN	31	BED
DH16-20	103.08	53.28	121.86	OPEN	31	BED
DH16-20	103.46	53.43	111.38	CLOSED	31	BED
DH16-20	103.88	43.7	119.35	OPEN	30	SHR
DH16-20	104.58	29.61	8.08	OPEN	32	SHR
DH16-20	104.78	65.76	134.42	CLOSED	31	SHR
DH16-20	105.13	62.57	123.17	CLOSED	31	SHR
DH16-20	105.6	56.9	107.32	OPEN	30	SHR
DH16-20	106.11	46.04	105.48	OPEN	32	SHR
DH16-20	107.24	70.1	208.28	CLOSED	31	SHR
DH16-20	107.69	35.72	86.64	OPEN	30	WEAK
DH16-20	107.89	46.61	103.05	OPEN	31	BED
DH16-20	108	47.27	103.78	OPEN	31	BED
DH16-20	108.29	41.88	76.2	OPEN	31	BED
DH16-20	108.57	36.31	50.83	OPEN	31	BED
DH16-20	109.27	39.02	53.34	OPEN	31	BED
DH16-20	109.44	20.76	71.83	OPEN	31	BED
DH16-20	110.24	43.73	120.28	OPEN	32	WEAK
DH16-20	110.52	51.39	124.25	OPEN	30	WEAK
DH16-20	110.71	31.64	139.16	OPEN	31	SHR
DH16-20	112.42	38.94	116.81	OPEN	31	SHR
DH16-20	113.49	33.8	62.36	OPEN	32	WEAK
DH16-20	116.16	32.55	65.68	OPEN	31	SHR
DH16-20	116.36	38.92	67.48	OPEN	31	SHR
DH16-20	116.56	43.85	66.33	OPEN	31	SHR
DH16-20	117	52.56	308.18	CLOSED	31	SHR
DH16-20	117.77	48.99	34.91	OPEN	31	SHR
DH16-20	118.44	32.35	98.5	CLOSED	31	SHR
DH16-20	118.83	25.89	0.32	CLOSED	31	SHR
DH16-20	120.21	31.39	90.75	CLOSED	31	SHR
DH16-20	120.52	23.13	97.42	CLOSED	31	BED
DH16-20	120.69	23.12	98.25	CLOSED	31	BED
DH16-20	120.77	28.13	90.59	CLOSED	31	BED
DH16-20	120.87	28.31	82.72	CLOSED	31	BED
DH16-20	121.02	34.05	57.61	OPEN	31	SHR
DH16-20	121.49	32.12	291.11	CLOSED	30	WEAK
DH16-20	121.95	41	63.73	OPEN	31	SHR
DH16-20	122.8	19.4	81.18	OPEN	32	WEAK
DH16-20	124.43	59.4	327.85	CLOSED	30	WEAK
DH16-20	125.14	48.42	312.82	CLOSED	32	WEAK
DH16-20	127.58	31.54	44.26	CLOSED	31	SHR
DH16-20	129.23	74.83	138.1	OPEN	31	SHR
DH16-20	131.15	35.9	108.46	OPEN	30	SHR
DH16-20	131.21	35.66	115.01	OPEN	32	SHR
DH16-20	131.8	28.18	108.36	OPEN	30	SHR
DH16-20	131.93	44.54	108.84	OPEN	32	SHR
DH16-20	133.21	27.77	271.13	OPEN	31	SHR
DH16-20	133.84	29.29	285.21	OPEN	30	SHR
DH16-20	134.04	34.12	280.41	OPEN	32	SHR
DH16-20	134.61	52.34	293.96	OPEN	30	SHR
DH16-20	135.02	49.76	92.47	UNCLEAR	32	SHR
DH16-20	136.35	44.39	310.15	OPEN	31	SHR
DH16-20	137.01	46.68	291.56	OPEN	31	SHR
DH16-20	137.76	47.31	287.16	CLOSED	31	SHR
DH16-20	138.65	22.72	78.12	CLOSED	31	BED
DH16-20	138.73	25.12	74.42	CLOSED	31	BED
DH16-20	139.39	49.21	337.69	CLOSED	31	SHR
DH16-20	140.15	56.29	325.42	CLOSED	31	SHR
DH16-20	141.59	42.52	125.37	OPEN	31	SHR
DH16-20	142.05	35.55	138.12	CLOSED	31	SHR
DH16-20	143.34	26.49	107.62	CLOSED	31	BED
DH16-20	143.46	26.49	109.81	CLOSED	31	BED
DH16-20	143.72	54.37	283.45	CLOSED	31	SHR
DH16-20	144.32	41.76	289.32	CLOSED	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-20	144.62	46.78	297.23	CLOSED	31	SHR
DH16-20	144.96	52.16	309.37	CLOSED	31	SHR
DH16-20	145.2	41.81	307.37	CLOSED	31	SHR
DH16-20	146.05	20.39	68.1	CLOSED	31	BED
DH16-20	146.28	48.03	311.78	CLOSED	31	SHR
DH16-20	146.56	54.99	297	CLOSED	31	SHR
DH16-20	146.75	61.76	315.4	CLOSED	31	SHR
DH16-20	146.87	56.16	306.18	CLOSED	31	SHR
DH16-20	147.36	47.75	334.23	OPEN	30	WEAK
DH16-20	147.46	38.81	117.63	OPEN	31	SHR
DH16-20	150.09	74.46	282.47	OPEN	32	WEAK
DH16-20	151.26	35.75	86.9	OPEN	31	SHR
DH16-20	152	49.14	272.6	CLOSED	31	SHR
DH16-20	154.65	26.56	252.22	CLOSED	30	WEAK
DH16-20	157.6	29.94	142.75	OPEN	30	WEAK
DH16-20	160.27	16.6	317.64	OPEN	32	WEAK
DH16-20	162.65	85.14	296.34	OPEN	31	SHR
DH16-20	164.86	65.21	302.27	OPEN	32	WEAK
DH16-20	167.45	52.13	299.27	CLOSED	31	SHR
DH16-20	167.81	28.97	90.14	CLOSED	31	BED
DH16-20	167.94	52.38	251.45	OPEN	31	SHR
DH16-20	167.96	34.01	77.56	CLOSED	31	BED
DH16-20	168.04	29.96	85.99	CLOSED	31	BED
DH16-20	168.14	33.08	84.08	CLOSED	31	BED
DH16-20	168.24	30.92	79.83	OPEN	30	WEAK
DH16-20	171	29.39	302.79	OPEN	32	WEAK
DH16-20	172.52	45.37	92.1	CLOSED	30	WEAK
DH16-20	173.72	79.06	283.34	OPEN	31	BED
DH16-20	175.76	66.13	85.31	OPEN	32	WEAK
DH16-20	177.32	53.16	301.19	OPEN	30	WEAK
DH16-20	178.41	64.2	300.76	OPEN	32	WEAK
DH16-20	185.38	69.36	301.47	OPEN	31	SHR
DH16-20	185.76	67.98	301.01	CLOSED	31	SHR
DH16-20	188.43	40.15	261.77	OPEN	30	WEAK
DH16-20	191.72	20.11	115.82	CLOSED	32	WEAK
DH16-20	192.68	79.34	302.56	CLOSED	30	WEAK
DH16-20	193.39	34.43	68.83	OPEN	31	SHR
DH16-20	195.1	49.97	90.05	OPEN	30	SHR
DH16-20	195.25	43.46	81.21	OPEN	32	SHR
DH16-20	195.91	68.93	299.84	CLOSED	31	WEAK
DH16-20	196.11	61.44	292.52	CLOSED	32	WEAK
DH16-20	196.82	35.28	305.43	CLOSED	31	SHR
DH16-20	197.68	24.01	88.22	CLOSED	30	WEAK
DH16-20	198.04	21.02	78.1	OPEN	31	SHR
DH16-20	198.18	26.31	115.62	CLOSED	32	WEAK
DH16-20	199.51	21.9	85.42	CLOSED	30	WEAK
DH16-20	199.7	23.7	92.85	CLOSED	32	WEAK
DH16-20	200.17	15.92	67.13	OPEN	30	SHR
DH16-20	200.26	18.59	69.04	OPEN	32	SHR
DH16-20	200.71	24.44	44.02	OPEN	30	SHR
DH16-20	200.92	23.43	85.8	OPEN	32	SHR
DH16-20	201.59	18.74	67.83	OPEN	30	SHR
DH16-20	201.71	13.43	73.63	OPEN	32	SHR
DH16-20	201.99	19.18	81.15	OPEN	30	SHR
DH16-20	202.15	32.43	70.16	OPEN	32	SHR
DH16-20	202.86	24.53	29.47	OPEN	30	BREAKOUT
DH16-20	203.31	27.31	57.24	OPEN	31	SHR
DH16-20	203.54	35.73	263.04	OPEN	31	SHR
DH16-20	204.31	57.16	282.65	OPEN	32	BREAKOUTBOT
DH16-20	205.7	36.67	311.39	OPEN	30	WEAK
DH16-20	209.35	81.17	120.71	OPEN	30	VOID
DH16-20	211.79	49.06	245.22	OPEN	32	VOID
DH16-20	217.14	83.23	109.18	OPEN	32	WEAK
DH16-20	218.37	36.88	343.9	CLOSED	31	SHR
DH16-20	219	24.95	96.46	OPEN	31	SHR
DH16-20	220.72	62.19	290	OPEN	31	SHR
DH16-20	222.77	30.18	24.98	CLOSED	30	WEAK
DH16-20	226.3	70.48	112.15	OPEN	32	WEAK
DH16-20	227.59	67.08	113.17	CLOSED	31	CONTACT
DH16-20	230.1	37.78	273.92	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-20	234.26	59.97	288.71	OPEN	31	SHR
DH16-20	234.68	31.77	277.22	OPEN	31	SHR
DH16-20	237.13	12.25	263.31	OPEN	30	WEAK
DH16-20	237.45	48.47	125.78	OPEN	30	SHR
DH16-20	237.66	48.45	116.37	OPEN	32	SHR
DH16-20	238.54	63.13	333.31	OPEN	31	SHR
DH16-20	239.43	39.24	29.12	OPEN	32	WEAK
DH16-20	240.36	42.82	298.1	OPEN	30	SHR
DH16-20	240.74	38.96	267.81	OPEN	32	SHR
DH16-20	241.34	53.14	269.03	OPEN	31	SHR
DH16-20	241.66	61.24	277.39	OPEN	31	SHR
DH16-20	241.87	59.56	269.92	OPEN	31	SHR
DH16-20	242.49	31.16	103.86	OPEN	30	WEAK
DH16-20	244.9	22.91	261.49	OPEN	32	WEAK
DH16-20	245.63	31.47	80.93	OPEN	31	SHR
DH16-20	245.81	13.74	200.06	OPEN	30	WEAK
DH16-20	247.07	13.66	117.32	OPEN	32	WEAK
DH16-20	247.75	36.62	315.24	OPEN	30	WEAK
DH16-20	248.06	30.74	320.23	OPEN	31	VOID
DH16-20	248.28	15.98	77.44	OPEN	32	WEAK
DH16-20	248.73	24.72	98.23	OPEN	31	SHR
DS16-01	48.94	8.34	103.25	CLOSED	31	BED
DS16-01	49.24	6.75	74.92	CLOSED	31	BED
DS16-01	50.81	10.55	35.61	CLOSED	31	BED
DS16-01	51.04	5.74	81.25	CLOSED	31	BED
DS16-01	51.75	32.68	100.91	CLOSED	31	SHR
DS16-01	58.06	9.06	78.21	CLOSED	31	BED
DS16-01	62.64	5.75	61.82	CLOSED	31	BED
DS16-01	64.26	7.92	87.56	CLOSED	31	BED
DS16-01	64.56	4.05	89.9	CLOSED	31	BED
DS16-01	64.85	8.35	78.19	CLOSED	31	BED
DS16-01	68.08	5.6	111.76	CLOSED	31	BED
DS16-01	68.3	3.79	123.49	CLOSED	31	BED
DS16-01	68.6	3.93	106.67	CLOSED	31	BED
DS16-01	68.93	5.5	121.51	CLOSED	31	BED
DS16-01	69.52	6.26	137.7	CLOSED	31	BED
DS16-01	73.21	9.7	128.92	CLOSED	31	BED
DS16-01	75.62	26.11	298.5	CLOSED	31	SHR
DS16-01	79.66	9.43	85.81	CLOSED	31	BED
DS16-01	80.42	7.01	117.35	CLOSED	31	BED
DS16-01	82.25	5.65	109.53	CLOSED	31	BED
DS16-01	96.26	6.48	91.75	CLOSED	31	BED
DS16-01	100.97	9.68	102.82	CLOSED	31	BED
DS16-01	106.38	15.83	81.38	OPEN	30	WEAK
DS16-01	107.87	25.4	345.49	OPEN	32	WEAK
DS16-01	115.02	5.84	90.07	OPEN	30	WEAK
DS16-01	117.48	9.57	65.64	OPEN	32	WEAK
DS16-01	124.29	6.48	96.93	CLOSED	31	BED
DS16-01	125.26	6.66	97.42	CLOSED	31	BED
DS16-01	126.02	4.82	115.07	CLOSED	31	BED
DS16-01	126.69	8.47	122.2	OPEN	31	SHR
DS16-01	143.14	5.72	101.7	CLOSED	31	BED
DS16-01	145.76	2.64	296.53	OPEN	30	WEAK
DS16-01	146.1	6.7	90.86	OPEN	32	WEAK
DS16-01	149.59	8.45	91.75	CLOSED	31	BED
DS16-01	167.51	6.76	80.25	CLOSED	31	BED
DS16-01	167.72	7.7	83.67	CLOSED	31	BED
DS16-01	167.92	5.75	93.64	CLOSED	31	BED
DS16-01	204.93	7.22	106.1	CLOSED	31	BED
DS16-01	205.21	7.98	101.19	CLOSED	31	BED
DS16-01	206.16	6.85	94.1	CLOSED	31	BED
DS16-01	206.85	5.87	109.84	CLOSED	31	BED
DS16-01	207.09	8.04	122.47	CLOSED	31	BED
DS16-01	257.6	6.44	84.77	CLOSED	31	BED
DS16-01	270.2	10.74	67.39	CLOSED	31	BED
DS16-01	275.86	11.15	91.36	CLOSED	31	BED
DS16-01	280.72	8.84	100.3	CLOSED	31	BED
DS16-01	282.12	12.61	108.5	CLOSED	31	BED
DS16-01	283.49	8.64	106.45	CLOSED	31	BED
DS16-01	288.76	6.66	123.35	CLOSED	31	BED

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-01	288.96	7.92	96.17	CLOSED	31	BED
DS16-01	289.81	8	82.89	CLOSED	31	BED
DS16-01	301.01	11.53	56.63	CLOSED	31	BED
DS16-01	309.49	15.97	102.73	CLOSED	31	BED
DS16-01	309.73	13.39	97	CLOSED	31	BED
DS16-01	312.62	12.25	111.67	CLOSED	31	BED
DS16-01	313.04	12.39	96.75	CLOSED	31	BED
DS16-01	313.25	14.27	85.5	CLOSED	31	BED
DS16-01	313.51	17.91	94.43	CLOSED	31	BED
DS16-01	315.21	9.35	100.6	CLOSED	31	BED
DS16-01	315.4	10.25	78.6	CLOSED	31	BED
DS16-01	316.61	28.99	94.06	CLOSED	31	SHR
DS16-01	319.33	76.14	62.09	OPEN	31	SHR
DS16-01	320.31	58.41	82.83	OPEN	31	SHR
DS16-01	339.66	17.14	81.33	OPEN	31	SHR
DS16-01	341.25	23.66	162.23	OPEN	31	SHR
DS16-01	341.82	44.85	78.53	OPEN	31	SHR
DS16-01	342.42	58.7	70.61	OPEN	31	SHR
DS16-01	393.51	35.61	75.17	CLOSED	31	SHR
DS16-01	413.92	19.83	22.6	CLOSED	31	BED
DS16-01	414.26	80.84	133.88	CLOSED	31	SHR
DS16-01	416.36	60.05	246.86	CLOSED	31	SHR
DS16-01	419.4	69.81	230.95	CLOSED	31	SHR
DS16-01	422.25	20.03	324.58	OPEN	30	WEAK
DS16-01	427.67	28.04	15.95	OPEN	32	WEAK
DS16-01	427.88	34.35	111.15	CLOSED	31	SHR
DS16-01	428.83	37.84	115.82	OPEN	31	BED
DS16-01	429.74	40.13	118	CLOSED	31	BED
DS16-01	430.15	69.98	226.09	CLOSED	31	SHR
DS16-01	430.41	36.8	114.23	OPEN	31	BED
DS16-01	431.47	29.57	80.87	CLOSED	31	SHR
DS16-01	433.88	65.47	294.35	OPEN	31	SHR
DS16-01	437.1	44.87	131.02	CLOSED	31	SHR
DS16-01	446.35	40.93	191.49	OPEN	30	WEAK
DS16-01	446.77	54.01	168.73	OPEN	31	SHR
DS16-01	452.57	52.04	40.97	OPEN	32	WEAK
DS16-01	464.89	39.54	108.04	OPEN	30	WEAK
DS16-01	465.72	33.15	99.24	CLOSED	31	SHR
DS16-01	466.12	40.77	102.36	CLOSED	31	SHR
DS16-01	467.17	35.95	87.67	CLOSED	31	SHR
DS16-01	468.04	23.74	96.46	CLOSED	31	SHR
DS16-01	485.48	59.8	262.69	CLOSED	31	SHR
DS16-01	510.11	46.63	85.76	OPEN	31	SHR
DS16-01	512.06	45.75	107.5	OPEN	31	SHR
DS16-01	536.6	42.13	74	OPEN	30	WEAK
DS16-01	537.33	35.04	254.58	CLOSED	31	SHR
DS16-01	542.73	65.33	273.45	OPEN	32	WEAK
DS16-01	547.13	45.31	78.1	OPEN	31	SHR
DS16-01	552.15	56.71	214.54	OPEN	31	SHR
DS16-01	554.22	48.08	97.75	OPEN	30	WEAK
DS16-01	559.99	41.04	97.41	OPEN	32	WEAK
DS16-01	564.59	47.73	282.47	CLOSED	31	SHR
DS16-01	565.24	50.42	289.02	CLOSED	31	SHR
DS16-01	565.74	43.97	109.44	CLOSED	31	SHR
DS16-01	566.65	43.44	92.79	CLOSED	31	SHR
DS16-01	566.86	61.97	216.26	CLOSED	31	SHR
DS16-01	567.66	43.76	281.5	OPEN	31	SHR
DS16-01	570.95	32.19	81.48	OPEN	31	SHR
DS16-01	573.06	22.59	67.19	CLOSED	31	SHR
DS16-01	593.62	32.74	89.09	OPEN	31	SHR
DS16-01	610.35	56.6	222.23	OPEN	31	SHR
DS16-01	630.05	75.87	232.98	CLOSED	31	SHR
DS16-01	642.72	27.14	86.88	OPEN	31	SHR
DS16-01	643.54	13.36	85.42	OPEN	31	SHR
DS16-01	644.6	47.91	269.73	OPEN	31	SHR
DS16-01	645.16	56.34	269.42	OPEN	31	SHR
DS16-01	646.69	56.79	281.9	OPEN	31	SHR
DS16-01	648.51	26.76	106.15	OPEN	31	SHR
DS16-01	654.06	61.84	243.7	OPEN	31	SHR
DS16-01	657.18	64.42	277.47	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-01	661.91	62.4	243.44	OPEN	30	VOID
DS16-01	663.2	63.59	218.72	OPEN	32	VOID
DS16-01	664.58	41.15	95.86	CLOSED	31	SHR
DS16-01	667.08	52.63	252.18	OPEN	30	WEAK
DS16-01	676.34	55.11	241.34	OPEN	31	SHR
DS16-01	677.57	51.4	261.2	OPEN	31	SHR
DS16-01	681.43	27.67	79.32	CLOSED	31	SHR
DS16-01	681.63	30.15	81.15	CLOSED	31	SHR
DS16-01	681.89	31.62	95.1	CLOSED	31	SHR
DS16-01	686.47	49.1	263.06	OPEN	31	SHR
DS16-01	689.24	33.54	263.74	OPEN	31	SHR
DS16-01	694.58	36.22	101.77	OPEN	32	WEAK
DS16-01	699.06	34.36	92.19	CLOSED	31	BED
DS16-01	699.69	29.64	97.12	CLOSED	31	BED
DS16-01	700.36	32.37	102.34	CLOSED	31	BED
DS16-01	700.63	31.47	88.04	CLOSED	31	BED
DS16-01	700.97	27.83	95.44	CLOSED	31	BED
DS16-01	708.01	33.83	99.21	OPEN	31	SHR
DS16-01	727.76	60.3	68.66	OPEN	31	SHR
DS16-01	739.35	27.83	98.24	OPEN	31	SHR
DS16-01	744.57	29.38	88.71	OPEN	30	VOID
DS16-01	744.86	43.79	83.57	OPEN	32	VOID
DS16-01	748.38	43.65	129.46	CLOSED	31	SHR
DS16-01	757.51	56.92	225.19	CLOSED	31	SHR
DS16-01	762.22	46.8	274.09	CLOSED	31	SHR
DS16-01	771.95	70.58	34.33	CLOSED	31	SHR
DS16-01	772.15	52.23	283.99	OPEN	31	SHR
DS16-01	772.37	57.99	280.15	CLOSED	31	SHR
DS16-01	778.87	19.51	129.1	CLOSED	31	BED
DS16-01	779.15	19.65	107.45	CLOSED	31	BED
DS16-01	785.11	62.86	239.5	CLOSED	31	SHR
DS16-01	788.27	68.7	231.16	CLOSED	31	SHR
DS16-01	795.8	27.06	78.97	OPEN	31	SHR
DS16-01	800.79	55.41	261.18	CLOSED	31	SHR
DS16-01	804.89	62.09	277.8	CLOSED	31	SHR
DS16-01	810.35	30.53	94.08	OPEN	30	VOID
DS16-01	810.61	29.23	102.01	OPEN	32	VOID
DS16-01	819.29	65.27	303.36	CLOSED	31	SHR
DS16-01	825.76	54.1	266.25	OPEN	31	SHR
DS16-01	826.51	45.64	268	CLOSED	31	SHR
DS16-01	835.98	60.51	247.58	CLOSED	31	SHR
DS16-01	841.12	77.48	334.52	CLOSED	31	SHR
DS16-01	848.59	64.1	222.1	CLOSED	31	SHR
DS16-01	850.29	34.43	85.38	CLOSED	31	SHR
DS16-01	851.78	29.26	78.71	CLOSED	31	SHR
DS16-01	856.17	17.19	54.61	CLOSED	31	SHR
DS16-01	856.79	18.7	69.04	CLOSED	31	SHR
DS16-01	858.85	34.16	113.32	CLOSED	31	SHR
DS16-01	861.3	32.08	83.04	CLOSED	31	SHR
DS16-01	865.52	63.35	228.23	CLOSED	31	SHR
DS16-01	870.57	68.77	164.73	CLOSED	31	SHR
DS16-02	29.89	82.99	110.67	CLOSED	31	BED
DS16-02	31.99	41.03	109.58	CLOSED	31	BED
DS16-02	46.04	83.66	152.45	CLOSED	31	BED
DS16-02	68.42	11.92	188.32	CLOSED	31	BED
DS16-02	156.22	73.33	131.18	CLOSED	30	CONTACT
DS16-02	157.75	85.02	166.51	CLOSED	32	CONTACT
DS16-02	172.06	36.88	138.76	CLOSED	31	CONTACT
DS16-02	192.88	72.89	127	CLOSED	31	SHR
DS16-02	204.7	27.08	137.15	CLOSED	31	SHR
DS16-02	265.56	38.22	106.99	OPEN	30	SHR
DS16-02	265.65	38.34	106.87	OPEN	31	SHR
DS16-02	265.77	39.94	108.24	OPEN	32	SHR
DS16-02	287.53	75.76	214.92	CLOSED	31	BED
DS16-02	295.55	72.75	232.08	OPEN	31	SHR
DS16-02	300.16	55.58	101.29	OPEN	31	SHR
DS16-02	358.97	82.92	112.32	OPEN	31	SHR
DS16-02	359.1	80.77	282.79	OPEN	31	SHR
DS16-02	365.42	53.31	88.98	OPEN	31	SHR
DS16-02	372.69	81	109.05	CLOSED	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-02	373.68	72.88	207.25	UNCLEAR	31	SHR
DS16-02	377.1	67.38	27.39	CLOSED	31	SHR
DS16-02	395.2	84.8	220.14	CLOSED	31	SHR
DS16-02	396.18	80.91	107.21	CLOSED	31	SHR
DS16-02	396.61	85.35	221.5	OPEN	31	SHR
DS16-02	397.37	58.82	92.41	CLOSED	31	SHR
DS16-02	398.94	83.13	105.02	OPEN	31	SHR
DS16-02	399.46	83.03	108.91	OPEN	31	SHR
DS16-02	402.01	88.07	109.97	OPEN	30	WEAK
DS16-02	402.38	82.89	290.09	OPEN	31	SHR
DS16-02	402.94	85.34	284.58	OPEN	32	WEAK
DS16-02	413.56	67.85	73.07	CLOSED	31	SHR
DS16-02	421.37	27.4	17.63	OPEN	31	WEAK
DS16-02	424.35	41.43	117.36	OPEN	31	SHR
DS16-02	435.64	52.39	245.99	CLOSED	31	SHR
DS16-02	442.13	70.32	48.79	OPEN	30	WEAK
DS16-02	444.12	72.97	36.98	OPEN	30	VOID
DS16-02	444.75	75.73	42.38	OPEN	31	VOID
DS16-02	445.5	77.56	49.32	OPEN	32	VOID
DS16-02	447.54	50.93	59.18	OPEN	32	WEAK
DS16-02	451.47	47.89	196.45	OPEN	31	SHR
DS16-02	461.09	48.9	291.99	OPEN	31	SHR
DS16-02	468.5	76.38	277.83	OPEN	31	SHR
DS16-02	470.06	49.2	202.04	OPEN	31	SHR
DS16-02	471.02	24.69	109.61	CLOSED	31	SHR
DS16-02	472.74	37.92	203.11	CLOSED	31	SHR
DS16-02	473.81	55.14	153.85	OPEN	31	SHR
DS16-02	474.96	45.51	152.27	OPEN	31	SHR
DS16-02	475.7	31.4	138.32	CLOSED	31	SHR
DS16-02	477.39	58.81	233.5	OPEN	31	SHR
DS16-02	480.45	38.49	150.41	OPEN	31	SHR
DS16-02	481.16	37.46	177.16	OPEN	30	WEAK
DS16-02	482.42	42.93	29.38	OPEN	32	WEAK
DS16-02	490.11	77.57	315.05	OPEN	31	SHR
DS16-02	491.01	63.21	242.28	OPEN	31	SHR
DS16-03	39.84	31.62	32.51	CLOSED	30	CLAST
DS16-03	40.33	36.05	3.43	CLOSED	32	CLAST
DS16-03	65.3	21.47	147.46	CLOSED	31	SHR
DS16-03	121.37	35.06	271.61	OPEN	31	SHR
DS16-03	138.9	12.93	279.95	CLOSED	31	SHR
DS16-03	197.26	49.4	174.53	OPEN	31	SHR
DS16-03	206.18	45.05	101.59	OPEN	31	SHR
DS16-03	219.65	28.03	157.68	OPEN	30	WEAK
DS16-03	219.86	13.39	154.65	OPEN	32	WEAK
DS16-03	230.01	60.65	357.45	CLOSED	31	SHR
DS16-03	276.55	35.86	106.57	CLOSED	31	SHR
DS16-03	282.66	28.3	202.19	CLOSED	31	SHR
DS16-03	287.05	18.32	192.15	CLOSED	31	SHR
DS16-03	326.24	26.15	262.04	CLOSED	31	SHR
DS16-03	352.68	30.9	265.2	OPEN	31	SHR
DS16-03	354.35	28.49	223.07	CLOSED	31	SHR
DS16-03	357.31	14.56	271.64	OPEN	31	SHR
DS16-03	380.55	41.89	135.48	CLOSED	31	SHR
DS16-03	395.81	35.11	76.98	CLOSED	31	SHR
DS16-03	399.05	16.63	124.24	OPEN	30	WEAK
DS16-03	399.97	6.92	287.88	OPEN	32	WEAK
DS16-03	402.12	7.36	255.18	OPEN	31	SHR
DS16-03	495.63	76.64	233.56	CLOSED	31	SHR
DS16-03	499.05	74.02	236.57	OPEN	31	SHR
DS16-03	559.16	48.37	252.85	CLOSED	31	SHR
DS16-03	559.73	53.54	259.77	OPEN	31	SHR
DS16-03	586.72	49.94	279.43	CLOSED	31	SHR
DS16-03	656.31	53.88	277.66	CLOSED	31	SHR
DS16-03	675.81	56.09	276.5	CLOSED	31	SHR
DS16-04	44.35	73.47	315.78	CLOSED	31	SHR
DS16-04	59.15	82.34	294.7	CLOSED	31	SHR
DS16-04	90.54	84.33	124.28	UNCLEAR	31	SHR
DS16-04	119.53	82.57	312.31	CLOSED	31	CONTACT
DS16-04	296.13	20.99	288.99	OPEN	31	SHR
DS16-04	309.55	49.51	309.6	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-04	377.18	46.67	212.83	OPEN	31	SHR
DS16-04	430.88	84.03	57.53	OPEN	31	SHR
DS16-04	444.67	86.47	245.06	OPEN	31	WEAK
DS16-04	449.23	78.86	269.31	CLOSED	30	WEAK
DS16-04	451.21	86.35	264.32	CLOSED	32	WEAK
DS16-04	492.81	69.33	43.97	CLOSED	31	SHR
DS16-04	494.46	59.63	28.1	CLOSED	31	SHR
DS16-04	496.67	86.38	24.43	OPEN	31	SHR
DS16-04	499.13	78.1	44.93	OPEN	31	SHR
DS16-04	499.63	75.95	30.39	OPEN	31	SHR
DS16-04	508.49	49.69	152.83	OPEN	31	SHR
DS16-04	510.55	48.04	162.5	OPEN	31	SHR
DS16-04	511.76	64.34	51.28	OPEN	31	SHR
DS16-04	512.37	50.62	51.17	CLOSED	31	SHR
DS16-04	512.56	52.31	48.43	OPEN	31	SHR
DS16-04	512.99	51.39	50.87	OPEN	31	SHR
DS16-04	515.36	48.42	27.84	OPEN	31	SHR
DS16-04	529.08	40.93	262	OPEN	31	SHR
DS16-04	530.87	40.75	83.77	OPEN	31	SHR
DS16-04	534.01	44.77	26.88	OPEN	31	SHR
DS16-04	535.33	48.46	30.53	CLOSED	31	SHR
DS16-04	543.41	40.95	142.34	OPEN	30	WEAK
DS16-04	549.73	71.35	244.84	OPEN	32	WEAK
DS16-04	567.08	49.64	267.66	OPEN	31	SHR
DS16-04	587.95	34.73	83.63	OPEN	31	SHR
DS16-04	619.28	67.37	163.5	OPEN	31	SHR
DH16-06	11.46	25.55	81.18	UNCLEAR	31	SHR
DH16-06	12.99	34.41	322.81	UNCLEAR	31	SHR
DH16-06	14.32	40.7	209.86	UNCLEAR	31	SHR
DH16-06	15.02	36.5	59.94	UNCLEAR	31	SHR
DH16-06	15.58	28.72	334.6	UNCLEAR	31	SHR
DH16-06	18.25	35.14	212.2	UNCLEAR	31	SHR
DH16-06	18.82	19.61	344.87	OPEN	31	SHR
DH16-06	39.14	28.59	121.82	UNCLEAR	31	SHR
DH16-06	86.63	26.08	41.47	UNCLEAR	31	SHR
DH16-06	88.8	41.47	168.83	UNCLEAR	31	SHR
DH16-06	117.65	15.35	111.77	CLOSED	31	BED
DH16-06	120.32	10.96	76.73	CLOSED	31	BED
DH16-06	122.34	7.83	189.18	OPEN	31	BED
DH16-06	123.73	19.78	131.18	CLOSED	31	LAY
DH16-06	130.42	27.18	20.69	UNCLEAR	31	SHR
DH16-06	136.44	38.71	321.57	UNCLEAR	31	SHR
DH16-06	137.54	42.12	88.76	UNCLEAR	31	SHR
DH16-06	150.54	16.19	305.53	UNCLEAR	31	SHR
DH16-06	158.01	17	8.41	CLOSED	31	BED
DH16-06	158.54	31.5	287.93	CLOSED	31	BED
DH16-06	182.81	10.31	272.58	CLOSED	31	SHR
DH16-06	188.78	27.65	294.7	CLOSED	31	SHR
DH16-06	200.66	33.04	230.42	CLOSED	31	SHR
DH16-06	201.74	6.37	300.66	UNCLEAR	31	SHR
DH16-06	205.88	16.75	36.79	CLOSED	31	BED
DH16-06	209.59	14.52	56.75	UNCLEAR	31	BED
DH16-06	215.87	14.84	341.66	CLOSED	31	BED
DH16-06	234.24	25.3	351.54	UNCLEAR	31	CONTACT
DH16-06	238.39	26.26	246.05	UNCLEAR	30	BED
DH16-06	238.66	36.44	277.94	UNCLEAR	32	BED
DH16-07	123.08	29.32	135.7	CLOSED	31	CONTACT
DH16-07	136.44	46.46	285.81	CLOSED	30	WEAK
DH16-07	137.52	44	341.51	CLOSED	32	WEAK
DH16-07	143.14	6.78	276.03	CLOSED	30	WEAK
DH16-07	144.38	23.33	223.15	CLOSED	32	WEAK
DH16-07	159.1	65.1	99.47	CLOSED	30	WEAK
DH16-07	160.5	35.11	91.67	CLOSED	32	WEAK
DH16-07	170.65	44.36	130.59	CLOSED	31	SHR
DH16-07	198.3	34.27	335.43	CLOSED	30	WEAK
DH16-07	198.62	36.66	345.2	CLOSED	32	WEAK
DH16-07	204.69	18.74	109.61	OPEN	30	FZ
DH16-07	204.94	9.6	95.24	OPEN	32	FZBOT
DH16-07	214.26	50.54	35.68	OPEN	30	FZ
DH16-07	215.69	53.02	8.58	OPEN	32	FZBOT

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-07	223.14	28.36	170.27	OPEN	30	FZ
DH16-07	223.57	31.73	173.17	OPEN	32	FZBOT
DH16-08	30.18	0.5	115.7	CLOSED	30	WEAK
DH16-08	30.88	13.38	5.46	CLOSED	32	WEAK
DH16-08	31.56	19.48	214.75	CLOSED	30	WEAK
DH16-08	31.89	9.78	183.06	CLOSED	32	WEAK
DH16-08	110.09	1.26	38.11	CLOSED	31	SHR
DH16-08	206.33	26.28	270.53	CLOSED	30	WEAK
DH16-08	215.13	22.35	304.83	CLOSED	32	WEAK
DH16-08	241.41	47.27	18.17	CLOSED	31	CLAST
DH16-10	13.94	20.51	87.21	OPEN	31	SHR
DH16-10	15.04	58.2	75.03	CLOSED	31	WEAK
DH16-10	16.84	47.14	90.91	CLOSED	31	SHR
DH16-10	32.22	43.86	189.93	OPEN	30	FZ
DH16-10	32.46	38.67	207.54	OPEN	32	FZBOT
DH16-10	36	70.86	75.27	CLOSED	31	SHR
DH16-10	39.83	54.63	70.82	CLOSED	31	SHR
DH16-10	40.73	63.77	54.06	CLOSED	31	SHR
DH16-10	45.63	14.33	137.09	CLOSED	31	SHR
DH16-10	46.39	11.7	147.44	CLOSED	31	BED
DH16-10	47.17	12.41	138.66	CLOSED	31	BED
DH16-10	50.45	34.35	228.96	OPEN	31	SHR
DH16-10	50.62	30.73	233	OPEN	31	SHR
DH16-10	54.04	18.14	86.77	CLOSED	31	SHR
DH16-10	56.4	31.91	190.28	CLOSED	31	SHR
DH16-10	56.85	33.04	190.87	CLOSED	31	SHR
DH16-10	57.29	34.04	196.39	CLOSED	31	SHR
DH16-10	58.87	26.59	193.22	CLOSED	31	SHR
DH16-10	59.73	23.1	221.76	CLOSED	31	SHR
DH16-10	60.05	21.73	201.81	CLOSED	31	SHR
DH16-10	61.31	22.92	206.45	CLOSED	31	BED
DH16-10	65.24	22.93	187.85	CLOSED	31	BED
DH16-10	67.12	62.61	73.91	CLOSED	31	SHR
DH16-10	69.57	28.86	199.05	CLOSED	31	BED
DH16-10	71.55	27.98	210.92	CLOSED	31	SHR
DH16-10	77.05	76.18	63.33	CLOSED	31	SHR
DH16-10	80.93	22.25	138.62	OPEN	31	SHR
DH16-10	81.68	23.6	149.35	CLOSED	31	WEAK
DH16-10	84.41	25.03	162.74	CLOSED	31	SHR
DH16-10	85.27	67.78	58.87	CLOSED	31	SHR
DH16-10	87.23	57.78	74.99	CLOSED	31	SHR
DH16-10	89.19	26.62	206.79	OPEN	31	SHR
DH16-10	90.08	33.19	99.42	OPEN	31	SHR
DH16-10	90.94	22.41	144.99	OPEN	31	SHR
DH16-10	92.88	28.26	172.68	OPEN	30	FZ
DH16-10	93.3	25.64	180.32	OPEN	32	FZBOT
DH16-10	94.99	17.44	153.12	CLOSED	31	BED
DH16-10	103.2	23.37	178.1	OPEN	31	SHR
DH16-10	104.59	26.1	144.36	OPEN	31	SHR
DH16-10	108.4	20.25	194.5	OPEN	31	SHR
DH16-10	108.5	19.32	182.98	OPEN	31	SHR
DH16-10	110.03	24.64	256.79	OPEN	31	SHR
DH16-10	134.12	52.28	196.17	OPEN	31	SHR
DH16-10	138.94	46.13	151.9	OPEN	31	SHR
DH16-10	145.02	29.89	221.22	CLOSED	31	BED
DH16-10	163.74	30.35	151.36	UNCLEAR	31	WEAK
DH16-10	165.94	30.84	221.83	CLOSED	31	CONTACT
DH16-10	189.49	9.38	190.02	CLOSED	31	WEAK
DH16-10	202.33	30	270.65	CLOSED	31	SHR
DH16-10	205.56	38.43	246.78	CLOSED	30	CLAST
DH16-10	205.81	42.73	246.42	CLOSED	32	CLAST
DH16-10	222.76	61.63	89.61	CLOSED	31	WEAK
DH16-10	224.36	61.21	42.45	CLOSED	31	SHR
DH16-10	237.98	71.12	12.94	CLOSED	31	SHR
DH16-14	31.75	22.76	59.85	UNCLEAR	31	WEAK
DH16-14	32.52	29.79	58.19	UNCLEAR	31	WEAK
DH16-14	33.85	29.22	35.42	UNCLEAR	31	WEAK
DH16-14	34.2	33.32	20.23	UNCLEAR	30	BREAKOUT
DH16-14	36.82	25.33	30.61	UNCLEAR	32	BREAKOUTBOT
DH16-14	38	24.71	29.25	UNCLEAR	31	WEAK

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-14	40.7	19.1	74.74	OPEN	30	BREAKOUT
DH16-14	41.08	31.18	171.5	OPEN	32	BREAKOUTBOT
DH16-14	41.75	43.4	117.87	OPEN	31	SHR
DH16-14	42.05	45.61	105.95	OPEN	31	SHR
DH16-14	42.58	50.88	26.81	OPEN	30	BREAKOUT
DH16-14	44.23	22.4	23.98	OPEN	31	SHR
DH16-14	45.9	20.99	50.58	OPEN	31	SHR
DH16-14	48.07	12.69	54.65	OPEN	31	SHR
DH16-14	48.89	30.11	350.79	OPEN	31	SHR
DH16-14	50.22	15.69	257.6	OPEN	31	SHR
DH16-14	50.65	18.86	219.96	OPEN	31	SHR
DH16-14	51.94	29.2	34.91	OPEN	31	SHR
DH16-14	54.75	49.39	27.33	OPEN	32	BREAKOUTBOT
DH16-14	55.45	45.33	25.69	OPEN	31	SHR
DH16-14	56.01	55.05	331.96	OPEN	31	SHR
DH16-14	57.61	19.85	320.59	OPEN	31	FOL
DH16-14	57.88	21.61	320.56	no data	31	FOL
DH16-14	58.26	46.19	297.97	UNCLEAR	31	WEAK
DH16-14	59.86	56.62	269.46	UNCLEAR	31	WEAK
DH16-14	60.76	22.26	270.08	OPEN	30	BREAKOUT
DH16-14	61.32	32.87	266.53	OPEN	32	BREAKOUTBOT
DH16-14	63.13	39.43	290.18	OPEN	30	BREAKOUT
DH16-14	63.5	45.43	279.61	OPEN	31	SHR
DH16-14	64.09	39.9	343.6	UNCLEAR	31	WEAK
DH16-14	65.67	45.55	131.17	UNCLEAR	31	WEAK
DH16-14	66.07	40.4	314.16	UNCLEAR	31	WEAK
DH16-14	66.51	28.53	261.93	UNCLEAR	31	WEAK
DH16-14	67.03	62.93	310.05	OPEN	32	BREAKOUTBOT
DH16-14	67.38	48.28	303.92	UNCLEAR	31	WEAK
DH16-14	68.46	23.77	271.23	CLOSED	31	FOL
DH16-14	68.81	23.89	294.55	CLOSED	31	FOL
DH16-14	69.92	23.36	243.99	OPEN	30	BREAKOUT
DH16-14	70.47	51.49	276.69	OPEN	32	BREAKOUTBOT
DH16-14	71.88	27.52	298.97	UNCLEAR	31	WEAK
DH16-14	73.5	78.62	217.65	UNCLEAR	31	WEAK
DH16-14	75.22	51.02	128.58	OPEN	30	BREAKOUT
DH16-14	76.38	38.86	22.45	OPEN	32	BREAKOUTBOT
DH16-14	79.73	23.86	149.1	CLOSED	31	LAY
DH16-14	80.64	21.47	128.79	CLOSED	31	LAY
DH16-14	82.09	76.01	11.6	OPEN	30	BREAKOUT
DH16-14	87.33	60.65	51.38	OPEN	32	BREAKOUTBOT
DH16-14	109.13	50.27	80.58	UNCLEAR	31	WEAK
DH16-14	109.85	69.59	101.2	OPEN	31	SHR
DH16-14	110.71	17	293.66	UNCLEAR	31	WEAK
DH16-14	110.85	31.48	289.9	UNCLEAR	31	WEAK
DH16-14	111.27	10.46	249	UNCLEAR	31	WEAK
DH16-14	111.89	75.97	87.16	UNCLEAR	31	WEAK
DH16-14	112.74	65.33	103.65	UNCLEAR	31	WEAK
DH16-14	113.52	72.06	73.68	UNCLEAR	31	WEAK
DH16-14	114.92	29.22	82.62	UNCLEAR	31	WEAK
DH16-14	115.67	68.06	116.22	UNCLEAR	31	WEAK
DH16-14	116.26	57.48	75.18	UNCLEAR	31	WEAK
DH16-14	116.82	73.04	91.29	UNCLEAR	31	WEAK
DH16-14	117.52	54.98	278.61	OPEN	31	SHR
DH16-14	117.92	49.62	235.36	UNCLEAR	31	WEAK
DH16-14	119.66	72.94	78.26	UNCLEAR	31	WEAK
DH16-14	120.8	26.96	242.55	OPEN	31	SHR
DH16-14	122.05	15.28	182.02	UNCLEAR	31	WEAK
DH16-14	122.73	24.25	29.34	OPEN	31	SHR
DH16-14	123.05	27.34	87.79	OPEN	31	SHR
DH16-14	124.84	31.52	268.64	UNCLEAR	31	WEAK
DH16-14	127.6	30.57	176.48	CLOSED	31	FOL
DH16-14	128.64	25.36	105.11	UNCLEAR	31	WEAK
DH16-14	128.86	43.45	88.1	UNCLEAR	31	WEAK
DH16-14	129.26	41.12	322.49	UNCLEAR	31	WEAK
DH16-14	130.63	34.94	252.21	UNCLEAR	31	WEAK
DH16-14	131.27	35.71	28.74	UNCLEAR	31	WEAK
DH16-14	133.7	55.34	22.22	UNCLEAR	31	WEAK
DH16-14	135.25	36.1	320.7	UNCLEAR	31	WEAK
DH16-14	136.47	73.72	29.92	UNCLEAR	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-14	146.83	64.03	258.22	UNCLEAR	31	WEAK
DH16-14	148.15	44.97	44.96	CLOSED	31	FOL
DH16-14	149.37	48.52	313.27	OPEN	31	SHR
DH16-14	149.83	27.18	24.55	OPEN	30	BREAKOUT
DH16-14	150.21	32.17	302.8	OPEN	32	BREAKOUTBOT
DH16-14	152.27	37.98	3.25	UNCLEAR	31	WEAK
DH16-14	152.61	51.64	47.19	UNCLEAR	31	WEAK
DH16-14	152.86	26.97	346.68	UNCLEAR	31	WEAK
DH16-14	153.27	37.19	333.06	OPEN	31	SHR
DH16-14	154.39	54.09	100.41	UNCLEAR	31	FOL
DH16-14	156.08	27.95	352	UNCLEAR	31	WEAK
DH16-14	156.56	28.78	9.64	OPEN	31	SHR
DH16-14	157.55	11.06	185.8	UNCLEAR	31	WEAK
DH16-14	158.54	49.24	41.47	UNCLEAR	31	WEAK
DH16-14	159.16	52.59	306.77	UNCLEAR	31	WEAK
DH16-14	159.5	50.73	259.07	OPEN	31	SHR
DH16-14	159.87	47.08	270.9	OPEN	31	SHR
DH16-14	160.2	23.01	283.89	OPEN	31	SHR
DH16-14	162.58	42.07	67.98	UNCLEAR	31	WEAK
DH16-14	164.06	63.73	277.95	OPEN	30	BREAKOUT
DH16-14	164.9	74.74	254.87	OPEN	32	BREAKOUTBOT
DH16-14	166.45	30.84	51.84	UNCLEAR	31	WEAK
DH16-14	167.54	33.88	71.88	UNCLEAR	31	WEAK
DH16-14	168.19	8.81	180.1	UNCLEAR	31	WEAK
DH16-14	168.88	48.56	10.69	UNCLEAR	31	WEAK
DH16-14	168.95	27.34	196.09	UNCLEAR	31	WEAK
DH16-14	169.79	29.98	247.87	UNCLEAR	31	WEAK
DH16-14	171.17	28.46	49.32	UNCLEAR	31	WEAK
DH16-14	171.9	26.17	33.26	UNCLEAR	31	WEAK
DH16-14	172.55	49.91	240.7	CLOSED	31	FOL
DH16-14	175.94	30.19	214.08	CLOSED	31	FOL
DH16-14	176.6	60.97	34.75	OPEN	30	BREAKOUT
DH16-14	177.09	44.69	33.1	OPEN	32	BREAKOUTBOT
DH16-14	177.96	22.08	97.7	UNCLEAR	31	WEAK
DH16-14	180.63	42.23	28.54	CLOSED	31	SHR
DH16-14	181.55	28.65	312.73	CLOSED	31	SHR
DH16-14	182.89	26.22	128.24	CLOSED	31	FOL
DH16-14	185.96	51.49	359.4	UNCLEAR	31	SHR
DH16-14	187.88	29.82	118.06	UNCLEAR	31	WEAK
DH16-14	188.06	31.17	111.36	UNCLEAR	31	WEAK
DH16-14	190.75	18.61	179.92	CLOSED	31	FOL
DH16-14	197.3	58.67	270.13	UNCLEAR	31	WEAK
DH16-14	200.21	24.94	245.16	CLOSED	31	SHR
DH16-14	201.53	42.18	48.26	CLOSED	31	FOL
DH16-14	205.99	24.42	166.74	UNCLEAR	31	FOL
DH16-14	209.5	31.76	73.6	CLOSED	31	FOL
DH16-14	214.64	66.09	73.24	UNCLEAR	31	SHR
DH16-15	143.15	3	347.44	CLOSED	31	BED
DH16-22	32.44	75.2	313.94	OPEN	30	FZ
DH16-22	49.3	71.51	16.34	OPEN	32	FZBOT
DH16-22	52.25	69.34	158.51	OPEN	30	FZ
DH16-22	53.26	58.1	152.79	OPEN	32	FZBOT
DH16-22	62.04	34.53	66.93	OPEN	30	FZ
DH16-22	62.49	32.78	37.9	OPEN	32	FZBOT
DH16-22	66.76	25.62	142.86	OPEN	30	FZ
DH16-22	67.52	12.97	80.25	OPEN	32	FZBOT
DH16-22	73.55	54.5	317.48	OPEN	30	FZ
DH16-22	75.92	34.84	130.77	OPEN	32	FZBOT
DH16-22	98.4	47.32	133.37	CLOSED	31	SHR
DH16-22	101.24	27.58	179.04	OPEN	30	FZ
DH16-22	103.45	18.61	160.63	OPEN	32	FZBOT
DH16-22	128.57	52.1	9.26	OPEN	30	FZ
DH16-22	132.65	55.7	354.86	OPEN	32	FZBOT
DH16-22	152.83	22.41	109.96	OPEN	30	FZ
DH16-22	157.77	32.29	96.75	OPEN	32	FZBOT
DH16-22	160.58	76.07	253.56	OPEN	30	FZ
DH16-22	168	76.11	253.57	OPEN	32	FZBOT
DH17-23	16.45	21.68	355.94	OPEN	31	SHR
DH17-23	18.87	61.94	327.44	CLOSED	31	LAY
DH17-23	22.97	13.84	335.08	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-23	23.03	29.02	339.13	OPEN	31	SHR
DH17-23	27.46	41.62	81.06	OPEN	31	SHR
DH17-23	31.3	40.51	0.52	OPEN	31	SHR
DH17-23	31.67	71.41	341.26	OPEN	31	SHR
DH17-23	34.19	29.42	46	CLOSED	31	LAY
DH17-23	42.13	36.5	334.9	UNCLEAR	31	SHR
DH17-23	43.3	48.86	37.73	UNCLEAR	31	SHR
DH17-23	43.37	62.19	277.67	UNCLEAR	31	SHR
DH17-23	44.51	16.29	135.72	UNCLEAR	31	SHR
DH17-23	44.75	54.46	348.22	UNCLEAR	31	SHR
DH17-23	45.24	26.43	350.91	CLOSED	31	LAY
DH17-23	46.39	42.7	348.42	CLOSED	31	SHR
DH17-23	47.41	28.42	342.09	CLOSED	31	SHR
DH17-23	48.3	47.12	293.99	OPEN	31	SHR
DH17-23	49.12	44.96	304.25	OPEN	31	SHR
DH17-23	49.48	45.15	306.73	CLOSED	31	LAY
DH17-23	49.92	53.62	289.82	CLOSED	31	LAY
DH17-23	51.11	37.12	86.27	OPEN	31	SHR
DH17-23	51.68	20.16	283.8	OPEN	31	SHR
DH17-23	51.76	26.89	11.11	OPEN	31	SHR
DH17-23	51.92	30.34	32.4	OPEN	31	SHR
DH17-23	52.72	43.11	187.06	CLOSED	31	SHR
DH17-23	55.76	47.37	215.14	CLOSED	31	SHR
DH17-23	58.68	78.48	81.06	OPEN	31	SHR
DH17-23	63	60.26	95.15	CLOSED	31	SHR
DH17-23	64.06	63.62	197.03	UNCLEAR	31	SHR
DH17-23	64.95	39.34	113.78	CLOSED	31	SHR
DH17-23	65.45	62.77	68.94	UNCLEAR	31	SHR
DH17-23	67.23	21.29	105.87	CLOSED	31	SHR
DH17-23	70.61	31.04	131.85	OPEN	31	SHR
DH17-23	72.05	28.74	178.39	OPEN	31	SHR
DH17-23	92.96	62.06	265.58	CLOSED	31	SHR
DH17-23	93.7	66.44	120.21	CLOSED	31	SHR
DH17-23	105.5	78.55	276.38	CLOSED	31	SHR
DH17-23	116.45	47.75	320.87	CLOSED	31	SHR
DH17-23	117.05	39.92	110.85	CLOSED	31	LAY
DH17-23	119.17	44.92	107.66	CLOSED	31	LAY
DH17-23	119.51	46.63	95.15	CLOSED	31	LAY
DH17-23	119.98	32.84	69.6	CLOSED	31	LAY
DH17-23	122.49	54.28	66.69	CLOSED	31	LAY
DH17-23	125.27	34.69	75.6	CLOSED	31	LAY
DH17-23	138.27	39.18	142.87	CLOSED	31	LAY
DH17-23	154.82	58.98	93.93	CLOSED	31	LAY
DH17-23	156.05	65.86	94.91	CLOSED	31	LAY
DH17-23	157.56	47.83	267.22	CLOSED	31	LAY
DH17-23	159.11	49.99	193.26	OPEN	31	LAY
DH17-23	159.56	31.27	255.22	UNCLEAR	31	SHR
DH17-23	165.94	78.5	203.94	UNCLEAR	30	SHR
DH17-23	167.34	54.2	264.26	UNCLEAR	31	SHR
DH17-23	167.96	65.86	292.52	UNCLEAR	31	SHR
DH17-23	169.11	69.48	256.1	UNCLEAR	31	SHR
DH17-23	171.77	70.36	96.24	CLOSED	32	CONTACT
DH17-23	175.92	46.01	71.46	CLOSED	31	SHR
DH17-23	188.49	46.14	154	no data	31	LAY
DH17-23	199.59	39.56	82.99	OPEN	30	SHR
DH17-23	200.76	67.6	107.83	CLOSED	32	CONTACT
DH17-23	205.89	59.14	289.87	CLOSED	31	SHR
DH17-23	208.15	46.17	81.55	OPEN	31	SHR
DH17-23	208.16	74.38	299.43	OPEN	31	SHR
DH17-23	212.28	55.09	261.15	CLOSED	31	SHR
DH17-23	212.97	32.06	216.85	OPEN	31	SHR
DH17-23	245.41	59.86	257.24	CLOSED	31	SHR
DH17-23	248.06	60.58	81.71	CLOSED	31	SHR
DH17-25	39.46	48.9	306.99	OPEN	32	BREAKOUTBOT
DH17-25	40.15	38.27	111.3	OPEN	31	SHR
DH17-25	40.66	45.49	302.64	OPEN	31	SHR
DH17-25	40.96	70.82	36.68	UNCLEAR	31	WEAK
DH17-25	42.31	28.25	114.63	UNCLEAR	31	WEAK
DH17-25	43.17	64.05	43.45	UNCLEAR	31	WEAK
DH17-25	43.64	80.09	20.81	UNCLEAR	31	WEAK

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-25	44.24	52.53	10.64	OPEN	31	SHR
DH17-25	44.92	65.33	90.7	UNCLEAR	31	WEAK
DH17-25	45.44	74.59	46.56	UNCLEAR	31	WEAK
DH17-25	47.19	69.23	45.29	OPEN	31	SHR
DH17-25	47.92	57.18	82.4	OPEN	30	BREAKOUT
DH17-25	49.28	72.72	202.39	OPEN	32	BREAKOUTBOT
DH17-25	51.08	36.67	39.47	OPEN	30	BREAKOUT
DH17-25	54.64	82.59	3.78	UNCLEAR	31	WEAK
DH17-25	56.3	23.9	49.46	OPEN	32	BREAKOUTBOT
DH17-25	56.43	74.63	355.01	UNCLEAR	31	WEAK
DH17-25	57.69	33.15	106.44	UNCLEAR	31	WEAK
DH17-25	58.65	30.75	83.13	UNCLEAR	31	WEAK
DH17-25	58.85	74.59	7.4	UNCLEAR	31	WEAK
DH17-25	60.1	57.06	250.91	UNCLEAR	31	WEAK
DH17-25	61.1	70.92	249.82	UNCLEAR	31	WEAK
DH17-25	62.08	57.43	244.97	UNCLEAR	31	WEAK
DH17-25	62.73	30.4	79.15	OPEN	31	SHR
DH17-25	63.6	64.71	221.36	UNCLEAR	31	WEAK
DH17-25	64.23	38.21	71.06	CLOSED	31	CONTACT
DH17-25	64.54	33.23	67.97	UNCLEAR	31	WEAK
DH17-25	65.19	69.74	212.22	UNCLEAR	31	WEAK
DH17-25	66.21	61.46	227.89	UNCLEAR	31	WEAK
DH17-25	66.61	47.57	249.38	CLOSED	31	CONTACT
DH17-25	67.27	51.09	268.68	UNCLEAR	31	WEAK
DH17-25	68.01	42.02	89.29	UNCLEAR	31	WEAK
DH17-25	68.2	63.23	238.52	UNCLEAR	31	WEAK
DH17-25	68.56	46.07	235.42	OPEN	30	BREAKOUT
DH17-25	70.21	32.52	234.18	OPEN	32	BREAKOUTBOT
DH17-25	71.02	20.56	66.94	CLOSED	31	CONTACT
DH17-25	71.25	20.78	91.67	CLOSED	31	CONTACT
DH17-25	72.28	65.06	251.03	UNCLEAR	31	WEAK
DH17-25	73.05	32.68	80.06	CLOSED	31	WEAK
DH17-25	74.95	71.91	264.35	UNCLEAR	31	WEAK
DH17-25	75.2	67.13	262.99	UNCLEAR	31	WEAK
DH17-25	75.47	62.96	266.86	UNCLEAR	31	WEAK
DH17-25	76.2	62.37	274.24	UNCLEAR	31	WEAK
DH17-25	77.63	56.1	287.93	OPEN	31	SHR
DH17-25	78.28	57.67	272.1	UNCLEAR	31	WEAK
DH17-25	78.49	56.25	276.72	OPEN	30	BREAKOUT
DH17-25	78.94	65.22	268.15	OPEN	32	BREAKOUTBOT
DH17-25	79.84	56.19	259.54	UNCLEAR	31	WEAK
DH17-25	80.22	64.94	285.25	UNCLEAR	31	WEAK
DH17-25	82.89	12.9	76.2	OPEN	31	SHR
DH17-25	82.91	55.85	264.96	OPEN	31	SHR
DH17-25	84.19	26.73	83.9	CLOSED	31	BED
DH17-25	84.38	26.82	91.06	CLOSED	31	BED
DH17-25	84.52	26.75	88.5	CLOSED	31	BED
DH17-25	85.93	26.85	94.43	OPEN	31	SHR
DH17-25	89.17	26.69	81.95	CLOSED	31	BED
DH17-25	89.6	26.7	83.26	CLOSED	31	BED
DH17-25	89.92	34.39	75.02	UNCLEAR	31	WEAK
DH17-25	91.16	40.18	76.79	UNCLEAR	31	WEAK
DH17-25	91.23	41.93	247.35	UNCLEAR	31	WEAK
DH17-25	91.59	59.3	259.13	UNCLEAR	31	WEAK
DH17-25	92.63	58.78	280.11	UNCLEAR	31	WEAK
DH17-25	92.85	38.02	273.07	OPEN	31	SHR
DH17-25	93.22	60.68	270.85	UNCLEAR	31	WEAK
DH17-25	93.74	56.61	276.78	UNCLEAR	31	WEAK
DH17-25	94.93	59.61	274.82	UNCLEAR	31	WEAK
DH17-25	95.68	29.81	92.87	OPEN	31	SHR
DH17-25	96.07	51.62	278.68	UNCLEAR	31	WEAK
DH17-25	99.35	81.95	357.6	UNCLEAR	31	WEAK
DH17-25	100.32	36.34	168.79	UNCLEAR	31	WEAK
DH17-25	101.3	35.59	100.51	UNCLEAR	31	WEAK
DH17-25	101.98	11.69	150.2	UNCLEAR	31	WEAK
DH17-25	102.11	58.96	341.34	OPEN	30	BREAKOUT
DH17-25	106.34	9.43	77.38	OPEN	32	BREAKOUTBOT
DH17-25	107.24	55.24	283.37	OPEN	31	SHR
DH17-25	107.68	23.28	75.74	OPEN	31	SHR
DH17-25	110.44	64.08	257.57	UNCLEAR	31	VOID

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-25	111.18	29.7	94.79	UNCLEAR	31	WEAK
DH17-25	111.91	27.52	2.13	UNCLEAR	31	WEAK
DH17-25	113.71	60.5	292.73	UNCLEAR	31	WEAK
DH17-25	114.27	31.05	83.36	CLOSED	31	BED
DH17-25	115.58	25.76	91.69	CLOSED	31	BED
DH17-25	116.14	25.7	87.07	CLOSED	31	BED
DH17-25	116.61	33.59	82.73	CLOSED	31	CONTACT
DH17-25	118.43	66.33	324.83	CLOSED	31	SHR
DH17-25	120.92	34.77	74.9	UNCLEAR	31	WEAK
DH17-25	123.05	59.96	238.47	UNCLEAR	31	SHR
DH17-25	124.13	33	79.76	CLOSED	31	BED
DH17-25	125	33.13	85.93	CLOSED	31	BED
DH17-25	126.74	28.2	75.64	UNCLEAR	31	WEAK
DH17-25	127.98	64.05	335.9	OPEN	30	BREAKOUT
DH17-25	128.3	61.1	326.72	OPEN	31	SHR
DH17-25	128.83	67.08	297.49	OPEN	31	SHR
DH17-25	129.32	59.53	319.05	OPEN	31	SHR
DH17-25	129.91	40.72	290.66	OPEN	31	SHR
DH17-25	130.18	72.28	301.76	UNCLEAR	31	WEAK
DH17-25	131.1	14.31	55.72	OPEN	32	BREAKOUTBOT
DH17-25	132.43	41.58	62.19	UNCLEAR	31	WEAK
DH17-25	132.63	57.72	267.63	OPEN	30	BREAKOUT
DH17-25	133.54	54.32	251.64	OPEN	32	BREAKOUTBOT
DH17-25	134.81	56.42	259.6	UNCLEAR	31	WEAK
DH17-25	135.37	55.03	278.17	UNCLEAR	31	WEAK
DH17-25	137.07	52.74	70.14	CLOSED	31	BED
DH17-25	138.25	27.96	79.09	CLOSED	31	CONTACT
DH17-25	138.63	30.46	73.75	CLOSED	31	BED
DH17-25	141.42	35.94	90.46	CLOSED	31	CONTACT
DH17-25	142.97	56.7	260.48	UNCLEAR	31	SHR
DH17-25	145.06	44.49	70.7	CLOSED	31	BED
DH17-25	145.24	64.64	255.07	UNCLEAR	31	WEAK
DH17-25	146.53	44.35	82.48	CLOSED	31	BED
DH17-25	147.05	43.86	42.3	CLOSED	31	BED
DH17-25	147.33	36.6	68.94	CLOSED	31	BED
DH17-25	149.25	29.16	71.2	CLOSED	31	BED
DH17-25	149.77	37.82	54.46	CLOSED	31	BED
DH17-25	150.53	38	67.69	CLOSED	31	BED
DH17-25	152.11	72.19	270.38	UNCLEAR	31	WEAK
DH17-25	153.02	33.4	73.67	CLOSED	31	BED
DH17-25	154.76	62.49	251.72	UNCLEAR	31	WEAK
DH17-25	155.51	59.31	256.1	UNCLEAR	31	WEAK
DH17-25	156.85	24.35	95.98	CLOSED	31	BED
DH17-25	157.24	24.42	91.55	CLOSED	31	BED
DH17-25	158.01	50.56	263.37	OPEN	30	BREAKOUT
DH17-25	159.8	38.86	89.1	OPEN	31	SHR
DH17-25	160.13	54.58	266.87	UNCLEAR	31	WEAK
DH17-25	160.34	58.78	247.07	UNCLEAR	31	WEAK
DH17-25	160.8	52.08	255.52	UNCLEAR	31	WEAK
DH17-25	161.19	22.6	78.61	OPEN	32	BREAKOUTBOT
DH17-25	161.47	25.28	85.11	UNCLEAR	31	WEAK
DH17-25	161.83	22.35	83.32	CLOSED	31	BED
DH17-25	162.85	66.51	233.95	UNCLEAR	31	WEAK
DH17-25	163.54	22.26	75.61	CLOSED	31	BED
DH17-25	163.89	22.38	86.56	CLOSED	31	BED
DH17-25	164.92	22.15	66.43	CLOSED	31	BED
DH17-25	165.55	22.39	87.18	CLOSED	31	BED
DH17-25	166.19	22.26	75.4	CLOSED	31	BED
DH17-25	166.83	63.78	224.26	OPEN	31	SHR
DH17-25	168.78	66.14	253.08	UNCLEAR	31	WEAK
DH17-25	170.28	30.85	67.97	UNCLEAR	31	WEAK
DH17-25	172.38	30.97	77.07	CLOSED	31	BED
DH17-25	173.99	30.87	70.59	CLOSED	31	BED
DH17-25	176.41	30.77	62.76	CLOSED	31	BED
DH17-25	176.76	30.79	62.74	CLOSED	31	BED
DH17-25	177.2	30.89	67.27	CLOSED	31	BED
DH17-25	177.64	33.17	204.7	UNCLEAR	31	WEAK
DH17-25	178.1	31.01	77.01	CLOSED	31	BED
DH17-25	178.85	30.86	65.98	UNCLEAR	31	WEAK
DH17-25	179.44	30.83	67.33	CLOSED	31	BED

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-25	180.79	30.7	59.51	CLOSED	31	BED
DH17-25	181.3	30.91	72.52	CLOSED	31	BED
DH17-25	183.97	60.27	318.73	OPEN	31	SHR
DH17-25	184.64	30.88	67.28	CLOSED	31	BED
DH17-25	185.05	30.89	65.95	CLOSED	31	BED
DH17-25	186.42	30.85	67.97	CLOSED	31	BED
DH17-25	187.91	30.84	67.98	CLOSED	31	BED
DH17-25	188.92	30.59	50.41	CLOSED	31	BED
DH17-25	190.41	30.85	68.16	CLOSED	31	BED
DH17-25	191.65	30.78	63.41	CLOSED	31	BED
DH17-25	192.19	30.84	69.3	CLOSED	31	BED
DH17-25	192.69	46.54	62.23	OPEN	30	BREAKOUT
DH17-25	193.07	34.13	151.38	OPEN	31	SHR
DH17-25	193.58	26.48	88.12	OPEN	32	BREAKOUTBOT
DH17-25	194.98	61.66	281.57	UNCLEAR	31	WEAK
DH17-25	195.3	62.06	245.11	UNCLEAR	31	WEAK
DH17-25	195.67	14.28	80.52	UNCLEAR	31	WEAK
DH17-25	195.71	69.03	247.16	UNCLEAR	31	WEAK
DH17-25	196.49	21.42	82.25	OPEN	30	BREAKOUT
DH17-25	198.38	49.25	270.67	OPEN	32	BREAKOUTBOT
DH17-25	198.98	33.28	108.1	OPEN	30	BREAKOUT
DH17-25	199.32	8.56	87.18	OPEN	32	BREAKOUTBOT
DH17-25	200.16	47.3	258.71	UNCLEAR	31	WEAK
DH17-25	202.08	30.95	84.9	UNCLEAR	31	WEAK
DH17-25	202.47	52.12	266.74	UNCLEAR	31	WEAK
DH17-25	203.78	31.02	94	UNCLEAR	31	WEAK
DH17-25	204.61	31.07	90.78	UNCLEAR	31	WEAK
DH17-25	204.93	31.23	108.22	UNCLEAR	31	WEAK
DH17-25	206.37	73.69	347.16	UNCLEAR	31	WEAK
DH17-25	208.95	64.87	349.08	UNCLEAR	30	BREAKOUT
DH17-25	211.49	45.47	354.21	UNCLEAR	32	BREAKOUTBOT
DH17-25	216.32	31.57	342.45	UNCLEAR	31	WEAK
DH17-25	218.32	61.86	262.88	UNCLEAR	31	WEAK
DH17-25	218.74	58.57	280.14	UNCLEAR	31	WEAK
DH17-25	219.06	61.78	275.53	UNCLEAR	31	WEAK
DH17-25	220.12	67.54	257.74	OPEN	30	BREAKOUT
DH17-25	221.06	55.88	47.59	OPEN	31	SHR
DH17-25	221.56	45.83	8.44	OPEN	31	SHR
DH17-25	222.2	43.86	1.19	OPEN	31	SHR
DH17-25	222.34	45.63	130.39	OPEN	31	BREAKOUT
DH17-25	222.68	53.38	157	OPEN	32	BREAKOUTBOT
DH17-25	223.41	39.27	115.94	UNCLEAR	31	WEAK
DH17-25	224.14	33.27	191.94	OPEN	30	BREAKOUT
DH17-25	225.11	40.53	282.07	OPEN	31	SHR
DH17-25	225.57	60.25	332.13	OPEN	32	BREAKOUTBOT
DH17-25	227.58	42.85	108.08	CLOSED	31	BED
DH17-25	227.95	44.99	6.86	OPEN	31	SHR
DH17-25	230.34	42.9	114.5	CLOSED	31	BED
DH17-25	230.72	42.9	117.15	CLOSED	31	BED
DH17-25	231.16	42.98	125.32	CLOSED	31	BED
DH17-25	233.27	41.74	136	OPEN	31	BREAKOUT
DH17-25	233.69	30.45	85.14	OPEN	31	BREAKOUT
DH17-25	234.89	37.41	67.22	OPEN	31	SHR
DH17-25	235.75	37.8	90.55	UNCLEAR	31	WEAK
DH17-25	236.63	34.65	131.37	CLOSED	31	CONTACT
DH17-25	236.88	30.92	114.66	CLOSED	31	CONTACT
DH17-25	239.58	38.65	74.96	OPEN	31	SHR
DH17-25	243.89	30.94	75.92	UNCLEAR	31	WEAK
DH17-25	244.3	31.1	101.72	CLOSED	31	BED
DH17-25	244.8	31.08	92.04	CLOSED	31	BED
DH17-25	245.04	31.09	98.47	CLOSED	31	BED
DH17-25	245.34	31.02	91.38	CLOSED	31	BED
DH17-25	245.58	30.91	79.04	CLOSED	31	BED
DH17-25	245.95	31.03	91.35	CLOSED	31	BED
DH17-26	10.32	6.9	163.78	UNCLEAR	31	BED
DH17-26	10.59	4.71	40.1	UNCLEAR	31	BED
DH17-26	11.6	3.64	71.16	UNCLEAR	31	BED
DH17-26	12.01	10.46	220.23	OPEN	31	BED
DH17-26	12.95	9.56	49.03	OPEN	31	BED
DH17-26	13.79	7.37	43.64	OPEN	31	BED

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-26	16.74	8.04	100.9	UNCLEAR	31	BED
DH17-26	17.76	2.81	76.89	OPEN	31	BED
DH17-26	17.85	7.02	61.3	OPEN	31	BED
DH17-26	18.04	4.77	251.29	OPEN	31	BED
DH17-26	18.2	25.43	36.33	OPEN	31	SHR
DH17-26	18.42	21.05	350.97	OPEN	31	SHR
DH17-26	19.11	7.27	101.55	UNCLEAR	31	BED
DH17-26	19.4	4.29	72.06	UNCLEAR	31	BED
DH17-26	20.08	12.29	149.55	CLOSED	31	BED
DH17-26	20.53	9.85	105.65	CLOSED	31	BED
DH17-26	21.35	6.77	111.29	CLOSED	31	BED
DH17-26	21.7	4.23	79.73	OPEN	31	BED
DH17-26	22.28	4.23	101.77	OPEN	31	SHR
DH17-26	23.19	4.64	88.67	UNCLEAR	31	BED
DH17-26	23.8	13.46	113.39	UNCLEAR	31	BED
DH17-26	24.23	17.46	115.58	UNCLEAR	31	BED
DH17-26	24.37	3.93	127.76	UNCLEAR	31	BED
DH17-26	25.17	8.65	71.82	CLOSED	31	BED
DH17-26	27.82	5.01	211.42	CLOSED	31	BED
DH17-26	28.28	7.05	160.3	CLOSED	31	BED
DH17-26	29.28	5.06	176.65	UNCLEAR	31	BED
DH17-26	29.71	3.59	191.09	UNCLEAR	31	BED
DH17-26	30.44	10.67	351.7	UNCLEAR	31	BED
DH17-26	33.84	13.01	343.75	UNCLEAR	31	BED
DH17-26	34.4	3.45	222.7	UNCLEAR	31	BED
DH17-26	34.98	55.65	225.39	CLOSED	31	SHR
DH17-26	35.59	10.58	115.84	UNCLEAR	31	BED
DH17-26	36.82	10.37	271.87	CLOSED	31	BED
DH17-26	38.72	2.08	173.08	UNCLEAR	31	BED
DH17-26	38.98	4.42	64.77	OPEN	31	BED
DH17-26	39.08	10.12	93.55	UNCLEAR	31	BED
DH17-26	40.19	5.52	155.83	OPEN	31	BED
DH17-26	40.36	4.68	156.73	UNCLEAR	31	BED
DH17-26	40.54	3.31	141.28	UNCLEAR	31	BED
DH17-26	40.97	7.93	163.71	UNCLEAR	31	BED
DH17-26	41.12	4.85	103.91	UNCLEAR	31	BED
DH17-26	42.27	8.14	53.22	CLOSED	31	BED
DH17-26	42.82	11.1	97.88	OPEN	31	BED
DH17-26	44.34	9.26	129.57	CLOSED	31	BED
DH17-26	45.15	8.05	134.8	UNCLEAR	31	BED
DH17-26	45.95	21.22	113.2	UNCLEAR	31	BED
DH17-26	46.05	13.68	244.17	UNCLEAR	31	BED
DH17-26	46.26	3.95	105.26	UNCLEAR	31	BED
DH17-26	46.59	11.75	204.52	UNCLEAR	31	BED
DH17-26	47.11	3.3	219.12	OPEN	31	BED
DH17-26	47.87	9.48	122.07	OPEN	31	BED
DH17-26	48.17	12.91	168.05	CLOSED	31	BED
DH17-26	48.65	9.43	76.75	UNCLEAR	31	BED
DH17-26	49.06	57.16	73.96	UNCLEAR	31	SHR
DH17-26	49.28	11.23	34.73	OPEN	31	BED
DH17-26	49.99	9.36	110.65	CLOSED	31	BED
DH17-26	50.7	1.72	223.51	CLOSED	31	BED
DH17-26	51.91	8.92	187.49	CLOSED	31	BED
DH17-26	52.13	11.86	140.24	CLOSED	31	BED
DH17-26	53.52	43.61	74.7	OPEN	31	SHR
DH17-26	54.17	57.04	31.32	OPEN	31	SHR
DH17-26	55.09	39.35	346.67	OPEN	31	SHR
DH17-26	55.1	11.62	117.59	UNCLEAR	31	BED
DH17-26	55.61	37.3	15.92	UNCLEAR	31	SHR
DH17-26	55.93	43.18	15.54	UNCLEAR	31	SHR
DH17-26	56.71	55.65	31.8	UNCLEAR	31	SHR
DH17-26	56.93	21.57	93.74	UNCLEAR	31	BED
DH17-26	58.2	60.51	55.51	UNCLEAR	31	SHR
DH17-26	59.45	9.71	150	UNCLEAR	31	BED
DH17-26	61.04	14.13	25.41	UNCLEAR	31	BED
DH17-26	61.74	10.77	30.37	CLOSED	31	BED
DH17-26	63.15	53.24	207.1	UNCLEAR	30	BREAKOUT
DH17-26	64.22	57.2	225.5	UNCLEAR	31	FZ
DH17-26	65.22	61.27	225.71	UNCLEAR	32	BREAKOUTBOT
DH17-26	66.2	18.6	106.76	CLOSED	31	BED

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-26	66.55	20.45	129.73	CLOSED	31	BED
DH17-26	66.94	36.12	195.26	OPEN	31	SHR
DH17-26	67.72	15.25	74.48	CLOSED	31	BED
DH17-26	68.57	15.03	67.76	CLOSED	31	BED
DH17-26	71.2	6.73	49.19	CLOSED	31	BED
DH17-26	73.91	6.77	355.78	CLOSED	31	BED
DH17-26	76.07	6.49	47.23	CLOSED	31	BED
DH17-26	78.1	11.58	27.4	CLOSED	31	BED
DH17-26	79.61	10.42	67.05	OPEN	31	BED
DH17-26	80.66	4.56	348.29	CLOSED	31	BED
DH17-26	88.25	6.88	83.34	CLOSED	31	BED
DH17-26	89.6	12.35	57.82	CLOSED	31	BED
DH17-26	90.54	13.18	48.94	CLOSED	31	BED
DH17-26	92.46	8.99	54.64	CLOSED	31	BED
DH17-26	93.68	10.56	69.19	CLOSED	31	BED
DH17-26	96.26	6.9	113.53	CLOSED	31	BED
DH17-26	99.06	9.85	7.59	CLOSED	31	BED
DH17-26	100.43	5.83	72.4	CLOSED	31	BED
DH17-26	102.65	9.19	69.17	CLOSED	31	BED
DH17-26	105.39	6.06	47.77	CLOSED	31	BED
DH17-26	108.71	10.63	94.25	CLOSED	31	BED
DH17-26	112.4	8.45	211.46	UNCLEAR	31	VOID
DH17-26	112.79	71.6	50.7	CLOSED	31	SHR
DH17-26	119.42	9.98	71.55	CLOSED	31	BED
DH17-26	121.6	13.37	106.14	CLOSED	31	BED
DH17-26	123.72	7.41	87.8	CLOSED	31	BED
DH17-26	128	10.77	69.01	CLOSED	31	BED
DH17-26	130.71	8.73	88.81	CLOSED	31	BED
DH17-26	133.19	15.51	157.61	OPEN	31	BED
DH17-26	135.4	6.83	230.73	CLOSED	31	BED
DH17-26	139.21	24.3	288.38	CLOSED	31	BED
DH17-26	140.62	43.62	138.17	CLOSED	31	FOL
DH17-26	143.06	10.83	107.85	CLOSED	30	CONTACT
DH17-26	147.65	55.39	199.34	CLOSED	32	CONTACT
DH17-26	155.12	52.89	211.12	UNCLEAR	31	VOID
DH17-26	162.62	39.6	245.1	UNCLEAR	30	VOID
DH17-26	164.72	46.87	350.32	UNCLEAR	32	VOID
DH17-26	165.43	34.54	106.81	CLOSED	31	FOL
DH17-26	166.33	40.29	155.32	UNCLEAR	30	VOID
DH17-26	170.17	45.74	42.98	UNCLEAR	32	VOID
DH17-26	171.59	43.86	32.49	CLOSED	31	FOL
DH17-26	173.87	33.92	127.42	CLOSED	31	SHR
DH17-26	175.3	52.06	91.71	CLOSED	31	SHR
DH17-26	176.18	55.83	59.22	CLOSED	31	SHR
DH17-26	176.53	67.7	56.4	CLOSED	31	SHR
DH17-26	177.87	33.33	70.11	CLOSED	31	SHR
DH17-26	179.27	46.8	89.86	CLOSED	31	SHR
DH17-26	179.54	46.17	86.3	CLOSED	31	SHR
DH17-26	181.83	45.48	13.27	OPEN	30	SHR
DH17-26	182.02	21.14	273.64	OPEN	31	SHR
DH17-26	182.82	45.69	301.69	OPEN	32	FZ
DH17-26	183.82	63.82	221.25	CLOSED	31	SHR
DH17-26	184.8	16.8	199.34	CLOSED	31	SHR
DH17-26	185.22	15.5	250.29	CLOSED	31	SHR
DH17-26	185.79	13.38	197.25	CLOSED	31	SHR
DH17-26	186.28	14.91	151.43	CLOSED	31	SHR
DH17-26	187.78	65.34	41.2	CLOSED	31	SHR
DH17-26	188.45	7.92	48.28	CLOSED	31	SHR
DH17-26	189.36	69.12	268.45	CLOSED	31	SHR
DH17-26	190.21	16.64	75.7	CLOSED	31	SHR
DH17-26	191.02	14.94	187.81	CLOSED	31	SHR
DH17-26	191.84	20.06	254.58	CLOSED	31	SHR
DH17-26	192.53	64.81	85.65	CLOSED	31	SHR
DH17-26	196.04	22.2	81.31	CLOSED	31	SHR
DH17-26	196.6	47.55	226.6	CLOSED	31	SHR
DH17-26	197.85	58.55	232.78	CLOSED	31	SHR
DH17-26	199.39	18.68	74.97	CLOSED	31	SHR
DH17-26	199.81	60.68	244.14	CLOSED	31	SHR
DH17-26	199.93	8.7	149.83	CLOSED	31	SHR
DH17-26	200.96	5.3	351.2	CLOSED	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-26	201.49	47.38	209.85	CLOSED	31	SHR
DH17-26	206.08	49.67	36.68	CLOSED	31	SHR
DH17-26	207.79	46.51	6.11	CLOSED	31	SHR
DH17-26	208.18	59.76	134.81	CLOSED	31	SHR
DH17-26	208.95	32.11	73.62	CLOSED	31	SHR
DH17-26	209.66	47.64	108.67	CLOSED	31	SHR
DH17-26	210.56	26.53	30.62	CLOSED	31	SHR
DH17-26	211.53	50.38	227.59	CLOSED	31	SHR
DH17-26	212.37	56.45	22.58	CLOSED	31	SHR
DH17-26	212.54	49.1	227.77	CLOSED	31	SHR
DH17-26	213.08	18.07	298.72	CLOSED	31	SHR
DH17-26	213.87	28.17	29.88	CLOSED	31	SHR
DH17-26	214.67	26.62	22.38	CLOSED	31	SHR
DH17-26	214.86	67.56	226.89	CLOSED	31	SHR
DH17-26	215.24	20.7	102.32	CLOSED	31	SHR
DH17-26	215.75	17.13	53.55	CLOSED	31	SHR
DH17-26	217.7	69.84	127.63	CLOSED	31	SHR
DH17-26	219.23	33.29	218.68	CLOSED	31	SHR
DH17-26	219.55	47.66	31.75	CLOSED	31	SHR
DH17-26	220.33	34.58	7.24	CLOSED	31	SHR
DH17-26	220.82	45.28	31.81	CLOSED	31	SHR
DH17-26	223.48	45.02	249.77	CLOSED	31	SHR
DH17-26	223.94	28.82	352.25	CLOSED	31	SHR
DH17-26	224.14	25.31	35.2	CLOSED	31	SHR
DH17-26	224.59	47.55	225.79	CLOSED	31	SHR
DH17-26	224.95	29.11	46.46	CLOSED	31	SHR
DH17-26	225.26	47.55	50.88	CLOSED	31	SHR
DH17-26	227.5	15.47	52.23	CLOSED	31	SHR
DH17-26	228.26	39.42	53.41	CLOSED	31	SHR
DH17-26	230.69	43.2	211.34	CLOSED	31	SHR
DH17-26	231.18	59.45	24.04	CLOSED	31	SHR
DH17-26	231.63	18.6	64.25	CLOSED	31	SHR
DH17-26	233.08	73.94	230.43	CLOSED	31	SHR
DH17-26	234.4	45.98	8.61	CLOSED	31	SHR
DH17-26	237.32	39.69	219.01	CLOSED	31	SHR
DH17-26	238.57	36.14	43.53	CLOSED	31	SHR
DH17-26	239.16	29.07	233.84	CLOSED	31	SHR
DH17-26	239.89	38.07	52.93	CLOSED	31	SHR
DH17-26	241.68	65.29	42.29	CLOSED	31	SHR
DH17-26	242.83	77.65	226.1	CLOSED	31	SHR
DH17-26	245.09	51.62	199.89	CLOSED	31	SHR
DH17-26	245.62	27.62	84.56	CLOSED	31	SHR
DH17-26	246.47	35.56	17.44	CLOSED	31	SHR
DH17-26	247.25	44.48	13.62	CLOSED	31	SHR
DH17-26	248.49	31.75	26.17	CLOSED	31	SHR
DH17-27	15.54	77.31	80.32	UNCLEAR	31	WEAK
DH17-27	15.79	64.25	219.15	UNCLEAR	31	WEAK
DH17-27	17.15	34.3	209.66	UNCLEAR	31	WEAK
DH17-27	17.72	50.7	266.96	UNCLEAR	31	WEAK
DH17-27	18.13	35.01	195.35	UNCLEAR	31	WEAK
DH17-27	18.4	31.67	198.27	UNCLEAR	31	WEAK
DH17-27	19.16	38.77	106.9	UNCLEAR	31	WEAK
DH17-27	20.69	61.54	78.07	UNCLEAR	31	WEAK
DH17-27	21.2	6.95	271.74	UNCLEAR	31	WEAK
DH17-27	21.38	69.17	248.89	UNCLEAR	31	WEAK
DH17-27	22.35	50.43	154.48	UNCLEAR	31	WEAK
DH17-27	22.83	56.04	70.29	UNCLEAR	31	WEAK
DH17-27	23.48	17.79	150.98	UNCLEAR	31	WEAK
DH17-27	25.76	13.18	7.79	UNCLEAR	31	WEAK
DH17-27	27.71	16.84	262.14	OPEN	31	SHR
DH17-27	28.32	36.18	310.94	UNCLEAR	31	WEAK
DH17-27	35.14	18.43	350.85	OPEN	30	BREAKOUT
DH17-27	35.35	36.25	357.06	OPEN	32	BREAKOUTBOT
DH17-27	38.78	26.13	219.75	OPEN	30	BREAKOUT
DH17-27	39.8	41.3	36.56	OPEN	32	BREAKOUTBOT
DH17-27	41.9	22.73	53.03	UNCLEAR	31	WEAK
DH17-27	44.02	70.21	235.57	UNCLEAR	31	WEAK
DH17-27	45.43	25.27	41.46	UNCLEAR	31	WEAK
DH17-27	46.98	24.02	14.23	OPEN	30	BREAKOUT
DH17-27	47.22	40.56	350.86	OPEN	32	BREAKOUTBOT

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-27	48.99	12.89	27.5	OPEN	31	SHR
DH17-27	61.57	5.66	22.39	UNCLEAR	31	WEAK
DH17-27	64.59	39.13	332.44	CLOSED	31	WEAK
DH17-27	72.59	65.31	219.87	CLOSED	31	SHR
DH17-27	75.18	70.4	43.09	CLOSED	31	SHR
DH17-27	78.02	65.01	220.72	CLOSED	31	SHR
DH17-27	84.74	65.89	56.8	UNCLEAR	31	WEAK
DH17-27	100.97	57.81	121.15	CLOSED	31	SHR
DH17-27	119.04	66.07	240.95	CLOSED	31	SHR
DH17-27	131.97	20.82	333.77	CLOSED	31	CONTACT
DH17-27	132.34	22.7	327.21	CLOSED	31	LAY
DH17-27	133.69	13.35	240.35	CLOSED	31	LAY
DH17-27	134.15	36.85	86.41	CLOSED	31	LAY
DH17-27	142.12	42.56	202.35	UNCLEAR	31	CONTACT
DH17-27	145.8	35.28	40.85	CLOSED	31	CONTACT
DH17-27	148.47	52.38	355.57	CLOSED	31	LAY
DH17-27	149.47	44.76	2.39	UNCLEAR	31	LAY
DH17-27	151.93	22.67	272.69	OPEN	30	BREAKOUT
DH17-27	152.41	30.85	51.76	OPEN	32	BREAKOUTBOT
DH17-27	156.71	48.86	41.47	CLOSED	31	CONTACT
DH17-27	157.2	56.39	20.02	CLOSED	31	LAY
DH17-27	159.6	28.73	90.51	CLOSED	31	CONTACT
DH17-27	160.17	69.78	254.33	OPEN	31	SHR
DH17-27	160.9	61.77	244.4	OPEN	31	SHR
DH17-27	165.62	60.36	216.89	CLOSED	31	CONTACT
DH17-27	169.82	33.49	90.87	UNCLEAR	31	WEAK
DH17-27	170.4	44.25	26.12	OPEN	31	SHR
DH17-27	174.54	13.4	313.83	CLOSED	31	LAY
DH17-27	176.65	12.54	302.24	CLOSED	31	CONTACT
DH17-27	178.85	65.33	211.81	CLOSED	31	CONTACT
DH17-27	183.94	33.17	12.6	CLOSED	31	LAY
DH17-27	184.49	22.39	27.78	CLOSED	31	LAY
DH17-27	186.46	7.42	78.01	CLOSED	31	CONTACT
DH17-27	189.82	22.98	321.66	CLOSED	31	LAY
DH17-27	191.26	13.06	14.1	OPEN	31	SHR
DH17-27	191.96	9	23.23	CLOSED	31	CONTACT
DH17-27	203.79	35.59	349.39	CLOSED	31	SHR
DH17-27	204.42	28.31	128.62	CLOSED	31	SHR
DH17-27	227.24	56.14	345.03	CLOSED	31	CONTACT
DH17-27	227.79	34.69	98.72	CLOSED	31	CONTACT
DH17-27	228.63	36.05	63.09	CLOSED	31	LAY
DH17-27	243.41	7.74	40.76	CLOSED	31	LAY
DH17-27	245.91	12.65	33.9	CLOSED	31	CONTACT
DH17-27	246.48	16.83	355.99	CLOSED	31	CONTACT
DH17-27	248.49	51.73	111.77	CLOSED	31	FOL
DH17-28	21.84	3.84	130.51	UNCLEAR	31	BED
DH17-28	22.24	12.51	166.29	UNCLEAR	31	BED
DH17-28	24.44	14.61	198.18	CLOSED	31	BED
DH17-28	32.09	16.37	261.14	UNCLEAR	31	BED
DH17-28	35.53	30.85	83.49	CLOSED	31	LAY
DH17-28	43.63	9.79	115.96	CLOSED	31	BED
DH17-28	53.49	7.16	160.98	CLOSED	31	BED
DH17-28	68.12	7.04	170.96	UNCLEAR	31	BED
DH17-28	70.09	16.79	270.76	CLOSED	31	LAY
DH17-28	77.42	11.08	343.61	UNCLEAR	31	BED
DH17-28	91.97	17.18	5.11	CLOSED	31	BED
DH17-28	110.7	22.15	337.71	CLOSED	31	BED
DH17-28	123.81	34.17	112.26	UNCLEAR	31	BED
DH17-28	124.54	23.45	274.04	UNCLEAR	31	BED
DH17-28	126.3	17.7	11.02	CLOSED	31	BED
DH17-28	130.43	33.94	246.08	CLOSED	31	CONTACT
DH17-28	132.11	21.69	198.64	CLOSED	31	CONTACT
DH17-28	158.39	54.95	100.71	CLOSED	31	BREAKOUT
DH17-28	200.79	30.94	48.24	CLOSED	31	BED
DH17-28	202.06	5.86	246.21	CLOSED	31	BED
DH17-28	203.02	19.5	15.42	CLOSED	31	BED
DH17-28	205.59	9.71	294.59	CLOSED	31	BED
DH17-28	212.71	18.67	304.91	CLOSED	31	BED
DH17-28	213.81	20.72	227.48	CLOSED	31	BED
DH17-28	221.93	25.21	29.54	CLOSED	31	BED

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-28	229.21	16.38	317.48	UNCLEAR	31	BED
DH17-30	23.15	26.31	24.15	OPEN	31	SHR
DH17-30	27.01	13.87	3.98	OPEN	31	SHR
DH17-30	27.98	25.46	46.58	OPEN	31	SHR
DH17-30	29.31	6.41	233.91	CLOSED	31	LAY
DH17-30	34.54	9.1	146.84	OPEN	31	SHR
DH17-30	36.24	41.41	276.17	CLOSED	31	LAY
DH17-30	38.58	46.45	9.78	CLOSED	31	LAY
DH17-30	41.75	8.81	73.23	CLOSED	31	CONTACT
DH17-30	48.56	39.24	346.59	UNCLEAR	31	WEAK
DH17-30	49.59	25.59	138.71	CLOSED	31	CONTACT
DH17-30	50.66	9.48	182.84	CLOSED	31	CONTACT
DH17-30	52.67	21.05	11.16	CLOSED	31	CONTACT
DH17-30	53.08	27.06	290.09	CLOSED	31	CONTACT
DH17-30	55.94	23.99	6.45	CLOSED	31	LAY
DH17-30	57.7	12.87	180.01	CLOSED	31	LAY
DH17-30	66.41	21.42	349.11	CLOSED	31	CONTACT
DH17-30	67.45	28.48	332.28	CLOSED	31	CONTACT
DH17-30	79.3	8.14	356.91	CLOSED	31	CONTACT
DH17-30	81.43	30.07	47.19	CLOSED	31	LAY
DH17-30	83.84	27.6	236.16	CLOSED	31	LAY
DH17-30	86.79	20.19	5.36	CLOSED	31	LAY
DH17-30	88.64	1.85	243.55	CLOSED	31	CONTACT
DH17-30	89.36	20.1	175.47	CLOSED	31	CONTACT
DH17-30	90.01	20.32	137.41	CLOSED	31	CONTACT
DH17-30	90.36	25.31	184.88	CLOSED	31	CONTACT
DH17-30	91.66	24.39	37.26	CLOSED	31	CONTACT
DH17-30	93.53	25.18	15.52	CLOSED	31	CONTACT
DH17-30	95.92	26.2	342.46	CLOSED	31	CONTACT
DH17-30	97.7	23.14	335.78	CLOSED	31	LAY
DH17-30	101.2	24.43	40.27	CLOSED	31	LAY
DH17-30	103.83	17.45	62.07	CLOSED	31	LAY
DH17-30	115.59	15.96	51.46	CLOSED	31	LAY
DH17-30	120.11	13.67	26.11	CLOSED	31	LAY
DH17-30	121.97	11.1	18.03	CLOSED	31	CONTACT
DH17-30	123.68	21.82	188.99	CLOSED	31	CONTACT
DH17-30	127.43	0.6	357.38	CLOSED	31	CONTACT
DH17-30	127.71	8.05	46.01	CLOSED	31	CONTACT
DH17-30	129.31	35.99	347.22	CLOSED	31	LAY
DH17-30	133.68	26.37	23.34	CLOSED	31	LAY
DH17-30	137.69	36.05	301.29	CLOSED	31	CONTACT
DH17-30	139.17	39.24	23.21	CLOSED	31	CONTACT
DH17-30	141.09	27.36	322.19	CLOSED	31	LAY
DH17-30	144.46	31.03	236.31	CLOSED	31	LAY
DH17-30	159.69	5.22	61.95	CLOSED	31	LAY
DH17-30	164.8	8.64	2.56	CLOSED	31	LAY
DH17-30	165.36	31.28	348.9	CLOSED	31	LAY
DH17-30	166.76	14.69	207.02	CLOSED	31	CONTACT
DH17-30	167.54	5.87	289.62	CLOSED	31	CONTACT
DH17-30	172.94	12.32	45.19	CLOSED	31	LAY
DH17-30	174.67	26.96	147.9	CLOSED	31	LAY
DH17-30	178.13	11.86	18.89	CLOSED	31	CONTACT
DH17-30	179.39	35.47	23.91	CLOSED	31	CONTACT
DH17-30	180.49	19.35	0.92	CLOSED	31	CONTACT
DH17-30	181.63	44.88	3.07	CLOSED	31	CONTACT
DH17-30	182.54	18.41	37.05	CLOSED	31	CONTACT
DH17-30	185.57	35.71	89.64	CLOSED	31	CONTACT
DH17-30	186.51	13.94	200.15	CLOSED	31	LAY
DH17-30	187.31	15.71	338.31	CLOSED	31	LAY
DH17-30	187.79	32.45	52.14	CLOSED	31	CONTACT
DH17-30	189.35	30.91	276.96	CLOSED	31	LAY
DH17-30	190.17	21.76	73.19	CLOSED	31	CONTACT
DH17-30	191.15	17.8	12.57	CLOSED	31	CONTACT
DH17-30	192.67	19.75	319.95	CLOSED	31	LAY
DH17-30	197.74	7.74	40.8	CLOSED	31	CONTACT
DH17-30	198.11	24.31	171.96	CLOSED	31	CONTACT
DH17-30	206.91	4.87	44.73	CLOSED	31	CONTACT
DH17-30	211.97	31.68	114.94	CLOSED	31	CONTACT
DH17-30	214.27	29.15	358.89	CLOSED	31	LAY
DH17-30	214.67	20.48	288.31	CLOSED	31	CONTACT

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-30	215.26	17.32	241.21	CLOSED	31	CONTACT
DH17-30	219.05	18.81	50.72	CLOSED	31	LAY
DH17-30	220.62	20.19	352.81	CLOSED	31	LAY
DH17-30	228.94	13.03	28.43	CLOSED	31	LAY
DH17-30	231.03	22.77	322.56	CLOSED	31	LAY
DH17-30	232.26	23.84	351.97	CLOSED	31	LAY
DH17-30	233.98	21.29	356.04	CLOSED	31	CONTACT
DH17-30	234.52	22.78	69.55	CLOSED	31	CONTACT
DH17-30	236.84	21.28	86.28	CLOSED	31	CONTACT
DH17-30	238.07	10.41	58.16	CLOSED	31	CONTACT
DH17-30	238.76	11.92	239.58	CLOSED	31	CONTACT
DH17-30	239.3	18.99	326.54	CLOSED	31	CONTACT
DH17-30	240.27	12.58	282.46	CLOSED	31	CONTACT
DH17-30	245.19	18.14	0.51	CLOSED	31	CONTACT
DH17-30	246.45	15.77	33.58	CLOSED	31	CONTACT
DH17-30	248.1	6.47	37.63	CLOSED	31	CONTACT
DH17-30	248.83	13.33	30.04	CLOSED	31	CONTACT
DH17-32	34.85	0.8	204.55	OPEN	30	BREAKOUT
DH17-32	35.75	21.65	93.64	OPEN	32	BREAKOUTBOT
DH17-32	36.38	52.76	319.08	OPEN	31	SHR
DH17-32	36.73	60.66	74.83	OPEN	30	BREAKOUT
DH17-32	41.96	28.96	12.03	OPEN	32	BREAKOUTBOT
DH17-32	42.13	40.96	117.54	OPEN	31	SHR
DH17-32	42.67	56.58	142.15	OPEN	31	FOL
DH17-32	43.73	63.55	115.19	OPEN	31	FOL
DH17-32	44.16	64.12	130.51	UNCLEAR	31	FOL
DH17-32	44.51	59.83	127.33	OPEN	31	FOL
DH17-32	45.12	59.36	122.71	OPEN	31	FOL
DH17-32	45.81	60.85	161.25	OPEN	31	FOL
DH17-32	46.71	56.93	176.97	OPEN	30	BREAKOUT
DH17-32	49.22	40.5	129.06	OPEN	32	BREAKOUTBOT
DH17-32	49.5	43.27	135.3	OPEN	31	FOL
DH17-32	49.97	52.85	142.13	OPEN	31	FOL
DH17-32	50.56	38.87	134.51	OPEN	31	FOL
DH17-32	52.17	48.68	93.13	OPEN	31	SHR
DH17-32	57.29	40.77	19.96	OPEN	31	SHR
DH17-32	57.67	33.63	193.73	OPEN	30	BREAKOUT
DH17-32	60.74	48.67	195.31	OPEN	32	BREAKOUTBOT
DH17-32	62.09	70.16	225.13	OPEN	31	SHR
DH17-32	63.06	50.36	182.18	OPEN	31	SHR
DH17-32	63.78	20.26	35.37	OPEN	30	BREAKOUT
DH17-32	64.47	40.36	140.42	OPEN	32	BREAKOUTBOT
DH17-32	64.94	32.15	112.35	OPEN	31	SHR
DH17-32	65.3	52.51	131.95	OPEN	31	SHR
DH17-32	65.62	37.64	139.41	OPEN	31	SHR
DH17-32	66.45	68.07	136.18	OPEN	31	SHR
DH17-32	67.18	64.88	140.26	OPEN	31	SHR
DH17-32	67.85	13.08	4.97	OPEN	30	BREAKOUT
DH17-32	70.11	48.25	220.9	OPEN	32	BREAKOUTBOT
DH17-32	70.9	28.87	121.92	UNCLEAR	31	SHR
DH17-32	71.41	30.24	112.27	OPEN	31	FOL
DH17-32	71.95	37.36	111.26	OPEN	31	FOL
DH17-32	72.25	40.94	141.74	UNCLEAR	31	SHR
DH17-32	72.82	57.62	225.83	OPEN	31	SHR
DH17-32	72.99	32.5	132.03	OPEN	31	FOL
DH17-32	73.19	30.66	46.68	OPEN	31	SHR
DH17-32	74.69	24.8	138.34	OPEN	31	SHR
DH17-32	75.18	31.47	140.67	UNCLEAR	31	FOL
DH17-32	76.24	25.15	127.91	UNCLEAR	31	FOL
DH17-32	77.16	29.43	101.07	OPEN	31	FOL
DH17-32	77.46	26.43	78.38	OPEN	30	BREAKOUT
DH17-32	79.23	49.34	30.25	OPEN	32	BREAKOUTBOT
DH17-32	80.5	62.96	57.94	UNCLEAR	31	FOL
DH17-32	82.1	47.35	46.74	UNCLEAR	31	FOL
DH17-32	82.93	40.36	62.67	OPEN	30	BREAKOUT
DH17-32	85.05	30.3	123.08	OPEN	32	BREAKOUTBOT
DH17-32	85.78	57.41	239.77	OPEN	31	SHR
DH17-32	86.68	64.12	292.87	OPEN	31	SHR
DH17-32	87.07	46.69	129.4	OPEN	31	FOL
DH17-32	87.85	40.34	48.64	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-32	88.32	25.54	136.51	OPEN	31	FOL
DH17-32	89.36	28.82	137.94	UNCLEAR	31	SHR
DH17-32	90.27	37.62	328.7	OPEN	31	SHR
DH17-32	90.89	56.17	283.71	OPEN	31	SHR
DH17-32	91.54	44.95	137.64	OPEN	31	FOL
DH17-32	92.15	33.67	141.92	CLOSED	31	FOL
DH17-32	92.43	67.33	34.39	UNCLEAR	31	SHR
DH17-32	92.68	18.2	128.17	UNCLEAR	31	FOL
DH17-32	93.75	65.12	278.18	UNCLEAR	31	SHR
DH17-32	94.3	59.6	304.27	CLOSED	31	FOL
DH17-32	94.55	21.78	152.96	UNCLEAR	31	FOL
DH17-32	95.5	30.69	140.1	UNCLEAR	31	FOL
DH17-32	96.31	39.37	145.5	CLOSED	31	FOL
DH17-32	96.66	22.97	92.95	CLOSED	31	FOL
DH17-32	97.23	58.66	297.95	OPEN	31	SHR
DH17-32	97.54	37.9	299.71	OPEN	31	SHR
DH17-32	97.87	37.63	115.16	OPEN	31	FOL
DH17-32	98.18	46.63	122.15	OPEN	31	FOL
DH17-32	98.8	28.63	54.95	OPEN	31	FOL
DH17-32	99.54	34.66	88.45	OPEN	31	FOL
DH17-32	99.79	58.63	227.87	UNCLEAR	31	SHR
DH17-32	100.34	30.9	144.27	OPEN	31	FOL
DH17-32	101.17	44.26	107.92	CLOSED	31	FOL
DH17-32	101.62	38.98	131.59	CLOSED	31	FOL
DH17-32	101.97	33.83	133.33	CLOSED	31	FOL
DH17-32	102.32	37.37	138.83	OPEN	31	SHR
DH17-32	102.98	24.13	100.23	CLOSED	31	FOL
DH17-32	103.35	27.88	108.42	UNCLEAR	31	FOL
DH17-32	103.75	61.29	266.45	UNCLEAR	31	SHR
DH17-32	104.34	45.49	98.09	OPEN	31	SHR
DH17-32	104.64	38.1	131.58	UNCLEAR	31	FOL
DH17-32	105.17	46.52	239.98	OPEN	31	SHR
DH17-32	105.61	52.68	125.76	OPEN	31	SHR
DH17-32	105.74	21.25	73.87	OPEN	31	SHR
DH17-32	105.9	26.95	76.25	OPEN	31	SHR
DH17-32	106.36	42.46	124.32	OPEN	31	FOL
DH17-32	106.72	45.4	113.3	OPEN	31	FOL
DH17-32	107.44	36.37	111.17	OPEN	31	FOL
DH17-32	108.37	47.98	7.69	OPEN	30	BREAKOUT
DH17-32	109.07	50.13	4.17	OPEN	31	SHR
DH17-32	109.82	45.11	356.13	OPEN	32	BREAKOUTBOT
DH17-32	110.99	61.99	149.44	OPEN	31	SHR
DH17-32	111.45	13.47	170.5	OPEN	31	SHR
DH17-32	112.44	33.87	102.7	OPEN	31	BREAKOUT
DH17-32	113.07	35.16	21.6	OPEN	31	SHR
DH17-32	113.36	38.41	39.61	OPEN	30	SHR
DH17-32	113.92	30.78	140.97	OPEN	32	SHR
DH17-32	114.99	53.05	27.25	OPEN	30	BREAKOUT
DH17-32	116.72	29.82	99.18	OPEN	32	BREAKOUT
DH17-32	117.23	55.25	128.8	OPEN	31	FOL
DH17-32	117.88	53.53	127.04	OPEN	31	FOL
DH17-32	117.91	46.95	54.24	OPEN	31	SHR
DH17-32	118.39	50.19	98.1	OPEN	31	FOL
DH17-32	118.8	43.51	303.04	OPEN	30	BREAKOUT
DH17-32	119.63	40.86	109.57	OPEN	32	BREAKOUTBOT
DH17-32	120.16	65.76	72.69	OPEN	31	FOL
DH17-32	121.59	59.4	99.53	OPEN	31	FOL
DH17-32	122.45	50.12	110.13	OPEN	30	BREAKOUT
DH17-32	123.69	63.55	241.15	OPEN	32	BREAKOUTBOT
DH17-32	123.97	38.3	105.2	OPEN	31	FOL
DH17-32	124.51	48.01	102.9	OPEN	31	FOL
DH17-32	124.94	54.5	74.45	OPEN	31	FOL
DH17-32	125.28	46.57	75.86	UNCLEAR	31	FOL
DH17-32	125.83	43.53	131.7	OPEN	31	FOL
DH17-32	126.52	52.87	134.58	OPEN	31	FOL
DH17-32	127.9	60.41	126.71	OPEN	31	FOL
DH17-32	128.29	57.2	108.85	OPEN	31	FOL
DH17-32	128.93	54.62	143.16	OPEN	31	SHR
DH17-32	130.35	37.79	102.08	OPEN	31	SHR
DH17-32	130.84	51.19	117.94	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-32	131.84	47.77	96.81	OPEN	31	SHR
DH17-32	132.68	49.12	112.62	OPEN	31	SHR
DH17-32	133.44	64.44	87.61	OPEN	31	FOL
DH17-32	134.31	47.56	61.04	OPEN	31	FOL
DH17-32	135.19	42.46	183.28	OPEN	31	SHR
DH17-32	138.55	29.63	44.68	OPEN	30	BREAKOUT
DH17-32	140.33	41.3	80.46	OPEN	32	BREAKOUTBOT
DH17-32	141.45	45.25	103.07	OPEN	31	FOL
DH17-32	142	58.45	135.41	OPEN	31	FZ
DH17-32	142.55	43.98	72.56	OPEN	31	FZ
DH17-32	142.9	43.76	157.44	OPEN	31	FZ
DH17-32	143.31	33.8	175.25	OPEN	31	FZ
DH17-32	143.8	39.83	91.5	OPEN	30	BREAKOUT
DH17-32	144.42	35.73	153.08	OPEN	32	BREAKOUTBOT
DH17-32	144.87	49.72	199.06	OPEN	31	FZ
DH17-32	146.89	71.91	61.76	OPEN	30	BREAKOUT
DH17-32	150.48	46.16	60.8	OPEN	32	BREAKOUTBOT
DH17-32	153.28	35.46	351.82	OPEN	30	BREAKOUT
DH17-32	159.17	55.99	204.27	OPEN	32	BREAKOUTBOT
DH17-32	160.28	44.79	206.7	OPEN	30	BREAKOUT
DH17-32	163.85	66.72	358.14	OPEN	32	BREAKOUTBOT
DH17-32	167.31	47.53	6.64	OPEN	30	BREAKOUT
DH17-32	170.01	47.86	7.23	OPEN	32	BREAKOUTBOT
DH17-32	170.73	45.48	10.86	UNCLEAR	31	SHR
DH17-32	171.28	59.51	26.99	OPEN	31	SHR
DH17-32	171.82	62.33	154.89	OPEN	31	SHR
DH17-32	173.24	52.75	147.26	OPEN	31	SHR
DH17-32	173.61	56.51	3.09	OPEN	31	SHR
DH17-32	174.68	61.26	35.87	OPEN	31	SHR
DH17-32	175.19	63.65	9.76	CLOSED	31	SHR
DH17-32	175.66	35.94	41.36	CLOSED	31	SHR
DH17-32	175.76	61.91	216.22	CLOSED	31	SHR
DH17-32	176.6	50.45	59.82	UNCLEAR	31	SHR
DH17-32	177.25	67.85	153.23	OPEN	31	SHR
DH17-32	177.84	57.08	30.58	CLOSED	31	SHR
DH17-32	178.6	57.71	215.71	OPEN	31	SHR
DH17-32	180.56	49.1	126.37	OPEN	31	SHR
DH17-32	181.32	54.47	204.91	OPEN	31	SHR
DH17-32	181.98	64.33	141.01	OPEN	31	SHR
DH17-32	183.07	63.51	217.12	OPEN	31	SHR
DH17-32	183.58	33.28	51.79	CLOSED	31	SHR
DH17-32	184.74	55.03	144.73	OPEN	31	SHR
DH17-32	185.98	55.98	147.65	CLOSED	31	SHR
DH17-32	186.06	35.61	61.52	CLOSED	31	SHR
DH17-32	186.83	38.88	50.75	CLOSED	31	SHR
DH17-32	187.61	59.95	151.01	CLOSED	31	SHR
DH17-32	188.39	55.51	236.68	CLOSED	31	FOL
DH17-32	189.16	57.64	218.32	UNCLEAR	31	FOL
DH17-32	189.95	58.94	153.95	OPEN	31	FOL
DH17-32	190.65	55.7	152.45	UNCLEAR	31	FOL
DH17-32	191.21	54.08	152.24	UNCLEAR	31	FOL
DH17-32	191.28	49.04	300.38	CLOSED	31	SHR
DH17-32	191.68	43.51	187.6	UNCLEAR	31	FOL
DH17-32	192.22	50.63	74.12	OPEN	31	SHR
DH17-32	192.53	53.6	102.76	UNCLEAR	31	SHR
DH17-32	192.71	33.22	71.45	UNCLEAR	31	SHR
DH17-32	192.94	49.8	43.86	OPEN	31	SHR
DH17-32	193.36	52.1	33.48	OPEN	31	SHR
DH17-32	193.7	42.05	87.44	OPEN	31	SHR
DH17-32	194.32	41.82	49.86	UNCLEAR	31	SHR
DH17-32	194.42	50.89	256.33	OPEN	31	SHR
DH17-32	195.34	60.68	255.06	OPEN	31	SHR
DH17-32	195.94	62.37	237.52	OPEN	31	SHR
DH17-32	196.65	51.59	293.08	OPEN	31	SHR
DH17-32	197.2	50.99	118.09	OPEN	30	SHR
DH17-32	209.34	59.1	156.25	OPEN	32	BREAKOUTBOT
DH17-32	211.57	57.36	191.42	OPEN	31	FOL
DH17-32	212.9	60.85	237.89	OPEN	31	FOL
DH17-32	214.26	48.14	306.08	UNCLEAR	31	FOL
DH17-32	216.49	48.95	312.58	UNCLEAR	31	FOL

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-32	218	48.32	309.17	UNCLEAR	31	FOL
DH17-32	219.23	53.21	258.3	UNCLEAR	31	FOL
DH17-32	219.85	35.32	161.08	OPEN	30	BREAKOUT
DH17-32	220.87	54.43	153.64	OPEN	32	BREAKOUTBOT
DH17-32	221.76	54.78	357.64	CLOSED	31	FOL
DH17-32	222.37	66.08	217.92	UNCLEAR	31	SHR
DH17-32	226.74	55.15	14.52	CLOSED	31	FOL
DH17-32	228.71	58.12	56.47	OPEN	31	SHR
DH17-32	230.18	42.69	104.41	CLOSED	31	FOL
DH17-32	231.86	78.53	345.87	UNCLEAR	31	SHR
DH17-32	233.48	58.93	297.37	UNCLEAR	31	FOL
DH17-32	234.22	76.46	82.5	UNCLEAR	31	SHR
DH17-32	235.03	56.1	351.7	UNCLEAR	31	FOL
DH17-32	236.05	54.59	331.33	UNCLEAR	31	FOL
DH17-32	237.06	56.58	304.34	UNCLEAR	31	FOL
DH17-32	240.59	79.87	240.03	OPEN	31	SHR
DH17-32	242.83	30.04	263.97	UNCLEAR	31	SHR
DH17-32	243.13	42.38	280.09	UNCLEAR	31	SHR
DH17-32	246.17	40.29	114.21	UNCLEAR	31	FOL
DH17-32	246.38	65.43	95.33	UNCLEAR	31	SHR
DH17-37	22.05	34.02	271.31	OPEN	31	SHR
DH17-37	24.85	15.13	339.51	OPEN	31	SHR
DH17-37	29.83	13.64	39.27	CLOSED	31	CONTACT
DH17-37	30.27	23.48	55.83	CLOSED	31	CONTACT
DH17-37	31.98	12.82	104.83	UNCLEAR	31	SHR
DH17-37	38.83	31.97	111.05	UNCLEAR	31	SHR
DH17-37	42.48	44.2	120.98	UNCLEAR	31	SHR
DH17-37	50.66	25.92	146.7	OPEN	30	VOID
DH17-37	50.88	28.47	141.33	OPEN	32	VOID
DH17-37	56.72	24.35	178.73	OPEN	30	BREAKOUT
DH17-37	57.98	30.84	170.75	OPEN	32	BREAKOUTBOT
DH17-37	58.3	30.18	85.41	UNCLEAR	31	WEAK
DH17-37	58.6	24.99	104.34	UNCLEAR	31	WEAK
DH17-37	59.5	3.77	58.32	UNCLEAR	31	SHR
DH17-37	61.5	7.74	185.11	UNCLEAR	31	SHR
DH17-37	64.86	21	40.82	CLOSED	31	LAY
DH17-37	68.74	24.77	113.23	OPEN	30	BREAKOUT
DH17-37	69.46	13.62	172.81	OPEN	32	BREAKOUTBOT
DH17-37	70.49	9.57	342.17	OPEN	31	SHR
DH17-37	85.28	5.6	135.06	CLOSED	31	CONTACT
DH17-37	88.1	19.46	155.3	OPEN	31	SHR
DH17-37	91.62	39.85	111.48	CLOSED	31	CONTACT
DH17-37	92.5	18.26	196.52	CLOSED	31	CONTACT
DH17-37	94.22	42.15	60.18	CLOSED	31	CONTACT
DH17-37	95.06	25.11	67.44	CLOSED	31	CONTACT
DH17-37	103.31	26.95	63.42	UNCLEAR	31	BED
DH17-37	107.78	25.67	148.54	OPEN	31	SHR
DH17-37	115.04	13.58	17.86	CLOSED	31	LAY
DH17-37	118.94	53.65	264.72	CLOSED	31	LAY
DH17-37	126.82	36.98	318.98	CLOSED	31	LAY
DH17-37	140.48	20.5	140.99	CLOSED	31	LAY
DH17-37	148.91	53.62	159.56	CLOSED	31	LAY
DH17-37	158.7	19.42	214.23	CLOSED	31	LAY
DH17-37	162.28	36.94	33.5	CLOSED	31	LAY
DH17-37	174.55	15.99	115.75	CLOSED	31	LAY
DH17-37	185.7	28.08	81.82	CLOSED	31	LAY
DH17-37	186.18	29.61	70.75	CLOSED	31	LAY
DH17-37	198.86	19.17	4.47	CLOSED	31	LAY
DH17-37	208.45	33.99	183.3	CLOSED	31	LAY
DH17-37	209.64	15.4	338.41	UNCLEAR	31	WEAK
DH17-37	214.44	30.69	319.9	UNCLEAR	31	WEAK
DH17-37	219.04	34.68	64.11	UNCLEAR	31	WEAK
DH17-37	229.69	21.35	24.76	CLOSED	31	LAY
DH17-37	233.71	34.65	20.05	CLOSED	31	LAY
DH17-38	44.44	3.52	309.33	UNCLEAR	31	SHR
DH17-38	47.38	8.2	22.62	UNCLEAR	30	FZ
DH17-38	47.86	12.85	19.45	UNCLEAR	32	FZBOT
DH17-38	99.36	23.81	261.84	CLOSED	31	CLAST
DH17-38	124.34	5.8	27.3	CLOSED	31	BED
DH17-38	169.33	40.08	333.91	CLOSED	31	BED

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH17-38	206.5	22.15	127.94	CLOSED	31	SHR
DH17-38	206.61	41.17	268.23	CLOSED	31	SHR
DS16-05	34.19	63.17	35.46	CLOSED	31	SHR
DS16-05	49.95	46.44	288.45	OPEN	31	SHR
DS16-05	57.26	60.47	17.7	OPEN	30	VOID
DS16-05	57.77	54.38	14.07	OPEN	32	VOID
DS16-05	58.32	66.22	190.85	CLOSED	31	SHR
DS16-05	65.51	42.07	175.95	CLOSED	31	SHR
DS16-05	68.25	6.02	301.87	CLOSED	31	WEAK
DS16-05	82.83	39.2	28.23	OPEN	31	SHR
DS16-05	90.51	54.45	217.22	CLOSED	31	WEAK
DS16-05	99.02	67.39	201.67	CLOSED	31	SHR
DS16-05	120.43	58.63	329.45	OPEN	31	SHR
DS16-05	143.63	54.06	215.16	CLOSED	31	SHR
DS16-05	151.85	40.61	34.99	OPEN	31	SHN
DS16-05	157.47	42.28	358.08	CLOSED	31	SHN
DS16-05	163.51	65.27	359.9	CLOSED	31	SHN
DS16-05	166.07	54.43	226	OPEN	31	SHR
DS16-05	170.17	54.66	225.6	CLOSED	31	SHR
DS16-05	171.09	58.01	277.94	OPEN	31	SHR
DS16-05	171.49	68.75	128.23	CLOSED	31	SHR
DS16-05	176.83	73.68	224.54	OPEN	31	SHR
DS16-05	180.32	57.37	225.78	CLOSED	31	SHR
DS16-05	180.9	53.18	221.79	CLOSED	31	SHR
DS16-05	181.87	58.08	225.62	CLOSED	31	SHR
DS16-05	189.42	49.35	56.19	CLOSED	31	WEAK
DS16-05	233.76	47.01	355.97	CLOSED	31	WEAK
DS16-05	241.89	34.34	210.42	OPEN	30	VOID
DS16-05	243.31	39.37	313.63	OPEN	32	VOID
DS16-05	255.53	43.19	342.67	CLOSED	31	SHR
DS16-05	256.26	39.6	344.13	OPEN	31	SHR
DS16-05	256.72	57.11	340.9	OPEN	31	SHR
DS16-05	268.52	36.26	15.52	CLOSED	31	SHR
DS16-05	279.88	17.41	342.16	CLOSED	31	SHR
DS16-05	280.08	28.12	246.45	CLOSED	31	SHR
DS16-05	280.63	30.51	276.29	CLOSED	30	WEAK
DS16-05	281.83	17.73	251.65	CLOSED	32	WEAK
DS16-05	297.47	70.3	359.59	CLOSED	31	SHR
DS16-06	34.55	36.91	131.69	OPEN	31	SHR
DS16-06	35.76	19.42	147.7	CLOSED	31	SHR
DS16-06	35.86	57.97	286.28	CLOSED	31	SHR
DS16-06	36.19	44.95	295.07	CLOSED	31	SHR
DS16-06	37.29	50.8	114.53	OPEN	31	SHR
DS16-06	37.85	57.9	125.25	CLOSED	31	SHR
DS16-06	39.06	50.41	126.22	OPEN	31	SHR
DS16-06	41.14	50.21	117.48	OPEN	31	SHR
DS16-06	41.63	50.16	125.86	OPEN	31	SHR
DS16-06	43.94	28.82	96.66	OPEN	31	SHR
DS16-06	44.3	71.57	240.58	CLOSED	31	SHR
DS16-06	44.94	74.8	238.9	UNCLEAR	31	SHR
DS16-06	47.63	42.87	128.54	CLOSED	31	SHR
DS16-06	56.12	20.27	190.36	OPEN	30	WEAK
DS16-06	56.51	24.27	200.04	CLOSED	32	WEAK
DS16-06	57.73	45.32	102.67	OPEN	31	SHR
DS16-06	58.57	41.35	116.89	CLOSED	31	SHR
DS16-06	58.59	65.63	322	UNCLEAR	31	SHR
DS16-06	59.05	41.64	115.68	OPEN	31	SHR
DS16-06	60.44	53.01	112.11	CLOSED	31	SHR
DS16-06	62.11	50.12	106.83	CLOSED	31	SHR
DS16-06	62.79	48.25	107.15	OPEN	31	SHR
DS16-06	64.2	68.57	233.45	OPEN	31	SHR
DS16-06	65.77	49.42	71.17	OPEN	31	SHR
DS16-06	66.2	43.99	67.03	OPEN	31	SHR
DS16-06	67.5	70.61	209.59	OPEN	30	BREAKOUT
DS16-06	71.7	29.31	213.02	OPEN	32	BREAKOUT
DS16-06	72.5	41.25	156.24	OPEN	31	SHR
DS16-06	76.41	34.72	193.01	OPEN	30	WEAK
DS16-06	79.03	30.6	193.88	CLOSED	32	WEAK
DS16-06	80.73	31.37	162.65	OPEN	30	WEAK
DS16-06	94.41	18.7	220.58	OPEN	32	WEAK

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-06	94.63	20	202.92	CLOSED	31	SHR
DS16-06	95.22	21.73	174.41	CLOSED	31	SHR
DS16-06	98.09	27.22	35.63	OPEN	31	SHR
DS16-06	99.09	81.2	243.37	OPEN	31	SHR
DS16-06	99.34	14.7	186.38	OPEN	30	WEAK
DS16-06	101	32.82	222.7	CLOSED	32	WEAK
DS16-06	102.03	38.08	156.77	CLOSED	31	SHR
DS16-06	108.08	52.64	243.77	CLOSED	31	SHR
DS16-06	109.4	72.19	237.46	OPEN	31	SHR
DS16-07	24.01	64.15	275.04	CLOSED	31	SHR
DS16-07	25.68	50.89	286.75	CLOSED	31	SHR
DS16-07	31.11	31.82	346.72	CLOSED	31	SHR
DS16-07	36.22	69.32	68.38	CLOSED	31	SHR
DS16-07	40.59	82.42	212.24	CLOSED	31	SHR
DS16-07	43.13	46.5	75.76	CLOSED	31	SHR
DS16-07	44.14	72.1	253.84	CLOSED	31	SHR
DS16-07	53.03	68.55	70.03	CLOSED	31	BED
DS16-07	53.23	66.85	65.84	CLOSED	31	BED
DS16-07	54.74	51.56	93.63	CLOSED	31	SHR
DS16-07	57.18	26.51	55.21	CLOSED	31	SHR
DS16-07	60.25	50.42	278.22	CLOSED	31	SHR
DS16-07	60.78	81.03	62.26	CLOSED	31	BED
DS16-07	62.94	53.39	219.91	CLOSED	31	SHR
DS16-07	63.97	36.68	23.42	UNCLEAR	31	SHR
DS16-07	64.95	49	77.07	UNCLEAR	31	SHR
DS16-07	68	51.49	88.4	CLOSED	31	CONTACT
DS16-07	69.4	33.09	260.68	CLOSED	31	SHR
DS16-07	69.49	58.43	283.95	UNCLEAR	31	SHR
DS16-07	71.88	58.03	76	OPEN	30	FZ
DS16-07	73	50.22	191.05	CLOSED	31	SHR
DS16-07	73.82	35.9	14.78	OPEN	31	SHR
DS16-07	74.24	38.39	102.14	UNCLEAR	31	SHR
DS16-07	75.85	66.19	111.09	UNCLEAR	31	SHR
DS16-07	76.95	56.14	94.41	CLOSED	31	SHR
DS16-07	77.37	57.31	89.58	OPEN	32	FZBOT
DS16-07	78.73	60.05	119.46	OPEN	30	SHR
DS16-07	79.76	50.85	78.33	OPEN	32	SHR
DS16-07	80.07	55.25	87.85	OPEN	31	SHR
DS16-07	83.15	53.63	82.49	OPEN	30	WEAK
DS16-07	84.29	31.32	88.81	CLOSED	32	WEAK
DS16-07	84.37	59.9	89.54	CLOSED	31	WEAK
DS16-07	89.93	45.34	79	OPEN	31	SHR
DS16-07	92.81	64.13	86.26	OPEN	31	SHR
DS16-07	103.48	34.32	33.54	CLOSED	31	SHR
DS16-07	104.25	47.08	51.94	CLOSED	31	SHR
DS16-07	105.6	48.19	73.34	UNCLEAR	30	WEAK
DS16-07	106.59	50.4	76.61	UNCLEAR	32	WEAK
DS16-07	108.27	58.36	97.21	OPEN	31	SHR
DS16-07	124.21	59.77	70.72	CLOSED	31	SHR
DS16-07	124.89	56.86	63.3	CLOSED	30	SHR
DS16-07	125.52	51.93	62.65	CLOSED	32	SHR
DS16-07	134.96	24.92	29.27	CLOSED	31	SHR
DS16-07	135.6	43.93	36.21	CLOSED	31	SHR
DS16-07	144.75	76.64	292.8	CLOSED	31	SHR
DS16-07	160.62	77.28	300.55	OPEN	31	SHR
DS16-07	177.5	62.53	40.56	CLOSED	31	SHR
DS16-07	178.4	43.81	64.43	OPEN	31	SHR
DS16-07	186.45	67.58	106.2	CLOSED	31	SHR
DS16-07	225.09	57.61	286.42	CLOSED	31	SHR
DS16-07	251.93	24.33	60.71	CLOSED	31	SHR
DS16-07	256.13	39.15	294.5	CLOSED	31	SHR
DS16-07	257.85	32.13	62.28	CLOSED	30	WEAK
DS16-07	267.53	24.32	111.33	OPEN	31	SHR
DS16-07	273.45	43.05	284.72	CLOSED	31	SHR
DS16-07	274.62	48.32	306.31	UNCLEAR	31	SHR
DS16-07	274.81	52.58	286.16	UNCLEAR	31	SHR
DS16-07	275.6	51.53	266.81	CLOSED	31	SHR
DS16-07	279.01	35.09	40.81	CLOSED	31	SHR
DS16-07	279.33	22.97	243.96	CLOSED	31	SHR
DS16-07	281.88	59.26	243.25	CLOSED	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-07	283.48	64.62	227.07	CLOSED	32	WEAK
DS16-07	285.07	17.11	134.37	CLOSED	31	SHR
DS16-07	287.33	28.87	71.75	CLOSED	31	SHR
DS16-08	28.7	78.04	45.67	CLOSED	31	SHR
DS16-08	36.02	73.84	359.38	CLOSED	31	SHR
DS16-08	39.87	65.36	316.58	CLOSED	31	SHR
DS16-08	40.2	62.98	315.53	CLOSED	31	SHR
DS16-08	45.47	68.65	33.47	CLOSED	31	SHR
DS16-08	48.64	66.69	15.83	CLOSED	31	SHR
DS16-08	48.86	69.77	1.66	CLOSED	31	SHR
DS16-08	49.94	71.67	325.81	CLOSED	31	SHR
DS16-08	53.37	62.59	313.25	CLOSED	31	SHR
DS16-08	55.36	68.8	312.61	CLOSED	31	SHR
DS16-08	55.54	68.29	326.98	CLOSED	31	SHR
DS16-08	57.41	75.39	327.72	CLOSED	31	SHR
DS16-08	57.79	71.51	326.63	CLOSED	31	SHR
DS16-08	66.8	74.58	27.29	CLOSED	31	SHR
DS16-08	81.05	60.22	16.58	CLOSED	31	SHR
DS16-08	81.81	55.01	18.48	CLOSED	31	SHR
DS16-08	82	56.01	21.89	CLOSED	31	SHR
DS16-08	95.83	69.95	267.53	CLOSED	31	SHR
DS16-08	96.51	75.7	250.16	CLOSED	31	SHR
DS16-08	99.79	29.78	229.65	CLOSED	31	SHR
DS16-08	108.63	62.88	297.21	CLOSED	31	SHR
DS16-08	114.01	83.16	277.28	OPEN	31	SHR
DS16-08	121.32	72.63	178.49	OPEN	31	SHR
DS16-08	124.35	73.23	264.8	CLOSED	31	SHR
DS16-08	142.74	87.33	229.9	OPEN	31	SHR
DS16-08	146.65	62.99	269.91	CLOSED	31	SHR
DS16-08	146.89	83.96	241.62	OPEN	31	SHR
DS16-08	177.99	78.11	347.64	UNCLEAR	31	SHR
DS16-08	180.31	81.69	354.86	UNCLEAR	31	SHR
DS16-08	191.02	77.67	133.7	CLOSED	31	SHR
DS16-08	202.4	88.44	241.62	CLOSED	31	SHR
DS16-08	216.11	45.18	139.94	CLOSED	31	SHR
DS16-08	224.06	59.79	112.33	CLOSED	31	SHR
DS16-08	239.31	50.25	111.55	CLOSED	31	SHR
DS16-08	241.62	40.86	266.36	CLOSED	31	WEAK
DS16-08	242.4	33.19	233.98	CLOSED	30	WEAK
DS16-08	247.32	59.49	220.04	CLOSED	31	SHR
DS16-08	249.7	84.4	115.56	CLOSED	31	SHR
DS16-08	249.77	56.89	275.11	OPEN	31	SHR
DS16-08	250.64	26.73	279.38	CLOSED	32	WEAK
DS16-08	251.64	62.69	93.18	CLOSED	31	SHR
DS16-08	253.46	49.52	266.58	CLOSED	31	SHR
DS16-08	256.32	35.1	238.75	CLOSED	31	SHR
DS16-08	259	23.38	280.48	UNCLEAR	31	SHR
DS16-08	261.77	16.28	99.26	OPEN	31	SHR
DS16-08	265.32	51.99	113.34	CLOSED	31	SHR
DS16-08	266.81	15.61	164.6	OPEN	31	SHR
DS16-08	271.46	80.03	196.18	CLOSED	31	SHR
DS16-08	272.67	79.15	184.92	CLOSED	31	SHR
DS16-08	278.45	44.18	239.71	CLOSED	31	SHR
DS16-08	279.28	39.85	208.4	CLOSED	31	SHR
DS16-08	280.27	39.17	232.87	CLOSED	31	SHR
DS16-08	282.68	26.48	225.62	CLOSED	31	SHR
DS16-08	295.19	42.83	240.37	OPEN	31	SHR
DS16-08	296.6	36.65	231.15	OPEN	30	WEAK
DS16-08	297.08	43.3	231.98	CLOSED	32	WEAK
DS16-08	297.76	50.28	260.97	OPEN	31	SHR
DS16-08	298.57	36.03	237.59	UNCLEAR	31	SHR
DS16-08	301.73	58	259.35	OPEN	31	SHR
DS16-08	304.05	49.47	255.45	OPEN	31	SHR
DS16-08	305.59	33	198.77	OPEN	31	SHR
DS16-09	27.8	89.43	147.4	CLOSED	31	SHR
DS16-09	33.46	82.89	232.36	OPEN	31	SHR
DS16-09	34.47	86.55	309.76	CLOSED	31	SHR
DS16-09	38.89	89.17	171.01	CLOSED	31	SHR
DS16-09	39.41	89.28	170.77	CLOSED	31	SHR
DS16-09	62.94	86.59	173.29	CLOSED	31	LAY

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-09	65.35	85.35	190.56	CLOSED	31	BED
DS16-09	66.35	86.44	201.28	CLOSED	31	SHR
DS16-09	68.85	89.35	50.41	UNCLEAR	31	SHR
DS16-09	70.77	84.98	201.96	CLOSED	31	LAY
DS16-09	71.79	84.05	303.79	CLOSED	31	SHR
DS16-09	82.75	88.16	172.46	OPEN	31	SHR
DS16-09	83.5	80.51	1.81	CLOSED	31	SHR
DS16-09	84.44	86.31	191.79	CLOSED	31	SHR
DS16-09	85.14	86.85	182.39	CLOSED	31	LAY
DS16-09	87.02	83.46	34.26	CLOSED	31	SHR
DS16-09	96.94	87.51	29.65	CLOSED	31	SHR
DS16-09	102.27	89.01	18.66	CLOSED	31	SHR
DS16-09	103.18	88.95	21.65	CLOSED	31	SHR
DS16-09	108.6	83.53	164.24	CLOSED	31	SHR
DS16-09	112.81	87	352.31	CLOSED	31	SHR
DS16-09	121.29	89.26	205.27	CLOSED	31	SHR
DS16-09	130.66	87.75	266.49	OPEN	31	SHR
DS16-09	132.01	87.7	231.31	OPEN	31	SHR
DS16-09	139.01	83.91	230.35	CLOSED	30	WEAK
DS16-09	139.94	82.1	206.75	CLOSED	32	WEAK
DS16-09	145.68	88.8	238.78	CLOSED	31	SHR
DS16-09	151.84	88.72	318.88	CLOSED	31	SHR
DS16-09	158.94	83.86	279.22	UNCLEAR	31	SHR
DS16-09	173.01	84.9	54.72	CLOSED	31	SHR
DS16-09	176.13	87.75	285.82	CLOSED	31	SHR
DS16-09	184.76	84.51	227.81	CLOSED	31	SHR
DS16-10	117.85	65.92	107.55	OPEN	30	WEAK
DS16-10	118.32	67.84	120.55	CLOSED	32	WEAK
DS16-10	148.48	75.26	285.63	OPEN	30	WEAK
DS16-10	149.34	85.46	279.25	OPEN	31	SHR
DS16-10	150.09	52.63	281.23	CLOSED	31	SHR
DS16-10	160.33	18.61	208.68	CLOSED	32	WEAK
DS16-10	284.16	35	238.18	UNCLEAR	31	SHR
DS16-10	292.83	18.07	224.55	CLOSED	31	LAY
DS16-10	293.5	15.51	230.09	CLOSED	31	LAY
DS16-10	294.27	10.08	219.01	CLOSED	31	LAY
DS16-10	294.4	12.71	222.24	CLOSED	31	LAY
DS16-10	294.77	13.13	258.22	CLOSED	31	LAY
DS16-10	295.27	8.99	250.36	CLOSED	31	LAY
DS16-10	401.66	40.17	129.56	CLOSED	31	SHR
DS16-10	411.34	51.27	274.25	CLOSED	31	SHR
DS16-10	412.14	57.87	295.48	OPEN	31	SHR
DS16-10	412.52	59.51	273.4	OPEN	31	SHR
DS16-10	419.19	1.73	167.89	CLOSED	31	SHR
DS16-10	471.39	62.51	205.82	OPEN	31	SHR
DS16-10	475.46	61.09	209.48	UNCLEAR	31	SHR
DS16-10	476.57	47.91	218.48	CLOSED	31	SHR
DS16-10	477.11	40.35	213.43	UNCLEAR	31	SHR
DS16-10	477.25	36.51	167.91	UNCLEAR	31	SHR
DS16-10	509.25	13.63	5.15	CLOSED	31	SHR
DS16-11	80.12	47.14	158.91	CLOSED	31	SHR
DS16-11	100.41	8.48	94.44	CLOSED	31	BED
DS16-11	118.69	23.85	231.6	CLOSED	31	BED
DS16-11	119.19	11.39	223.42	CLOSED	31	BED
DS16-11	122.26	32.62	93.07	CLOSED	31	LAY
DS16-11	131.24	29.4	222.02	CLOSED	31	CONTACT
DS16-11	131.46	31.35	234.99	CLOSED	31	LAY
DS16-11	142.14	36.39	209.62	CLOSED	31	LAY
DS16-11	142.62	38.6	244.15	CLOSED	31	LAY
DS16-11	143.63	36.41	214.69	CLOSED	31	LAY
DS16-11	146.7	35.92	218.2	CLOSED	31	SHR
DS16-11	146.88	41.28	219.53	CLOSED	31	BED
DS16-11	146.99	38.77	213.08	CLOSED	31	BED
DS16-11	147.08	32.71	223.78	CLOSED	31	BED
DS16-11	147.23	33.2	222.87	CLOSED	31	CONTACT
DS16-11	151.18	79.84	89.99	CLOSED	31	SHR
DS16-11	171.63	60.12	222.74	CLOSED	31	SHR
DS16-11	172.71	42.1	271.54	CLOSED	31	SHR
DS16-11	173.91	51.17	99.69	CLOSED	31	SHR
DS16-11	177.55	36.34	200.21	CLOSED	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-11	189.81	63.63	227.99	CLOSED	31	SHR
DS16-11	205.75	63.17	232.1	CLOSED	31	SHR
DS16-11	232.25	84.61	80.35	CLOSED	31	SHR
DS16-11	302.57	83.83	83.37	CLOSED	31	SHR
DS16-11	306.5	72.58	103.74	CLOSED	31	SHR
DS16-11	338.15	19.9	252.18	CLOSED	31	SHR
DS16-11	353.87	60.8	245.86	CLOSED	31	SHR
DS16-11	379.59	69.52	245.23	CLOSED	31	SHR
DS16-11	431.12	83.05	127.93	CLOSED	31	SHR
DS16-11	537.08	43.55	168.91	UNCLEAR	31	SHR
DS16-11	542.8	59.91	291.81	CLOSED	31	SHR
DS16-11	545.04	68.04	269.72	CLOSED	31	SHR
DS16-11	551.74	25.48	161.37	CLOSED	31	SHR
DS16-11	557.68	80.1	268.15	CLOSED	31	SHR
DS16-11	558.27	18.62	140.56	CLOSED	31	SHR
DS16-11	592.12	63.9	84.4	OPEN	31	SHR
DS16-11	592.87	73.8	103.42	OPEN	31	SHR
DS16-11	609.03	57.77	100.44	OPEN	31	SHR
DS16-11	609.32	64.08	109.78	OPEN	31	SHR
DS16-11	610.36	43.2	120.88	OPEN	31	SHR
DS16-11	611.69	68.69	111.44	CLOSED	31	SHR
DS16-11	616.54	26.2	196.63	OPEN	31	WEAK
DS16-11	629.51	27.76	233.91	OPEN	31	SHR
DS16-12	36.69	78.03	264.4	OPEN	31	SHR
DS16-12	53.59	84.31	49.63	OPEN	31	SHR
DS16-12	68.36	27.79	176.46	UNCLEAR	31	SHR
DS16-12	75.3	45.99	107.08	CLOSED	31	SHR
DS16-12	75.82	65.8	181.16	OPEN	31	SHR
DS16-12	77.06	71.21	236.53	OPEN	31	SHR
DS16-12	78.62	61.96	239.62	UNCLEAR	31	SHR
DS16-12	80.16	45.44	262.95	CLOSED	31	SHR
DS16-12	83.65	42.77	260.45	CLOSED	31	SHR
DS16-12	92.88	20.02	98.69	CLOSED	31	SHR
DS16-12	100.49	70.72	53.24	CLOSED	31	SHR
DS16-12	121.99	70.08	236.44	CLOSED	31	SHR
DS16-12	122.04	64.33	277.95	CLOSED	31	SHR
DS16-12	123.74	62.21	38.45	OPEN	30	SHR
DS16-12	127.43	18.54	50.95	OPEN	32	SHR
DS16-12	131.02	79.33	267.37	OPEN	31	SHR
DS16-12	141.66	33.74	155.03	OPEN	31	SHR
DS16-12	142.55	33.62	344.55	CLOSED	31	SHR
DS16-12	142.84	36.12	351.43	CLOSED	31	SHR
DS16-12	147.89	41.56	272.72	CLOSED	31	SHR
DS16-12	147.989	41.2	312.87	CLOSED	31	SHR
DS16-12	147.99	11.23	315.92	CLOSED	31	SHR
DS16-12	152.7	77.01	234.62	CLOSED	31	SHR
DS16-12	152.89	77.18	200.7	OPEN	31	SHR
DS16-12	169.39	60.3	167.31	CLOSED	30	WEAK
DS16-12	170.47	55.83	131.28	OPEN	31	SHR
DS16-12	172.57	63.76	203.17	OPEN	30	SHR
DS16-12	173.26	71.58	208.57	OPEN	32	SHR
DS16-12	175.54	58.79	145.03	OPEN	31	SHR
DS16-12	177.4	48.13	147.52	CLOSED	31	LAY
DS16-12	179.09	48.22	138.91	OPEN	31	LAY
DS16-12	179.56	51.59	152.25	CLOSED	31	LAY
DS16-12	181.39	51.07	138.51	OPEN	31	LAY
DS16-12	185.95	47.87	137.94	OPEN	31	LAY
DS16-12	187.63	47.85	133.4	CLOSED	31	LAY
DS16-12	188.77	57.11	134.96	OPEN	31	LAY
DS16-12	191.25	51.53	145.4	CLOSED	31	LAY
DS16-12	194.24	50.52	136.67	CLOSED	31	LAY
DS16-12	194.65	50.85	138.07	CLOSED	31	LAY
DS16-12	196.54	47.55	68.84	CLOSED	31	LAY
DS16-12	197.18	46.45	74.13	OPEN	31	LAY
DS16-12	199.07	48.66	162.28	CLOSED	30	WEAK
DS16-12	202.5	33.72	111.36	CLOSED	32	WEAK
DS16-12	202.76	37.07	125.1	CLOSED	31	LAY
DS16-12	203.24	41.98	136.06	CLOSED	31	WEAK
DS16-12	203.68	40.59	121.13	CLOSED	31	LAY
DS16-12	204.81	53.12	133.73	CLOSED	30	WEAK

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-12	205.47	45.68	143.38	CLOSED	31	LAY
DS16-12	207.4	40.39	136.78	CLOSED	32	WEAK
DS16-12	208.19	46.15	340.64	CLOSED	31	SHR
DS16-12	209.14	35.06	150.97	CLOSED	31	SHR
DS16-12	210.2	38.42	146.47	CLOSED	31	WEAK
DS16-12	211.99	38.91	318.4	CLOSED	31	SHR
DS16-12	215.32	33.29	138.46	CLOSED	31	WEAK
DS16-12	215.48	14.89	42.22	OPEN	30	SHR
DS16-12	216.79	33.13	147.12	OPEN	32	WEAK
DS16-12	219.7	38.9	132.59	CLOSED	31	SHR
DS16-12	220.52	39.85	138.12	CLOSED	31	SHR
DS16-12	221.51	28.84	129.95	CLOSED	31	SHR
DS16-12	223.4	44.77	122.98	OPEN	31	SHR
DS16-12	223.67	43.54	125.07	OPEN	31	SHR
DS16-12	226.49	30.38	355.01	OPEN	31	SHR
DS16-12	227.34	37.96	135.71	CLOSED	31	SHR
DS16-12	227.52	36.75	138.7	CLOSED	31	SHR
DS16-12	230.4	37.71	133.84	CLOSED	30	WEAK
DS16-12	230.9	43.64	138.99	OPEN	31	SHR
DS16-12	231.86	37.21	140.79	CLOSED	32	WEAK
DS16-12	232.33	36.19	122.89	CLOSED	31	WEAK
DS16-12	233.61	42.72	128.28	CLOSED	31	SHR
DS16-12	234.32	38.34	126.1	OPEN	31	SHR
DS16-12	234.63	42.15	141.7	CLOSED	31	SHR
DS16-12	237.08	46.19	132.42	CLOSED	31	SHR
DS16-12	238.13	34.2	276.83	CLOSED	31	SHR
DS16-12	240.75	38.29	26.85	OPEN	31	SHR
DS16-12	244.68	35.14	353.02	OPEN	31	SHR
DS16-12	246.24	42.3	125.96	CLOSED	31	SHR
DS16-12	248.01	48.87	47.82	CLOSED	31	SHR
DS16-12	253.57	46.54	119.49	CLOSED	31	SHR
DS16-12	254.64	47.95	57.78	OPEN	31	SHR
DS16-12	259.52	34.06	318.75	CLOSED	31	SHR
DS16-12	259.89	38.74	299.61	CLOSED	31	SHR
DS16-12	272.54	36.49	325.7	CLOSED	31	SHR
DS16-12	275.88	39.48	313.05	CLOSED	31	SHR
DS16-12	277.45	63.01	238.72	CLOSED	31	SHR
DS16-12	277.85	70.96	235.46	CLOSED	31	SHR
DS16-12	278.78	60.61	233.6	CLOSED	31	SHR
DS16-12	280.28	73.03	219.67	CLOSED	31	SHR
DS16-12	281.31	45.85	329.46	CLOSED	31	SHR
DS16-12	282.69	67.17	227.99	CLOSED	31	SHR
DS16-12	284.34	69.12	221.68	CLOSED	31	SHR
DS16-12	286.37	37.16	313.1	OPEN	31	SHR
DS16-12	289.27	41.74	295.2	CLOSED	31	SHR
DS16-12	302.53	74.77	20.23	CLOSED	31	SHR
DS16-12	305.76	51.5	1.48	CLOSED	31	SHR
DS16-12	306.61	55.64	349	OPEN	31	SHR
DS16-12	312.44	61.64	4.97	CLOSED	31	SHR
DS16-12	313.33	48.63	331.63	CLOSED	31	SHR
DS16-12	325.82	39.43	326.11	OPEN	31	SHR
DS16-12	333.29	54.77	176.19	CLOSED	31	SHR
DS16-12	334.55	26.23	330.58	CLOSED	31	SHR
DS16-12	335.06	20.36	27.21	CLOSED	31	SHR
DS16-12	335.5	30.38	46.33	CLOSED	31	SHR
DS16-12	336.1	26.42	46.84	CLOSED	31	SHR
DS16-12	338.57	72.71	214.17	CLOSED	31	SHR
DS16-13	33.81	33.1	111.64	CLOSED	31	SHR
DS16-13	46.59	24.37	122.09	OPEN	30	SHR
DS16-13	47.08	7.48	94.9	OPEN	32	SHR
DS16-13	73.62	44.72	145.11	OPEN	31	SHR
DS16-13	75.1	51.3	108.52	OPEN	31	SHR
DS16-13	78.24	11.77	133.03	OPEN	30	SHR
DS16-13	78.56	8.13	292.03	OPEN	32	SHR
DS16-13	91.56	7.62	334.34	CLOSED	31	SHR
DS16-13	95.92	16.59	223.62	CLOSED	31	SHR
DS16-13	98.49	5.95	285.18	OPEN	30	SHR
DS16-13	98.72	4.02	111.15	OPEN	32	SHR
DS16-13	102.49	45.53	80.83	OPEN	31	SHR
DS16-13	108.07	47.8	192.83	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-13	121.31	66.37	229.5	CLOSED	31	SHR
DS16-13	128.92	47.43	206.7	OPEN	30	SHR
DS16-13	131.56	55.06	301.31	CLOSED	31	SHR
DS16-13	140.83	67.59	79.91	CLOSED	31	SHR
DS16-13	190.01	17.3	7.35	OPEN	32	WEAK
DS16-13	191.01	35.24	359.7	OPEN	30	WEAK
DS16-13	192.41	54.7	5.34	OPEN	32	WEAK
DS16-13	196.26	54.79	191.52	OPEN	30	WEAK
DS16-13	198.07	32.25	199.27	OPEN	32	WEAK
DS16-13	219.17	31.76	120.25	CLOSED	31	SHR
DS16-13	250.08	47.33	110.5	CLOSED	31	SHR
DS16-13	256.01	52.89	109.77	OPEN	30	SHR
DS16-13	256.33	52.24	78.54	OPEN	32	SHR
DS16-13	258.7	36.97	91.42	UNCLEAR	31	SHR
DS16-13	258.83	49.41	78.52	UNCLEAR	31	SHR
DS16-13	261.37	38.44	149.7	UNCLEAR	31	SHR
DS16-13	268.54	40.71	116.7	CLOSED	31	SHR
DS16-13	269.39	52.71	113.92	OPEN	31	SHR
DS16-13	272.55	42.93	321.46	CLOSED	31	SHR
DS16-13	274.31	34.76	335.58	CLOSED	31	SHR
DS16-13	304.88	41.3	245.94	CLOSED	31	SHR
DS16-13	305.83	54.22	242.36	CLOSED	31	SHR
DS16-13	324.88	61.23	134.23	CLOSED	31	SHR
DS16-13	341.54	36.93	259.62	CLOSED	31	SHR
DS16-13	346.09	62.76	270.35	CLOSED	31	SHR
DS16-13	348.82	44.01	264.83	CLOSED	31	SHR
DS16-13	364.15	51.39	274.27	CLOSED	31	SHR
DS16-13	366.66	27.81	265.14	CLOSED	31	SHR
DS16-13	370.83	43.07	287.67	CLOSED	31	SHR
DS16-13	377.36	67.72	231.17	CLOSED	31	SHR
DS16-13	378.08	54.98	220.43	CLOSED	31	SHR
DS16-13	386.67	86.55	238.84	OPEN	31	SHR
DS16-13	391.51	38.27	109.53	CLOSED	30	SHR
DS16-13	396.87	44.39	263.66	OPEN	32	SHR
DS16-13	418.77	50.42	280.7	CLOSED	31	SHR
DS16-13	444.49	60.37	96.59	OPEN	31	SHR
DS16-13	453.64	55.32	131.88	CLOSED	31	SHR
DS16-13	479.53	56.25	99.58	OPEN	30	SHR
DS16-13	479.84	54.53	92.82	OPEN	32	SHR
DS16-13	481.59	28.3	28.64	CLOSED	31	SHR
DS16-13	485.24	36.7	111.8	CLOSED	30	SHR
DS16-13	485.71	43.98	113.94	CLOSED	32	SHR
DS16-13	486.37	18.73	110.18	CLOSED	30	SHR
DS16-13	486.79	29.13	102.94	CLOSED	32	SHR
DS16-13	486.89	49.06	105.58	CLOSED	31	SHR
DS16-13	494.67	31.78	105.16	OPEN	30	WEAK
DS16-13	495.15	37.99	119.45	CLOSED	31	SHR
DS16-13	496.68	45.35	285.61	OPEN	32	WEAK
DS16-13	502.78	44.05	112.96	OPEN	31	SHR
DS16-13	504.31	28.37	291.91	OPEN	31	SHR
DS16-13	509.96	31.97	104.58	OPEN	31	SHR
DS16-13	512.02	31.18	108.7	OPEN	30	SHR
DS16-13	512.81	31.18	82.9	OPEN	32	SHR
DS16-13	517.36	31.78	109.78	CLOSED	31	SHR
DS16-13	519.4	50.43	359.64	CLOSED	31	SHR
DS16-13	524.25	65.84	232.23	CLOSED	31	SHR
DS16-13	526.01	26.04	300.65	CLOSED	31	SHR
DS16-13	526.88	48.33	352.55	CLOSED	31	SHR
DS16-13	528.3	53.35	0.81	CLOSED	31	SHR
DS16-14	35.77	65.41	117.74	CLOSED	31	SHR
DS16-14	45.32	33.53	93.33	OPEN	30	BED
DS16-14	45.57	32.69	112.46	CLOSED	31	BED
DS16-14	46.95	17.4	90.93	OPEN	32	BED
DS16-14	62.06	15.8	216.78	OPEN	30	SHR
DS16-14	62.84	7.96	82.93	OPEN	32	SHR
DS16-14	64.78	23.73	128.97	CLOSED	31	SHR
DS16-14	97.88	46.19	102.89	CLOSED	31	SHR
DS16-14	98.12	51.3	92.13	OPEN	30	SHR
DS16-14	98.97	26.97	46.25	OPEN	32	SHR
DS16-14	110.69	12.03	63.42	OPEN	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-14	152.27	56.24	18.73	CLOSED	31	SHR
DS16-14	159.6	21.04	130.74	CLOSED	31	SHR
DS16-14	160.87	22.54	134.08	CLOSED	31	SHR
DS16-14	172.15	19.89	116.44	CLOSED	31	SHR
DS16-14	175.6	61.36	54.22	CLOSED	31	SHR
DS16-14	207.64	35.69	125.59	CLOSED	31	SHR
DS16-14	258.06	12.5	355.81	UNCLEAR	30	WEAK
DS16-14	258.97	13.83	278.58	OPEN	32	WEAK
DS16-14	263.58	27.69	246.56	CLOSED	31	SHR
DS16-14	269.46	62.22	257.81	OPEN	31	SHR
DS16-14	275.6	41.99	129.69	CLOSED	31	SHR
DS16-14	279.04	68.5	282.12	CLOSED	31	SHR
DS16-14	280.83	54.62	297.53	OPEN	30	SHR
DS16-14	281.58	49.83	270.31	OPEN	32	SHR
DS16-14	285.95	47.34	263.11	OPEN	30	WEAK
DS16-14	287.62	66.5	259.41	CLOSED	31	SHR
DS16-14	287.74	43.12	251.74	OPEN	32	WEAK
DS16-14	291.14	82.17	205.79	CLOSED	31	SHR
DS16-14	294.66	64.04	5.99	CLOSED	31	SHR
DS16-14	297.08	78.97	358.88	CLOSED	31	SHR
DS16-14	297.74	80.72	2.09	CLOSED	31	SHR
DS16-14	312.82	77.27	185.25	OPEN	30	SHR
DS16-14	313.49	80.59	181.68	OPEN	32	SHR
DS16-14	318.04	11.3	204.38	CLOSED	31	SHR
DS16-14	327.52	36.05	97.28	CLOSED	31	SHR
DS16-14	330.55	57.4	238.52	CLOSED	31	SHR
DS16-14	342.69	78.69	92.74	CLOSED	31	SHR
DS16-14	345.58	61.98	249.08	CLOSED	31	SHR
DS16-14	353.39	66.75	292.82	CLOSED	31	SHR
DS16-14	361.76	59.2	277.04	OPEN	31	SHR
DS16-14	365.27	58.66	129.36	CLOSED	31	SHR
DS16-14	380.6	69.3	243.14	CLOSED	30	SHR
DS16-14	382.06	62.74	234.71	CLOSED	32	SHR
DS16-14	383.53	72.53	316.62	OPEN	31	SHR
DS16-14	392.12	74.52	239.37	OPEN	31	SHR
DS16-14	405.01	64.58	270.31	CLOSED	31	SHR
DS16-14	442.68	65.52	279.67	CLOSED	30	SHR
DS16-14	443.73	68.44	279.07	OPEN	32	SHR
DS16-14	450.21	36.1	136.23	CLOSED	31	SHR
DS16-14	451.96	34.35	290.69	OPEN	31	SHR
DS16-14	453.44	11.58	302.46	OPEN	31	SHR
DS16-14	544.57	45.27	239.83	UNCLEAR	31	SHR
DS16-14	545.17	49.26	269.07	CLOSED	31	SHR
DS16-14	593.5	81.23	112.76	OPEN	31	SHR
DS16-14	600.16	9.58	237.79	CLOSED	31	SHR
DS16-14	611.88	14.03	347.09	CLOSED	31	SHR
DS16-14	617.87	42.1	59.83	CLOSED	30	WEAK
DS16-14	623.88	27.22	264.93	CLOSED	32	WEAK
DS16-14	641.63	44.03	172.46	OPEN	31	SHR
DS16-14	642.5	69.65	235.96	OPEN	31	SHR
DS16-14	644.81	56.75	294.87	OPEN	31	SHR
DS16-14	651.99	44.35	198.6	CLOSED	31	SHR
DS16-14	653.35	68.36	244.19	OPEN	30	SHR
DS16-14	655.03	64.05	232.37	OPEN	32	SHR
DS16-14	664.33	57.17	284.3	OPEN	30	SHR
DS16-14	665.25	69.1	255.89	OPEN	32	SHR
DS16-14	691.8	37.42	257.4	OPEN	31	SHR
DS16-14	694.34	46.53	246.29	OPEN	31	SHR
DS16-14	695.3	30.08	272.14	OPEN	30	SHR
DS16-14	729.25	54.23	259.39	OPEN	32	SHR
DS16-14	738.65	44.05	202.93	OPEN	30	WEAK
DS16-14	740.73	64.33	240.22	CLOSED	32	WEAK
DS16-14	746.5	48.4	354.24	CLOSED	30	WEAK
DS16-14	753.6	52.23	120.45	CLOSED	32	WEAK
DS16-14	758.18	53.59	293.84	CLOSED	30	WEAK
DS16-14	767.36	12.03	283.12	CLOSED	32	WEAK
DS16-14	779.44	48.73	75.72	CLOSED	31	SHR
DS16-14	784.26	65.77	225.27	CLOSED	31	SHR
DS16-14	828.38	23.76	101.09	CLOSED	31	SHR
DS16-14	845.17	16.42	80.74	CLOSED	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS16-14	886.43	37.42	36.97	CLOSED	31	SHR
DS17-15	24.78	85.49	354.38	CLOSED	31	SHR
DS17-15	28.01	83.12	67.51	CLOSED	31	SHR
DS17-15	34.25	84.66	169.37	CLOSED	31	SHR
DS17-15	35.55	87.37	190.96	CLOSED	31	SHR
DS17-15	52.96	89.06	261.4	CLOSED	31	SHR
DS17-15	55.48	89.53	103.72	CLOSED	31	SHR
DS17-15	57.81	86.33	10.08	OPEN	31	SHR
DS17-15	58.7	89.11	71.07	OPEN	31	SHR
DS17-15	63.51	86.72	20.8	OPEN	31	SHR
DS17-15	65.14	84.15	13.92	CLOSED	31	SHR
DS17-15	70.92	69.97	81.69	OPEN	31	SHR
DS17-15	91.26	89.19	58.46	CLOSED	31	SHR
DS17-15	93.55	87.75	292.26	OPEN	31	SHR
DS17-15	94.64	87.19	307.91	OPEN	31	SHR
DS17-15	95.95	87.67	301.2	CLOSED	31	SHR
DS17-15	96.13	87.88	38.28	OPEN	31	SHR
DS17-15	97.65	87.47	299.45	OPEN	31	SHR
DS17-15	99.22	86.81	334.82	OPEN	31	SHR
DS17-15	101.19	88.32	53.13	CLOSED	31	SHR
DS17-15	102.53	87.18	305.4	OPEN	31	SHR
DS17-15	103.06	87.2	309.5	OPEN	31	SHR
DS17-15	105.26	83.74	351.78	CLOSED	31	SHR
DS17-15	107.28	86.56	334.1	CLOSED	31	SHR
DS17-15	112.26	86.24	44.8	CLOSED	31	SHR
DS17-15	112.32	87.05	298.63	CLOSED	31	SHR
DS17-15	113.75	87.32	67.13	CLOSED	31	SHR
DS17-15	115.33	84.96	55.64	CLOSED	31	SHR
DS17-15	117.47	85	34.69	OPEN	31	SHR
DS17-15	122.98	88.79	270.69	CLOSED	31	SHR
DS17-15	123.39	88.85	268.52	CLOSED	31	SHR
DS17-15	123.97	88.63	266.85	CLOSED	31	SHR
DS17-15	125.33	86.44	144.04	CLOSED	31	SHR
DS17-15	134.5	84.68	151.43	CLOSED	31	SHR
DS17-15	147.06	83.32	342.47	OPEN	31	SHR
DS17-15	154.53	87.2	91.33	CLOSED	31	SHR
DS17-15	156.9	74.75	17.51	CLOSED	31	SHR
DS17-15	159.94	85.65	354.52	CLOSED	31	SHR
DS17-15	169.24	80.92	136.98	CLOSED	31	SHR
DS17-15	186.12	89.54	279.25	CLOSED	31	SHR
DS17-15	196.48	84.47	242.04	CLOSED	31	SHR
DS17-15	201.36	50.7	4.14	CLOSED	31	BED
DS17-15	206.21	68.27	26.73	CLOSED	31	SHR
DS17-15	212.93	72.39	90.16	OPEN	31	BED
DS17-15	214.62	68.82	66.6	CLOSED	31	CONTACT
DS17-15	216.21	73.39	47.58	CLOSED	31	BED
DS17-15	216.41	76.92	74.43	CLOSED	31	BED
DS17-15	218.1	71.27	54.94	OPEN	31	BED
DS17-15	218.58	75.45	40.42	CLOSED	31	BED
DS17-15	219.78	78.95	51.36	OPEN	30	BED
DS17-15	220.53	78.72	56.16	OPEN	32	BED
DS17-15	220.69	78.52	53.38	OPEN	31	BED
DS17-15	222.76	74.19	52.32	CLOSED	31	BED
DS17-15	224.17	76.55	45.09	CLOSED	31	BED
DS17-15	224.69	77.57	62.31	CLOSED	31	CONTACT
DS17-15	227.36	70.82	53.78	CLOSED	31	CONTACT
DS17-15	227.8	77.95	37.82	CLOSED	31	BED
DS17-15	228.05	77.39	52.55	CLOSED	31	BED
DS17-15	228.68	75.81	63.65	CLOSED	31	BED
DS17-15	228.92	75.86	31.15	CLOSED	31	BED
DS17-15	229.52	76.37	55.53	CLOSED	31	BED
DS17-15	229.8	77.76	46.46	CLOSED	31	BED
DS17-15	235.11	78.58	40.06	CLOSED	31	BED
DS17-15	237.5	76.72	80.72	CLOSED	31	BED
DS17-15	244.47	82.89	75.56	CLOSED	31	SHR
DS17-15	245.91	74.95	47.2	CLOSED	31	SHR
DS17-15	253.02	76.36	44	CLOSED	31	SHR
DS17-15	254.67	79.48	67.05	CLOSED	31	BED
DS17-15	255.55	87.59	286.2	CLOSED	31	SHR
DS17-15	256.43	78.86	62.29	CLOSED	31	BED

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS17-15	256.7	77.41	52.21	OPEN	31	BED
DS17-15	257.95	78.15	46.86	OPEN	31	BED
DS17-15	258.5	80.84	66.49	CLOSED	31	BED
DS17-15	260.71	72.15	45.53	CLOSED	31	BED
DS17-15	263.52	79.82	30.12	CLOSED	31	BED
DS17-15	267.36	70.83	91.41	CLOSED	31	BED
DS17-15	268.14	72.19	67	CLOSED	31	BED
DS17-15	268.34	76.94	83.89	CLOSED	31	BED
DS17-15	268.45	74.71	90.67	CLOSED	31	BED
DS17-15	272.41	73.25	35.91	CLOSED	31	BED
DS17-15	272.61	79.17	27.2	CLOSED	31	BED
DS17-15	272.95	71.65	86.46	CLOSED	31	BED
DS17-15	273.04	74.53	80.69	CLOSED	31	BED
DS17-15	273.47	75.26	65.49	CLOSED	31	BED
DS17-15	303.04	82.9	333.34	CLOSED	31	SHR
DS17-15	304.27	87.57	27.08	CLOSED	31	SHR
DS17-15	304.99	88.28	41.91	OPEN	31	SHR
DS17-15	321.09	81.64	196.33	OPEN	31	SHR
DS17-15	323.75	88.2	206.32	CLOSED	31	SHR
DS17-15	324.1	77.92	51.72	CLOSED	31	SHR
DS17-15	328.05	80.39	284.65	CLOSED	31	SHR
DS17-15	331.01	82.92	231.6	CLOSED	31	SHR
DS17-15	331.56	88.42	259.73	CLOSED	31	SHR
DS17-15	335.33	86.16	73.33	CLOSED	31	SHR
DS17-15	338.2	74.71	108.2	OPEN	31	SHR
DS17-15	340.58	77.73	185.09	CLOSED	31	SHR
DS17-15	344.21	86.43	206.28	CLOSED	31	SHR
DS17-15	348.67	84.06	219.79	CLOSED	31	SHR
DS17-15	362.11	87.31	24.46	CLOSED	31	CONTACT
DS17-15	368.34	87.14	104.43	CLOSED	31	CONTACT
DS17-15	374.19	88.83	123.05	CLOSED	31	SHR
DS17-15	378.6	80.31	129.57	CLOSED	31	SHR
DS17-15	386.49	88.33	245.77	CLOSED	31	SHR
DS17-15	396.86	87.52	279.93	CLOSED	31	SHR
DS17-15	409.62	87	306.66	CLOSED	31	SHR
DS17-15	412.65	85.81	261.13	CLOSED	31	SHR
DS17-15	415.22	85.45	260.19	CLOSED	31	SHR
DS17-15	417.12	87.8	261.67	CLOSED	31	SHR
DS17-15	418.2	18.64	305.48	CLOSED	31	SHR
DS17-15	425.72	86.27	104.81	CLOSED	31	SHR
DS17-15	460.29	70.25	245.04	CLOSED	31	SHR
DS17-15	461.26	79.48	216.92	CLOSED	31	SHR
DS17-15	468.26	85.51	294.8	CLOSED	31	WEAK
DS17-15	471.67	85.74	71.48	CLOSED	31	WEAK
DS17-15	493.29	86.44	192.66	CLOSED	31	CONTACT
DS17-15	526.01	82.63	254.86	CLOSED	31	SHR
DS17-15	529.46	73.68	169.51	CLOSED	31	SHR
DS17-15	530.76	86.84	225.45	CLOSED	31	SHR
DS17-15	569.91	83.13	358.37	CLOSED	31	CONTACT
DS17-15	582.68	89.57	51.51	CLOSED	31	CONTACT
DS17-15	603.34	88.45	98.47	CLOSED	31	CONTACT
DS17-15	604.59	83	118.43	CLOSED	31	SHR
DS17-15	605.97	85.76	347.88	CLOSED	31	SHR
DS17-15	607.02	85.38	246.22	CLOSED	31	SHR
DS17-15	607.69	88.52	59.38	CLOSED	31	CONTACT
DS17-15	612.52	89.21	30.35	OPEN	31	SHR
DS17-15	612.78	89.61	28.62	CLOSED	31	CONTACT
DS17-15	616.64	80.94	283.21	OPEN	31	SHR
DS17-15	618.3	89.94	85.63	CLOSED	31	SHR
DS17-16	48.18	75.05	50.69	CLOSED	31	BED
DS17-16	53.15	74.68	48.35	CLOSED	31	BED
DS17-16	72.9	51.21	353.36	CLOSED	31	CONTACT
DS17-16	132.37	84.74	330.59	CLOSED	31	SHR
DS17-16	133.81	89.67	16.65	CLOSED	31	SHR
DS17-16	137.43	85.1	199.06	CLOSED	31	SHR
DS17-16	146.84	62.7	75.59	CLOSED	31	LAY
DS17-16	147.68	57.38	29.59	CLOSED	31	LAY
DS17-16	148.69	73.25	176.4	CLOSED	31	LAY
DS17-16	149.06	88.87	310.3	CLOSED	31	SHR
DS17-16	149.95	77.07	166.19	CLOSED	31	LAY

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DS17-16	151.5	89.06	311.12	CLOSED	31	LAY
DS17-16	154.4	84.23	246.73	CLOSED	31	SHR
DS17-16	168.85	87.73	18.38	CLOSED	31	SHR
DS17-16	178.26	84.56	55.12	CLOSED	31	SHR
DS17-16	179.04	81.95	81.47	CLOSED	31	SHR
DS17-16	182.22	88.73	330.55	CLOSED	31	SHR
DS17-16	194.3	89.88	179.7	CLOSED	31	SHR
DS17-16	198	89.58	24.11	CLOSED	31	SHR
DS17-16	200.82	83.57	284.46	CLOSED	31	SHR
DS17-16	211.45	87.6	241.38	UNCLEAR	31	SHR
DS17-16	222.59	79.76	299.69	OPEN	31	SHR
DS17-16	224.84	83.12	278.63	CLOSED	31	SHR
DS17-16	228.09	84.48	211.91	CLOSED	31	LAY
DS17-16	228.62	83.11	228.13	CLOSED	31	LAY
DS17-16	229.18	84.47	227.96	CLOSED	31	LAY
DS17-16	229.72	85.57	250.18	CLOSED	31	LAY
DS17-16	231.62	86	229.72	CLOSED	31	LAY
DS17-16	233.02	82.43	48.39	OPEN	31	SHR
DS17-16	233.52	87.65	227.36	OPEN	31	SHR
DS17-16	234.43	88.14	224.64	UNCLEAR	31	SHR
DS17-16	235.95	88.95	145.37	OPEN	31	SHR
DS17-16	239.41	75.76	110.69	OPEN	31	SHR
DS17-16	250.76	89.88	54.2	OPEN	31	SHR
DS17-16	251.89	88.33	326.09	CLOSED	31	SHR
DS17-16	257.69	89.67	26.62	CLOSED	31	SHR
DS17-16	260.04	80.79	114.83	CLOSED	31	SHR
DS17-16	276.11	84.84	63.05	CLOSED	31	SHR
DS17-16	276.9	83.06	127.93	CLOSED	31	SHR
DS17-16	277.31	80.64	88.87	OPEN	31	SHR
DS17-16	282.4	78.41	79.72	CLOSED	31	SHR
DS17-16	299.96	88.52	243.57	CLOSED	31	SHR
DS17-16	319.61	84.59	64.12	CLOSED	31	SHR
DS17-16	358.79	88.27	236.93	CLOSED	31	SHR
DS17-16	360.85	88.23	273.86	CLOSED	31	SHR
DS17-16	401.18	61.92	169.91	CLOSED	31	SHR
DS17-16	401.82	76.59	297.98	CLOSED	31	SHR
DS17-16	402.37	72.21	283.26	CLOSED	31	SHR
DS17-16	416.14	89.56	10.29	CLOSED	31	SHR
DS17-16	484.53	88	273.28	CLOSED	31	SHR
DS17-16	485.26	88.16	268.29	CLOSED	31	SHR
DS17-16	489.47	87.98	78.63	CLOSED	31	SHR
DS17-16	494.2	87.62	264.71	CLOSED	31	SHR
DS17-16	501.25	11.81	35.28	CLOSED	31	SHR
DS17-16	509.43	16.66	336.13	CLOSED	31	CONTACT
DS17-16	510.69	10.02	89.34	CLOSED	31	LAY
DS17-16	510.8	9.18	74.95	CLOSED	31	CONTACT
DS17-16	512.24	72.64	72.74	CLOSED	31	SHR
DS17-16	520.21	6.17	90.5	CLOSED	31	BED
DS17-16	522.26	5.36	116.09	CLOSED	31	BED
DH16-19	33.22	0.5	315.86	UNCLEAR	30	WEAK
DH16-19	36.98	58.63	138.93	UNCLEAR	32	WEAK
DH16-19	39.39	46.66	298.51	CLOSED	30	WEAK
DH16-19	43.49	13.02	313.96	CLOSED	32	WEAK
DH16-19	47.3	22.08	281.07	CLOSED	31	BED
DH16-19	49.32	23.75	266.2	CLOSED	31	BED
DH16-19	50.11	19.71	316.4	CLOSED	30	WEAK
DH16-19	50.68	23.08	274.04	CLOSED	32	WEAK
DH16-19	51.01	26.18	35.78	OPEN	31	SHR
DH16-19	51.99	20.51	347.51	OPEN	31	BED
DH16-19	52.27	70.13	57.24	UNCLEAR	31	SHR
DH16-19	53.77	31.62	218.88	UNCLEAR	31	BED
DH16-19	54.18	32.69	236.75	CLOSED	30	WEAK
DH16-19	56.42	56.17	357.09	OPEN	30	WEAK
DH16-19	66.89	54.68	88.36	OPEN	32	WEAK
DH16-19	68.92	43.33	66.34	OPEN	31	SHR
DH16-19	69.97	39.31	149.63	CLOSED	32	WEAK
DH16-19	71.8	69.02	156.89	CLOSED	31	SHR
DH16-19	73.8	49.31	77.52	CLOSED	31	SHR
DH16-19	75.17	28.55	246	CLOSED	31	BED
DH16-19	76.42	33.59	226.44	CLOSED	31	BED

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-19	77.67	10.32	260.24	CLOSED	31	BED
DH16-19	79.62	59.67	76.23	CLOSED	30	WEAK
DH16-19	80.37	48.4	79.31	CLOSED	32	WEAK
DH16-19	84.72	47.18	96.41	CLOSED	31	SHR
DH16-19	85.32	48.53	80.2	CLOSED	31	SHR
DH16-19	86.11	34.66	187.29	CLOSED	31	SHR
DH16-19	87.16	53.16	4.47	CLOSED	31	SHR
DH16-19	90.03	32.44	96.83	OPEN	31	SHR
DH16-19	90.2	60.54	136.53	CLOSED	31	SHR
DH16-19	92.08	37.72	121.27	CLOSED	31	SHR
DH16-19	93.1	52.47	255.37	CLOSED	30	WEAK
DH16-19	95.17	61.9	118.68	CLOSED	32	WEAK
DH16-19	96.41	69.56	315.32	CLOSED	31	SHR
DH16-19	97.48	47.49	118.63	OPEN	31	SHR
DH16-19	100.97	67.65	48.43	OPEN	31	SHR
DH16-19	102.86	37.64	145.65	OPEN	31	SHR
DH16-19	102.89	48.88	261.02	OPEN	31	SHR
DH16-19	105.43	43.94	316.89	CLOSED	30	WEAK
DH16-19	109.87	66.48	142.86	UNCLEAR	31	SHR
DH16-19	111.2	63.95	3.2	UNCLEAR	31	SHR
DH16-19	112.63	27.29	266.75	UNCLEAR	30	FZ
DH16-19	113.15	26.8	314.15	UNCLEAR	32	FZBOT
DH16-19	113.8	58.1	66.85	CLOSED	32	WEAK
DH16-19	114.17	38.61	248.17	CLOSED	31	BED
DH16-19	115.56	43.13	244.76	CLOSED	31	BED
DH16-19	115.66	64.91	56.92	CLOSED	31	SHR
DH16-19	118.24	52.29	303.59	CLOSED	31	SHR
DH16-19	119.66	48.55	188.62	CLOSED	31	SHR
DH16-19	120.05	30.05	216.97	CLOSED	31	SHR
DH16-19	121.83	43.99	330.66	CLOSED	31	SHR
DH16-19	122.34	66.68	350.78	CLOSED	31	SHR
DH16-19	123.55	46.34	322.7	CLOSED	31	SHR
DH16-19	134.67	58.48	99.29	CLOSED	31	SHR
DH16-19	135.58	71.43	173.11	CLOSED	31	SHR
DH16-19	137.72	78.64	199.24	CLOSED	31	SHR
DH16-19	146.86	46.19	29.22	CLOSED	31	SHR
DH16-19	156.65	52.45	326.71	UNCLEAR	31	SHR
DH16-19	192.3	40.48	124.69	UNCLEAR	31	WEAK
DH16-19	193.26	60.09	140.36	UNCLEAR	31	WEAK
DH16-19	196.35	52.66	120.85	UNCLEAR	31	WEAK
DH16-19	215.69	62.05	156.19	CLOSED	31	CONTACT
DH16-19	224.14	43.77	35.39	UNCLEAR	31	SHR
DH16-19	231.58	34.02	240.6	CLOSED	31	SHR
DH16-19	233.02	51.91	123.84	UNCLEAR	31	SHR
DH16-19	235.38	52.47	97.31	CLOSED	31	SHR
DH16-19	237.09	36.66	87.12	CLOSED	31	SHR
DH16-19	237.69	39.29	249.64	CLOSED	31	SHR
DH16-19	237.97	35.08	252.95	CLOSED	31	SHR
DH16-19	238.48	37.01	266.34	CLOSED	31	SHR
DH16-19	239.65	45.42	232.46	CLOSED	31	SHR
DH16-19	242.62	38.12	240.76	CLOSED	31	SHR
DH16-19	244.63	61.3	109.31	CLOSED	31	SHR
DH16-19	245.56	54.25	117	CLOSED	31	SHR
DH16-21	60.08	50.81	160.02	OPEN	31	SHR
DH16-21	61.91	15.56	90.5	OPEN	31	BED
DH16-21	62.35	46.1	230.49	OPEN	31	SHR
DH16-21	62.95	35.17	54.34	OPEN	31	BED
DH16-21	63.2	26.88	83.46	OPEN	31	BED
DH16-21	63.76	29.03	5.8	OPEN	30	FZ
DH16-21	65.66	13.06	81.84	OPEN	31	SHR
DH16-21	80.83	43.13	257.72	OPEN	32	FZBOT
DH16-21	81.56	65.58	347.5	UNCLEAR	31	SHR
DH16-21	88.26	50.69	80.73	OPEN	31	SHR
DH16-21	89	52.38	5.79	OPEN	31	SHR
DH16-21	91.07	76.2	115.99	CLOSED	31	SHR
DH16-21	94.06	22.68	86.55	UNCLEAR	30	WEAK
DH16-21	94.59	32.35	262.41	UNCLEAR	32	WEAK
DH16-21	95.68	32.44	246.94	UNCLEAR	30	WEAK
DH16-21	96.59	20.93	256.57	UNCLEAR	32	WEAK
DH16-21	98.98	46.71	253.79	UNCLEAR	31	SHR

HOLEID	GEOLFROM	MSDipTrue	MSDipDirTrue	MS_Open	MSStuctureCode	MSTypeStructure
DH16-21	100.14	64.62	78.63	OPEN	31	SHR
DH16-21	102.04	50.7	13.37	OPEN	31	SHR
DH16-21	102.93	59.92	277.42	OPEN	31	SHR
DH16-21	104.92	16.95	254.51	OPEN	30	WEAK
DH16-21	107.38	57.76	240.81	OPEN	32	WEAK
DH16-21	110.97	67.34	104.81	OPEN	31	SHR
DH16-21	111.39	33.47	286.89	CLOSED	30	WEAK
DH16-21	129.35	43.12	111.43	OPEN	30	FZ
DH16-21	130	47.98	82.18	OPEN	32	FZBOT
DH16-21	139.88	73.46	13.29	CLOSED	31	SHR
DH16-21	143.94	60.77	235.29	CLOSED	32	WEAK
DH16-21	146.07	45.05	74.17	CLOSED	30	WEAK
DH16-21	149.53	29.92	60.49	CLOSED	32	WEAK
DH16-21	152.7	49.9	59.42	CLOSED	30	WEAK
DH16-21	155.46	48.8	235.72	CLOSED	30	WEAK
DH16-21	157.11	45.85	269.42	CLOSED	32	WEAK
DH16-21	164.4	47.52	181.74	OPEN	31	SHR
DH16-21	167.11	58.64	112.18	CLOSED	32	WEAK
DH16-21	177.56	53.86	150.95	CLOSED	31	SHR
DH16-21	186.08	53.61	53.87	CLOSED	31	SHR
DH16-21	202.23	49.88	89.76	OPEN	30	WEAK
DH16-21	207.29	65.68	57.03	OPEN	32	WEAK
DH16-21	207.48	68.6	85.51	CLOSED	31	SHR
DH16-21	210.21	74.98	108.55	CLOSED	31	SHR
DH16-21	210.51	66.13	86.29	OPEN	30	WEAK
DH16-21	211.85	53.84	358.28	OPEN	32	WEAK
DH16-21	214.53	71.96	88.65	CLOSED	30	WEAK
DH16-21	217.78	57.1	108.8	CLOSED	32	WEAK
DH16-21	231.03	70.33	34.53	CLOSED	31	SHR
DH16-21	240.07	51.3	63.39	OPEN	30	FZ
DH16-21	240.59	56.51	76.09	OPEN	32	FZBOT
DH16-21	246.14	67.25	85.62	CLOSED	31	SHR

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-08		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER			OTHER SERVICES
MORE: CALIPER			E-LOGS
			GAMMA
LOCATION			TEMP/FLUID RES
			SONIC
			DUAL INDUCTION
			OPTICAL TELEVIEWER
SEC	TWP	RGE	

PERMANENT DATUM		ELEVATION		K.B.	
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM		D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	
DATE	9-30-16	TYPE FLUID IN HOLE		FORMATION WATER	
RUN No	3	MUD WEIGHT		N/A	
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY		N/A	
DEPTH-DRILLER	250.0 FT	LEVEL		FULL	
DEPTH-LOGGER	250.0 FT	MAX. REC. TEMP.		29.6 DEG. C	
BTM LOGGED INTERVAL	250.0 FT	IMAGE ORIENTED TO:		MAGNETIC NORTH	
TOP LOGGED INTERVAL	30.0 FT	SAMPLE INTERVAL		0.010 FT	
DRILLER / RIG#	BOART LONGYEAR	LOGGING TRUCK		TRUCK #310	
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL	TOOL STRING/SN		ALT QL ABI40 2G SN 143003	
WITNESSED BY	GOLDER	LOG TIME:ON SITE/OFF SITE		1:30 PM	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	15 FT	HWT	STEEL	SURFACE	15 FT
2	HQ	15 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	09-30-16	**Date**	09-30-16	**Date**	09-30-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	W&R DIL	**Tool Model**	COMBO TOOL	**Tool Model**	ALT QL ABI40 2G
Tool SN	3777	**Tool SN**	4953	**Tool SN**	143003
From	SURFACE	**From**	SURFACE	**From**	30.0 ft
To	250.0 FT	**To**	250.0 FT	**To**	250.0 FT
Recorded By	E. BEAM	**Recorded By**	E, BEAN	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	09-30-16	**Operation Check**	09-30-16	**Operation Check**	09-30-16
Calibration Check	N/A	**Calibration Check**	09-30-16	**Calibration Check**	N/A
Time Logged	3:15 PM	**Time Logged**	3:30 PM	**Time Logged**	4:00 PM

Date	09-30-16	**Date**	09-30-16	**Date**	09-30-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT 4 RX SONIC	**Tool Model**	MSI 40GRP	**Tool Model**	ALT QL OBI40 2G
Tool SN	4754	**Tool SN**	5514	**Tool SN**	152511
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	250.0 FT	**To**	250.0 FT	**To**	240.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	09-30-16	**Operation Check**	09-30-16	**Operation Check**	09-30-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	4:30 PM	**Time Logged**	4:50 PM	**Time Logged**	5:15 PM

Additional Comments:

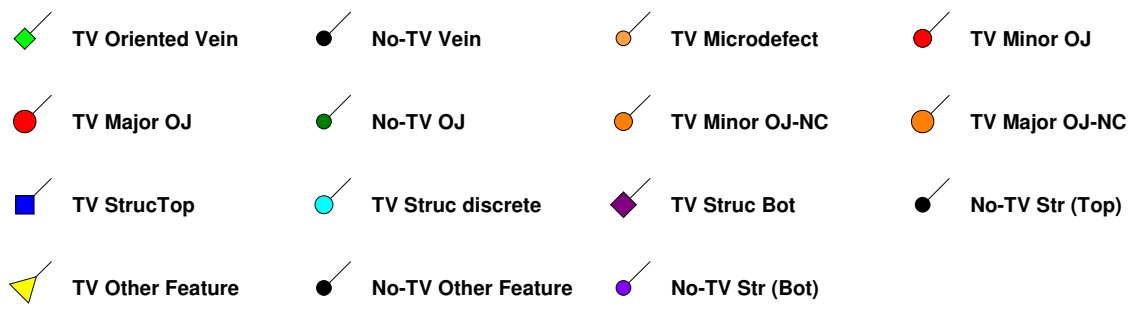
Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend



Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

GT-08 ABI40 2G Summary 28.5 to 250.4ft

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 6

Max Acoustic Caliper — 2 in 6

Ave Acoustic Caliper — 2 in 6

Enlargements

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 10000

Structure — 0° 90° 180° 270° 0°

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Tilt — 0 Deg 5

Azimuth — 0 Deg 360

28.0
29.0
30.0
31.0
32.0
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34.0
35.0
36.0
37.0
38.0
39.0
40.0

41.0
42.0
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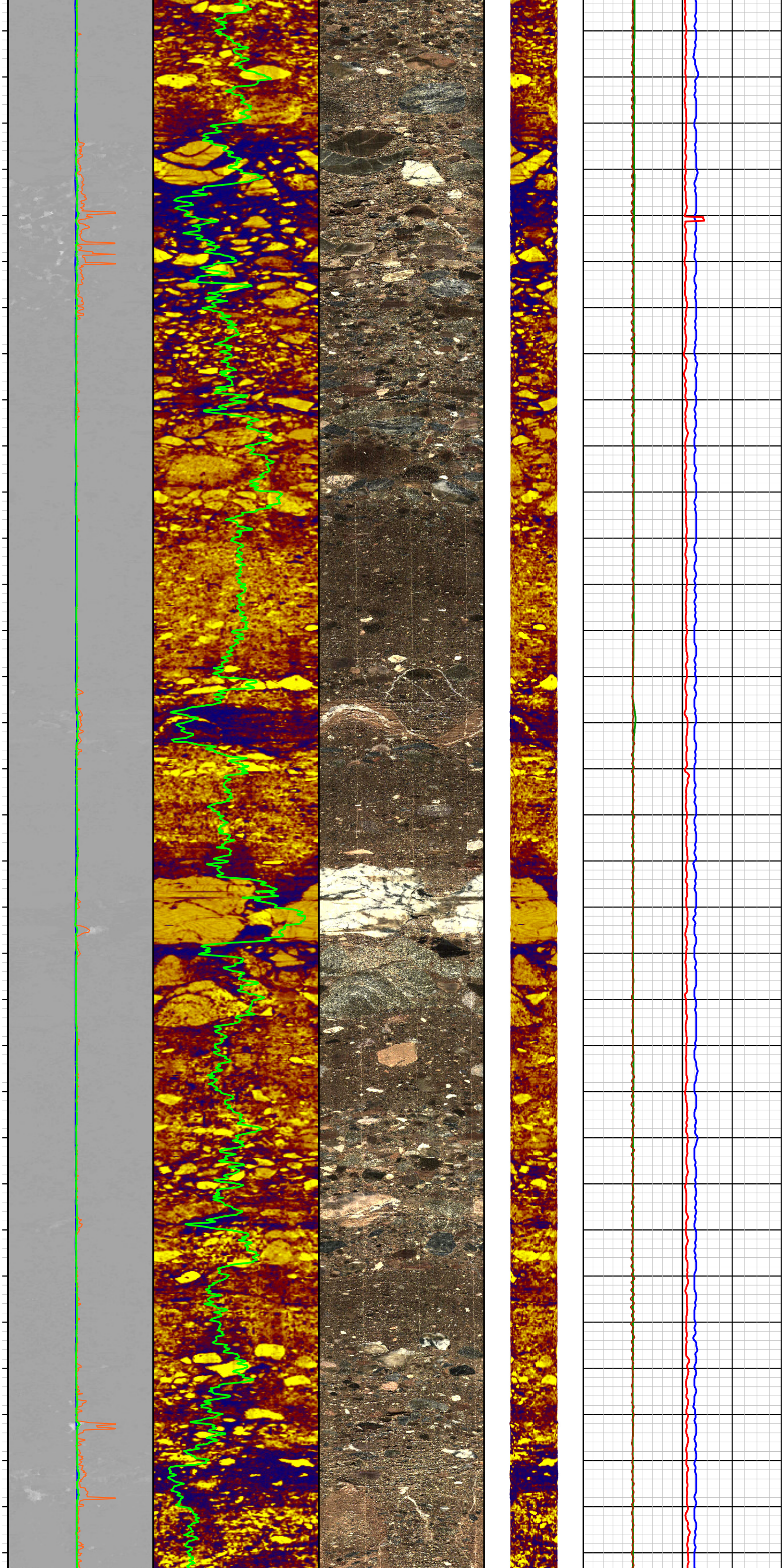

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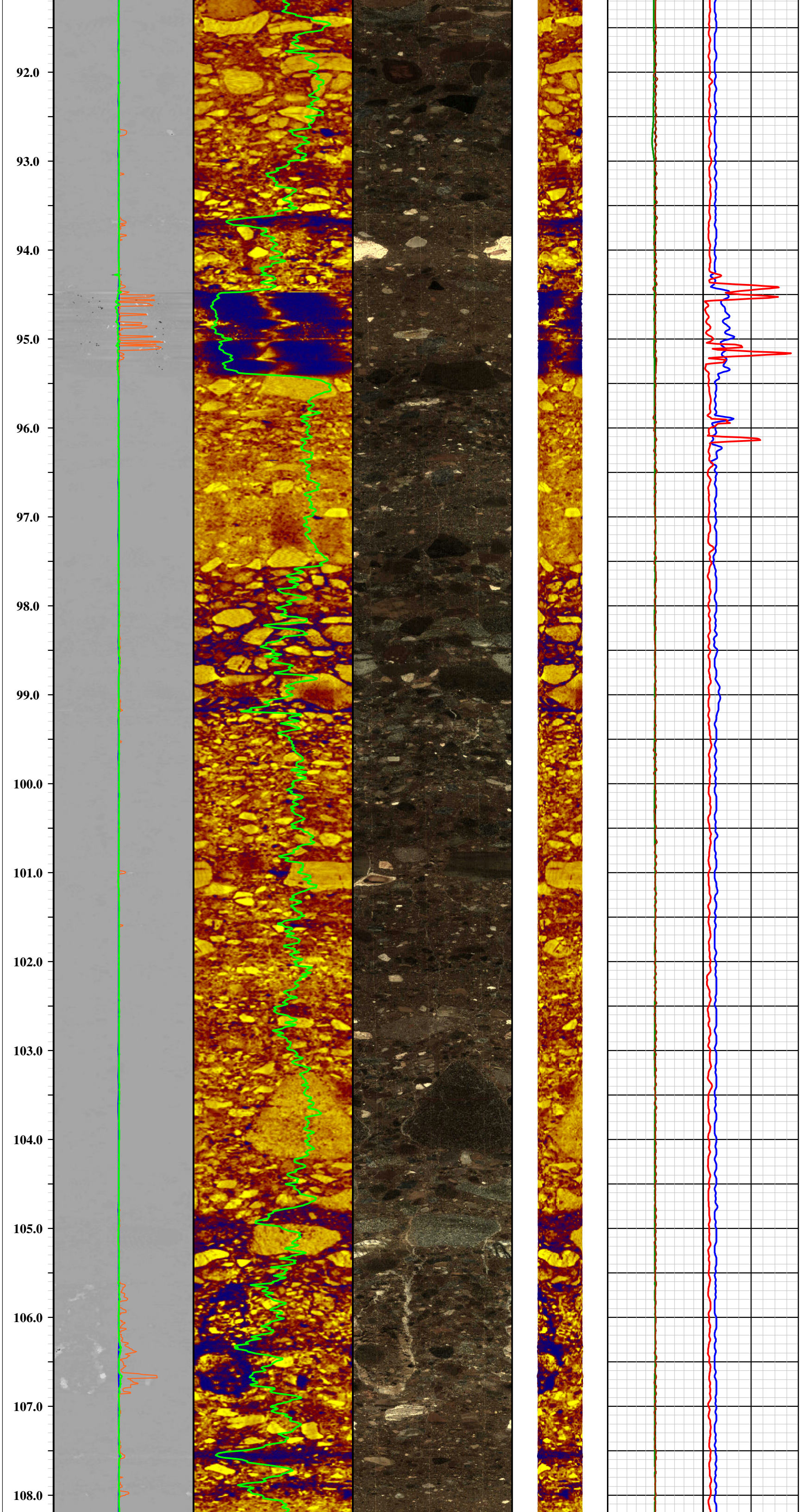

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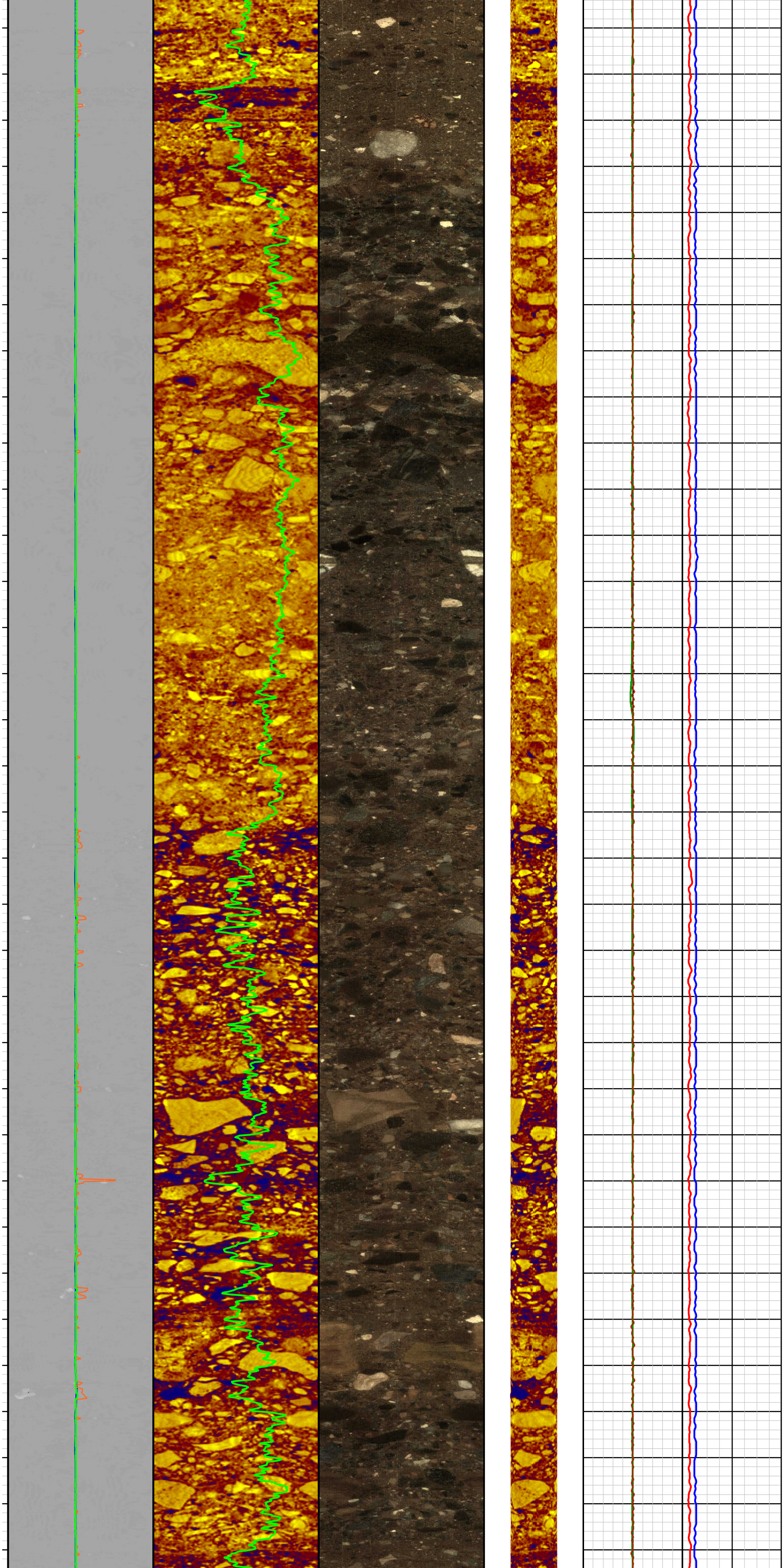

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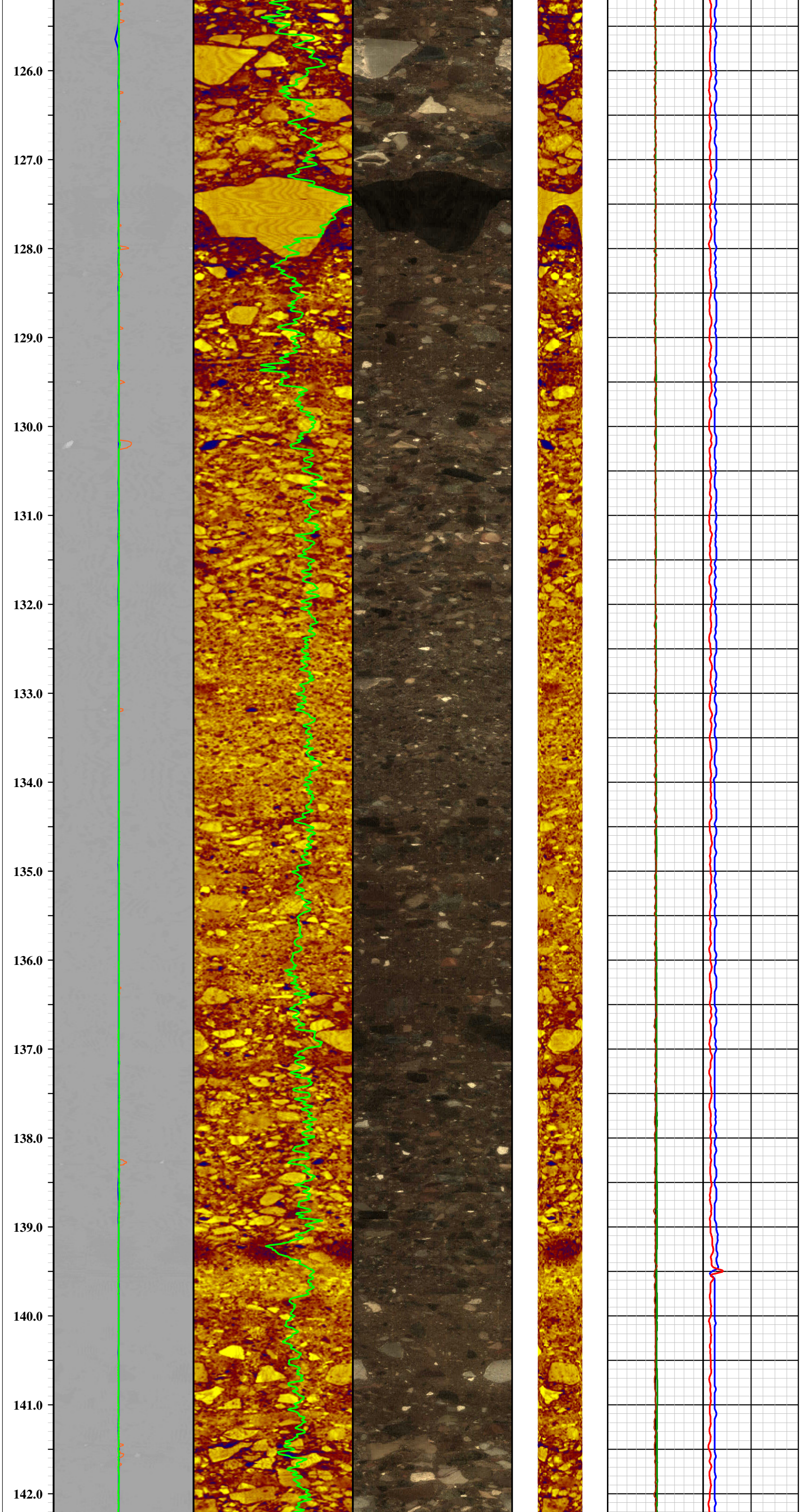

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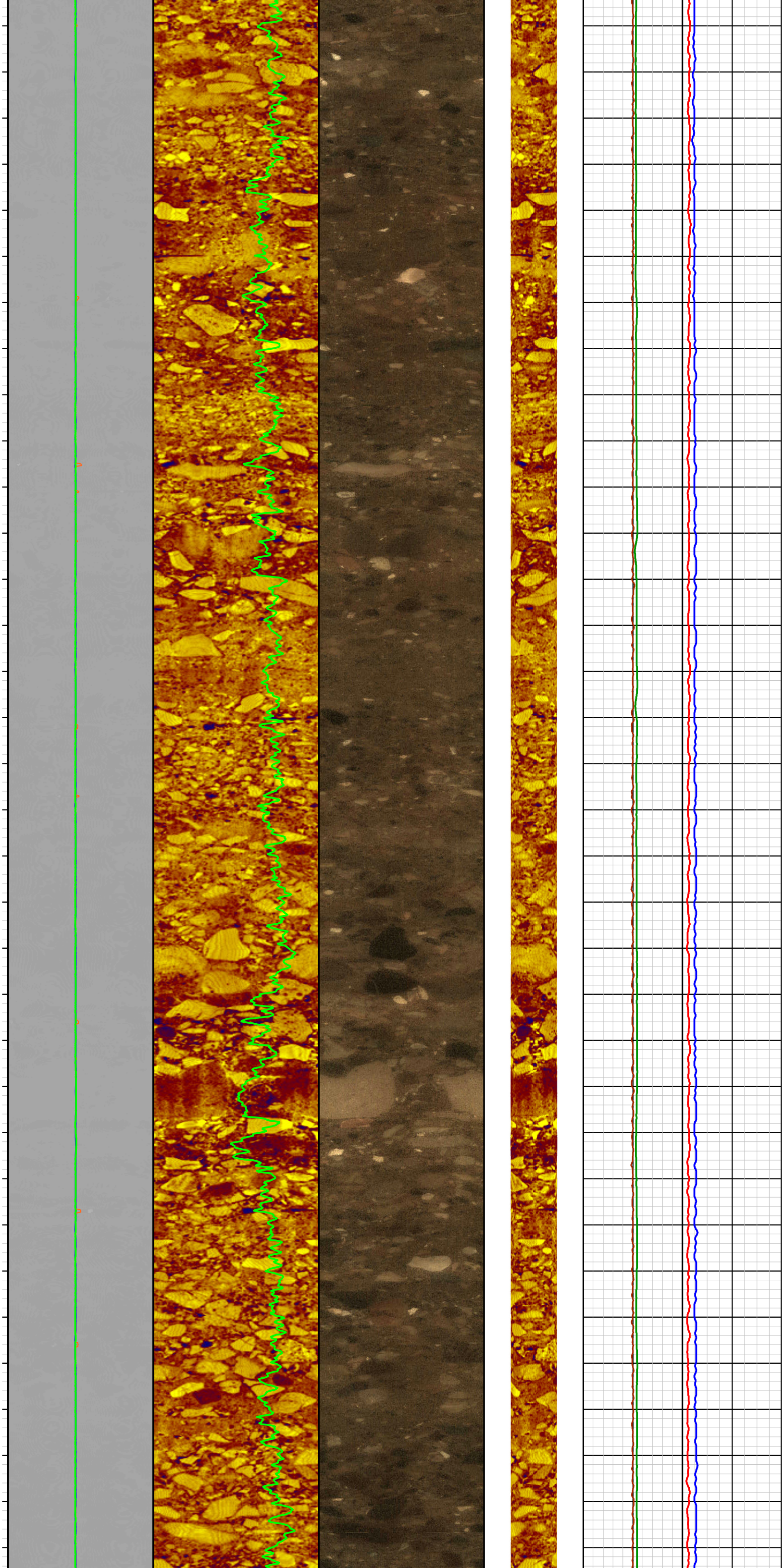

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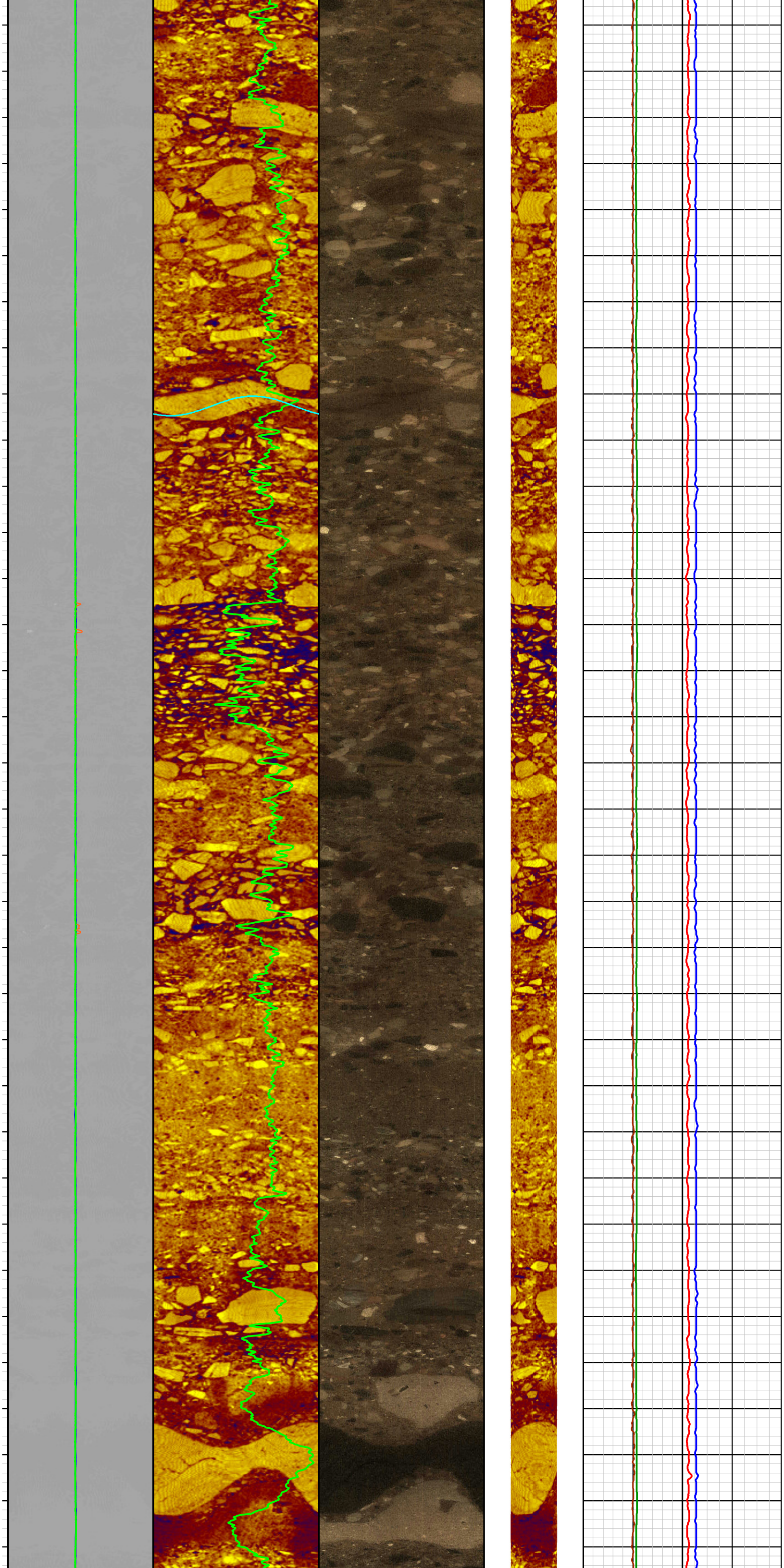

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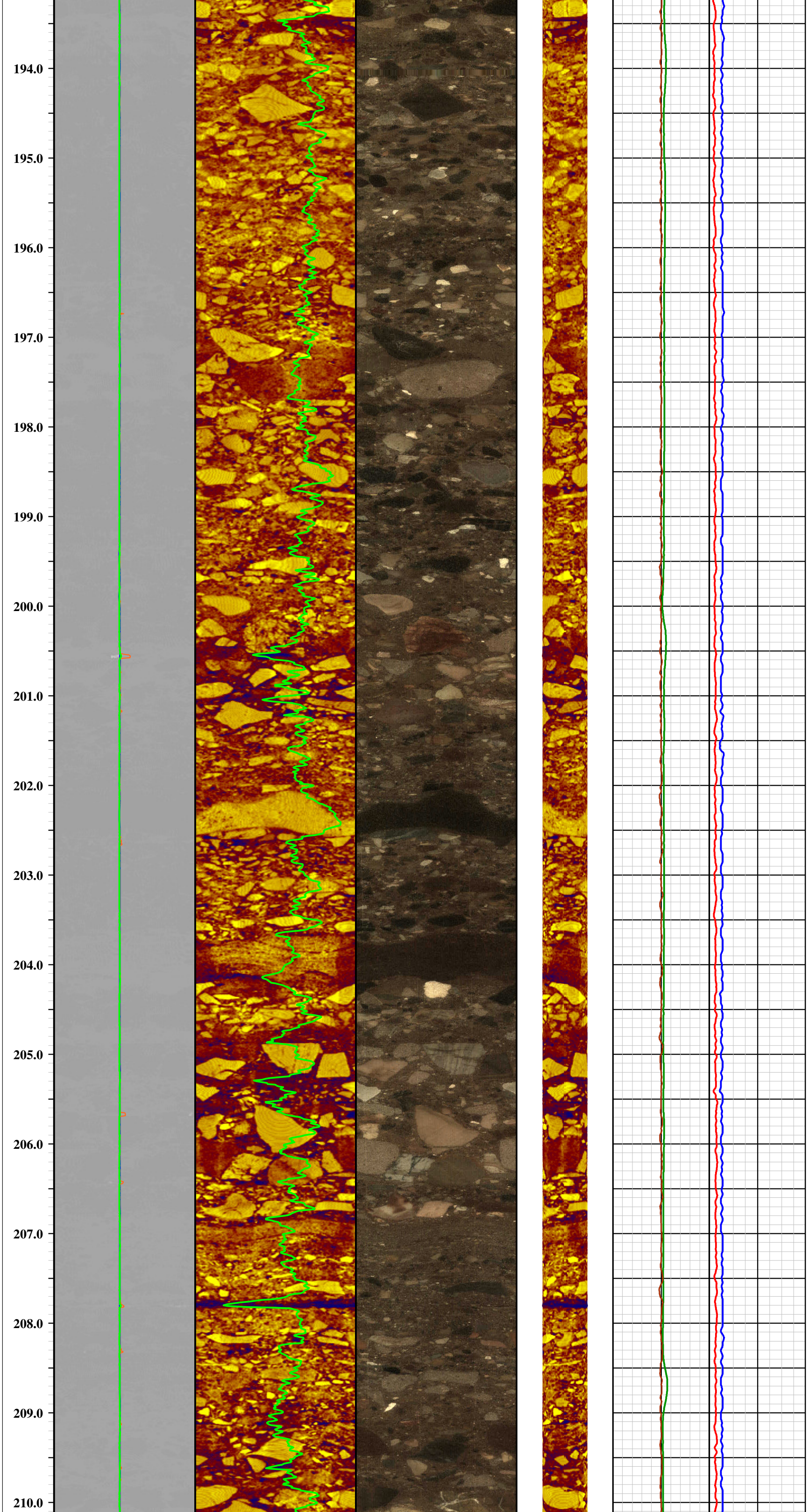

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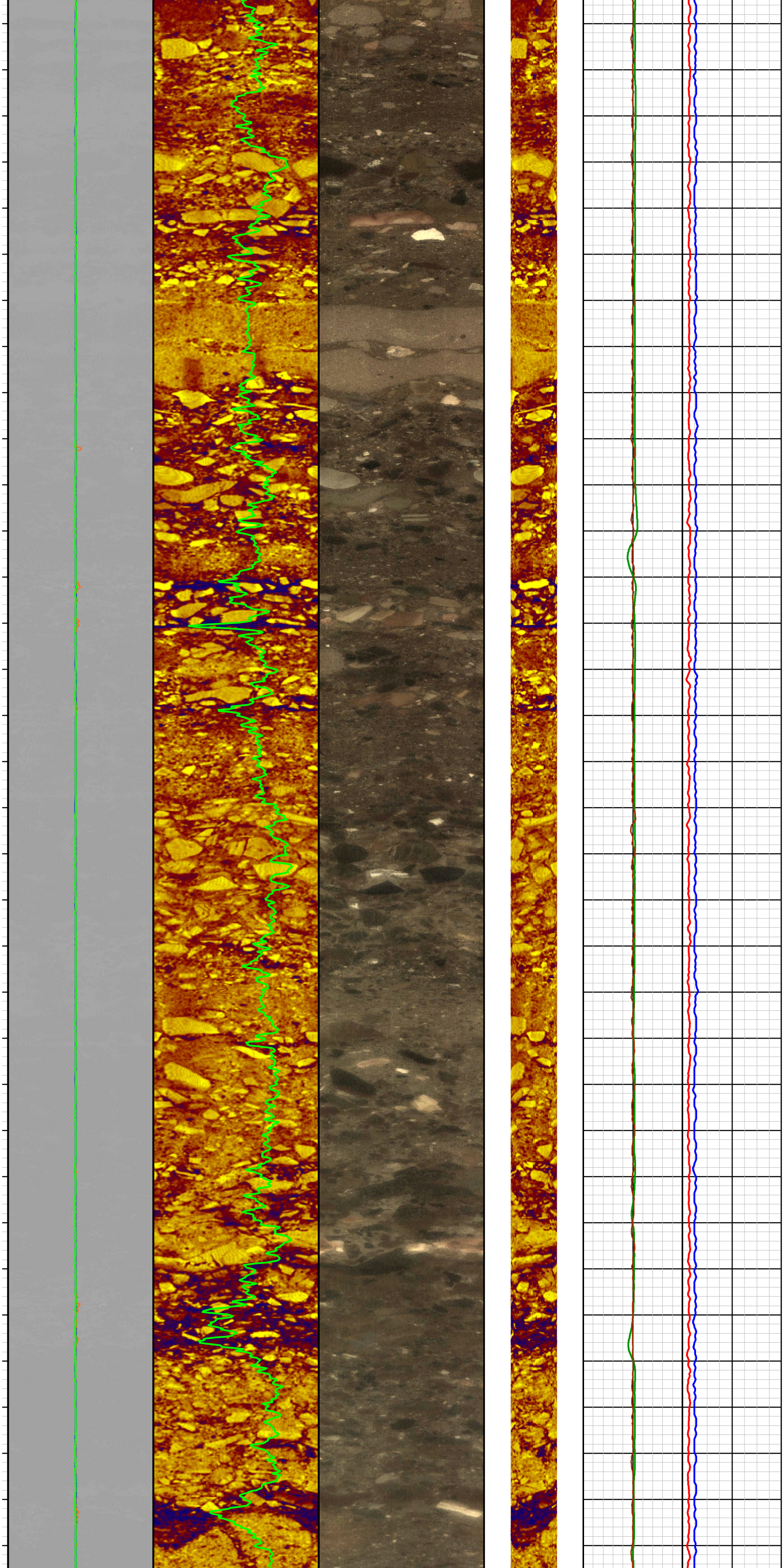

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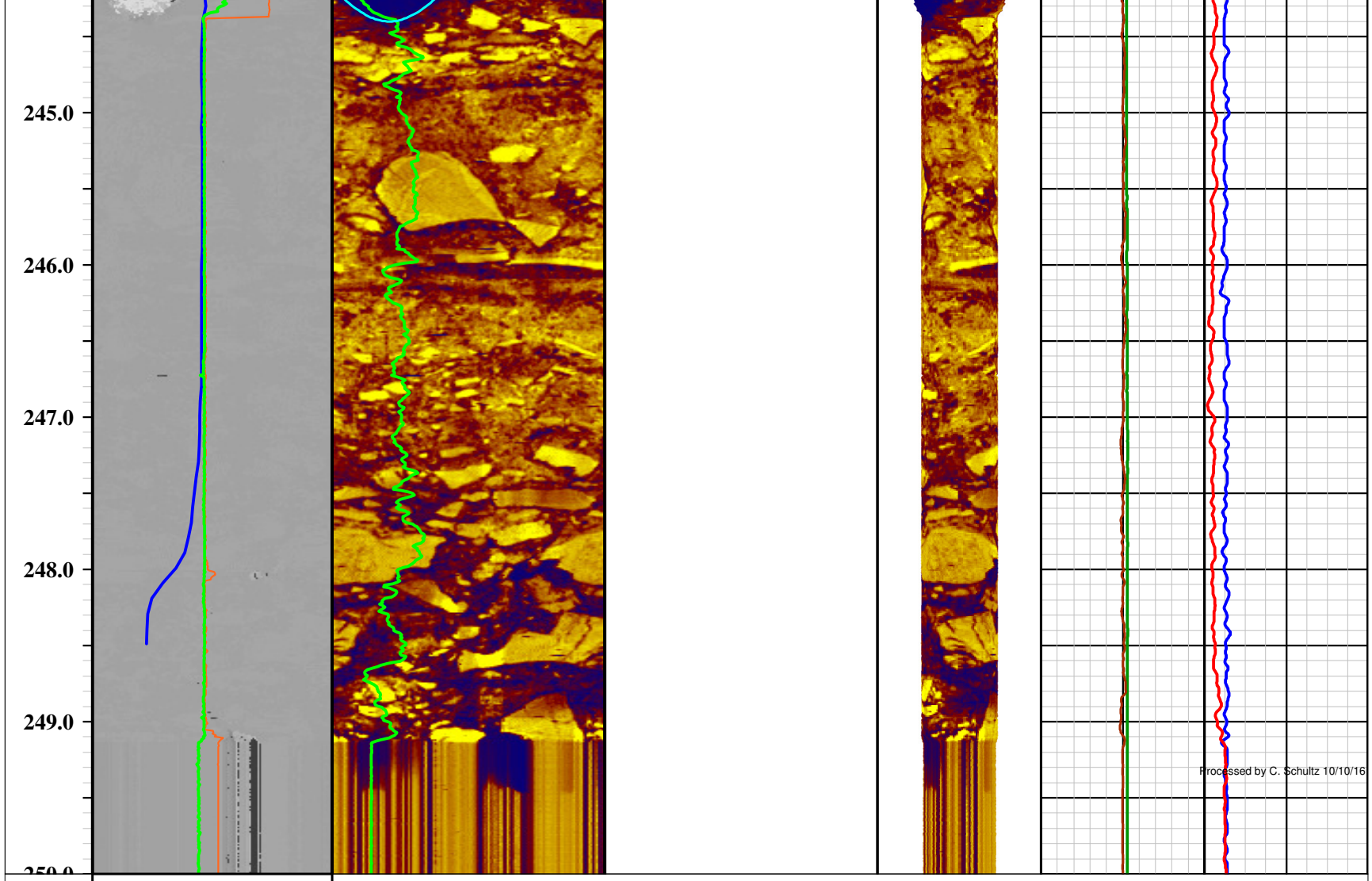


Enlargements

2 in 6 — Ave Acoustic Caliper

2 in 6 — Max Acoustic Caliper

2 Inches 6 — 3-Arm Caliper

0° 90° 180° 270° 0° — Oriented Mag North — Centralized TT

0° 90° 180° 270° 0° — Structure

0 10000 — ARI

0° 90° 180° 270° 0° — Oriented Mag North — Amp-High Pass

0° 90° 180° 270° 0° — Oriented Mag North — Amplitude-Static

0° 90° 180° 270° 0° — Oriented Mag North — Image-NM

0° — 3-D View

0.8 G 1.2 — Gravity

40 uT 60 — Mag Field

0 Deg 360 — Azimuth

0 Deg 5 — Tilt

1in:1ft

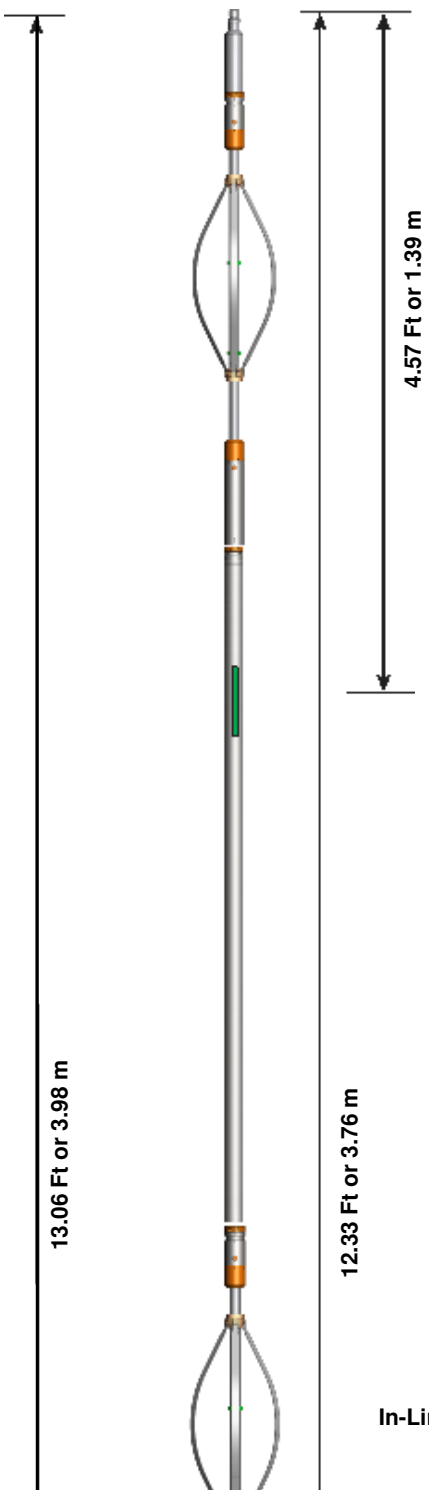
Depth

GT-08 ABI40 2G Summary 28.5 to 250.4ft

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

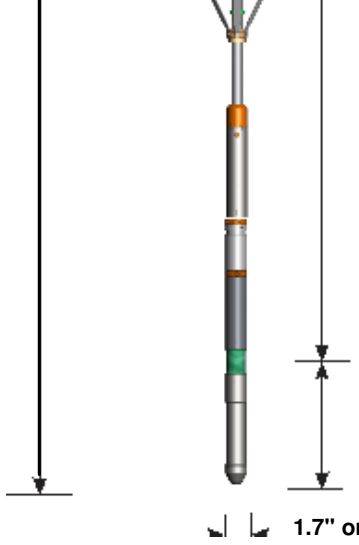
Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs



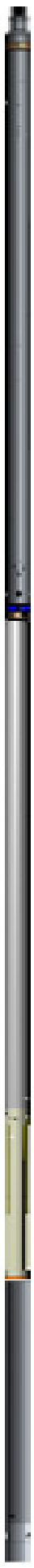
ABI Imaging Window

0.73 Ft or 0.22 m

1.7" or 43 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-08
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-41		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER			OTHER SERVICES
MORE: CALIPER			OPTICAL TELEVIEWER
			GAMMA
LOCATION			TEMP / FLUID RES
			DUAL INDUCTION
SEC	TWP	RGE	
PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	10-08-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	4		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	115.0 FT		LEVEL		-75.0 FT
DEPTH-LOGGER	107.0 FT		MAX. REC. TEMP.		26.5 DEG. C
BTM LOGGED INTERVAL	107.0 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	80.0 FT		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	GOLDER - GWEN		LOG TIME:ON SITE/OFF SITE		3:30 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	5 FT	HWT	STEEL	SURFACE	5 FT
2	HQ	5 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	10-08-16	**Date**	10-08-16	**Date**	10-08-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	W&R DIL	**Tool Model**	ALT QL OBI40 2G
Tool SN	4953	**Tool SN**	3777	**Tool SN**	152511
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	107.0 FT	**To**	107.0 FT	**To**	99.5 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-06-16	**Operation Check**	10-06-16	**Operation Check**	10-06-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	4:30 PM	**Time Logged**	4:50 PM	**Time Logged**	5:10 PM

Date	10-08-16	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143003	**Tool SN**		**Tool SN**	
From	80.0 FT	**From**		**From**	
To	107.0 FT	**To**		**To**	
Recorded By	E. BEAM	**Recorded By**		**Recorded By**	
Truck No	310	**Truck No**		**Truck No**	
Operation Check	10-06-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	5:30 PM	**Time Logged**		**Time Logged**	

Additional Comments:

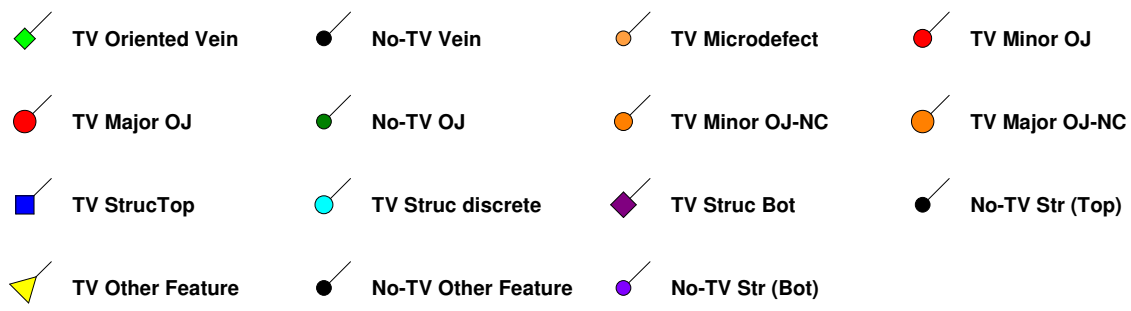
Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: N/A **Calibration Points:** N/A

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend



Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DH16-04 (GT-41) ABI40 2G Summary 77.86 to 107.82ft

Depth 1ft:6ft

Centralized TT — Oriented Mag North: 0° 90° 180° 270° 0°

3-Arm Caliper: 3 Inches 10

Max Acoustic Caliper: 3 in 10

Ave Acoustic Caliper: 3 in 10

Enlargements

Amplitude-NM — Oriented Mag North: 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North: 0° 90° 180° 270° 0°

ARI: 0 8000

Breakout/Tensile: 0° 90° 180° 270° 0°

Structure: 0° 90° 180° 270° 0°

Image-NM — Oriented Mag North: 0° 90° 180° 270° 0°

3-D View: 222°

Mag Field: 40 uT 60

Gravity: 0.8 G 1.2

Azimuth: 0 Deg 360

Tilt: 0 Deg 5

80.0
81.0
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83.0
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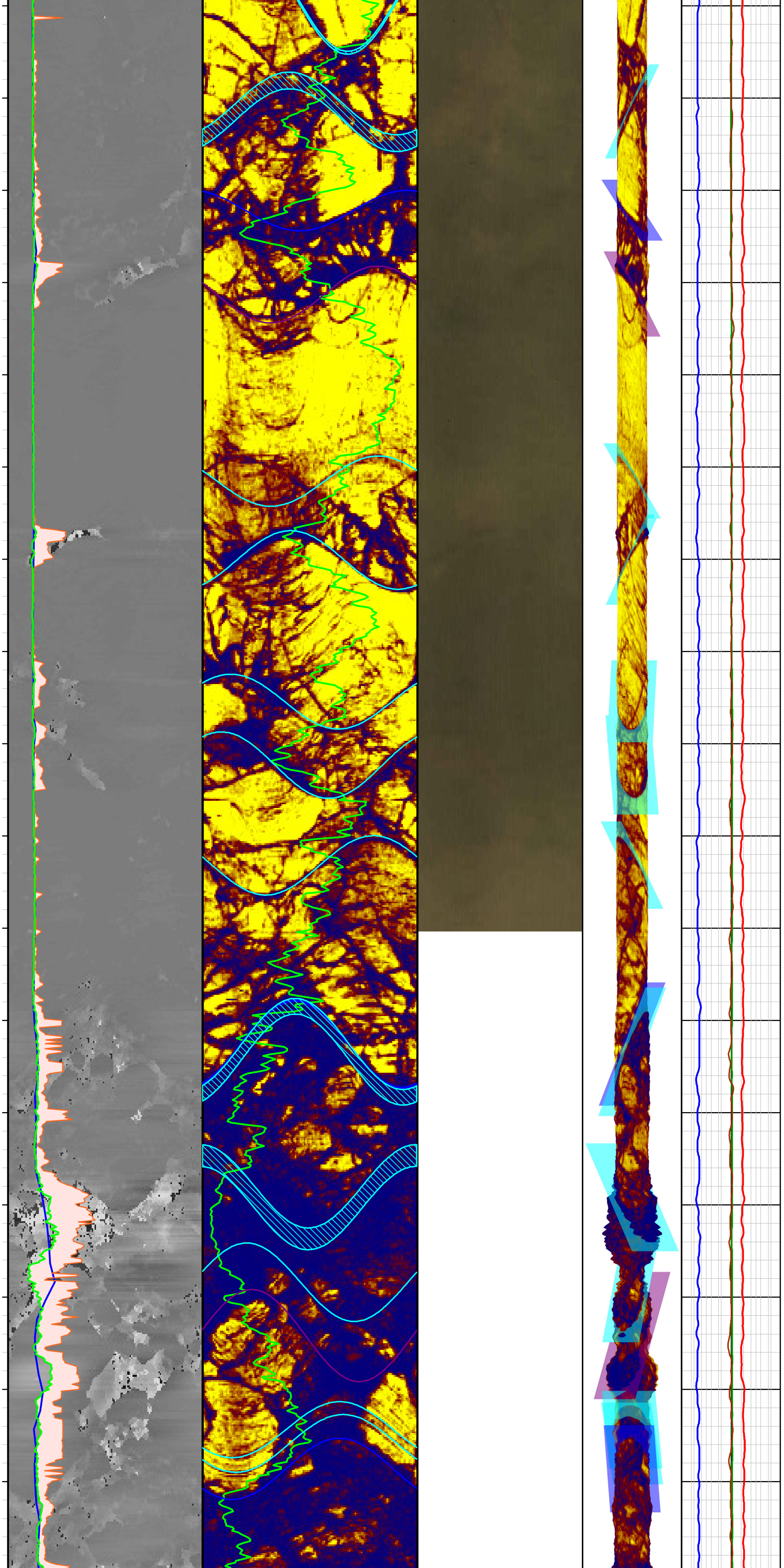
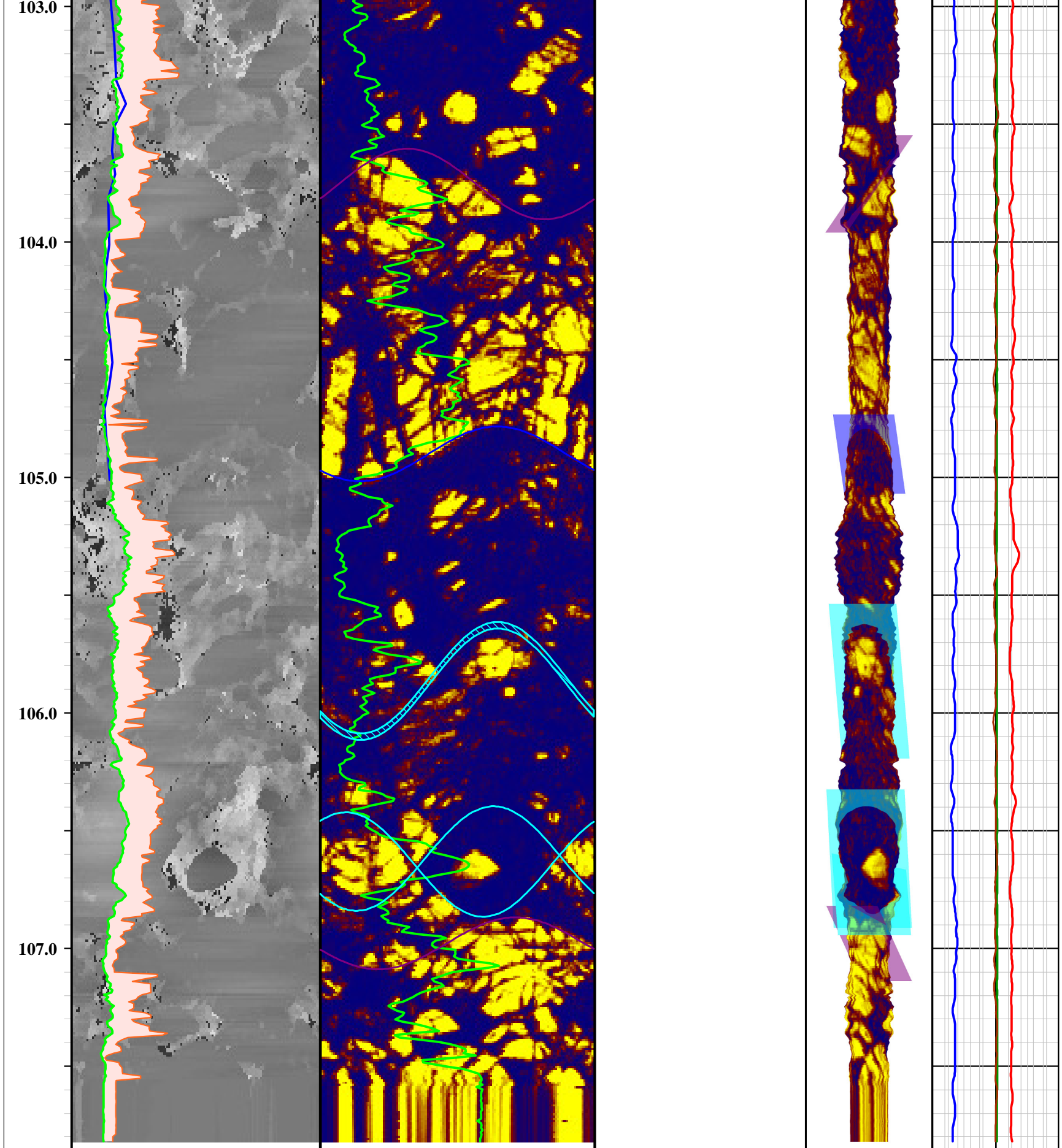




0° 90° 180° 270° 0°

Structure

0° 90° 180° 270° 0°

Breakout/Tensile

0 8000

ARI

0° 90° 180° 270° 0°

Oriented Mag North

Amplitude-Static

0° 90° 180° 270° 0°

Oriented Mag North

Amplitude-NM

0° 90° 180° 270° 0°

Oriented Mag North

Image-NM

222°

3-D View

Enlargements

3 in 10

Ave Acoustic Caliper

3 in 10

Max Acoustic Caliper

3 Inches 10

3-Arm Caliper

0° 90° 180° 270° 0°

Oriented Mag North

Centralized TT

0 Deg 5

Tilt

0 Deg 360

Azimuth

0.8 G 1.2

Gravity

40 uT 60

Mag Field

1ft:6ft

Depth

DH16-04 (GT-41) ABI40 2G Summary 77.86 to 107.82ft

ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

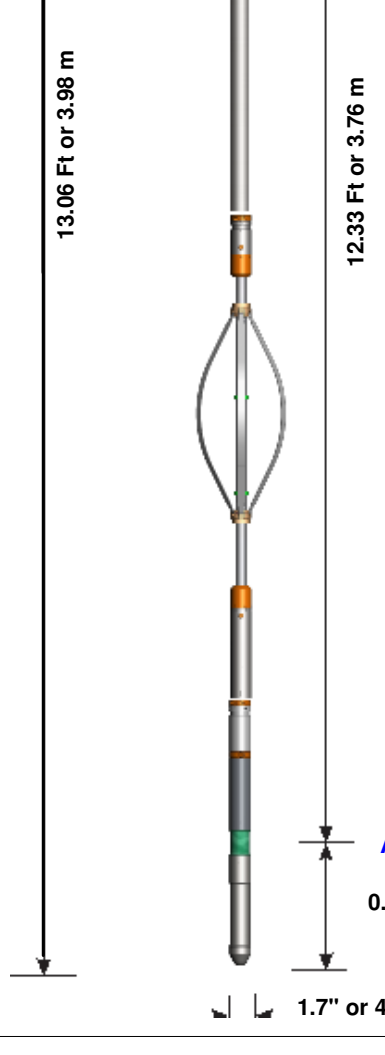
Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

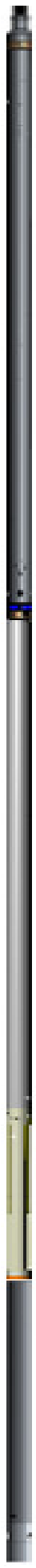
Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)



MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-41
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-39 (DH16-05)		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER		OTHER SERVICES	E-LOG
MORE: CALIPER			SONIC
LOCATION			TEMP/FLUID RES
			GAMMA

SEC		TWP		RGE	
PERMANENT DATUM			ELEVATION		K.B.
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM		D.F.
DRILLING MEAS. FROM	GROUND LEVEL				G.L.
DATE	10-18-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	4		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	250.0 FT		LEVEL		-20.0 FT
DEPTH-LOGGER	247.0 FT		MAX. REC. TEMP.		25.4 DEG. C
BTM LOGGED INTERVAL	247.0 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	SURFACE		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK		TRUCK #H-001
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL		TOOL STRING/SN		ALT QL ABI40 2G SN 143009
WITNESSED BY	BOART LONGYEAR		LOG TIME:ON SITE/OFF SITE		8:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	HWT	STEEL	SURFACE	20 FT
2	HQ	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	10-18-16	**Date**	10-18-16	**Date**	10-18-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	2CAA-F	**Tool Model**	E-LOG 40 GRP	**Tool Model**	ALT 4 RX SONIC
Tool SN	2299	**Tool SN**	5514	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	247.0 FT	**To**	247.0 FT	**To**	247.0 FT
Recorded By	E. BEAM	**Recorded By**	K. MITCHELL	**Recorded By**	K. MITCHELL
Truck No	H-001	**Truck No**	H-001	**Truck No**	H-001
Operation Check	10-16-16	**Operation Check**	10-18-16	**Operation Check**	10-18-16
Calibration Check	10-16-16	**Calibration Check**	10-18-16	**Calibration Check**	N/A
Time Logged	9:00 AM	**Time Logged**	10:00 AM	**Time Logged**	10:30 AM

Date	10-18-16	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143009	**Tool SN**		**Tool SN**	
From	40.0 FT	**From**		**From**	
To	247.0 FT	**To**		**To**	
Recorded By	K. MITCHELL	**Recorded By**		**Recorded By**	
Truck No	H-001	**Truck No**		**Truck No**	
Operation Check	10-16-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	11:00 AM	**Time Logged**		**Time Logged**	

Additional Comments:

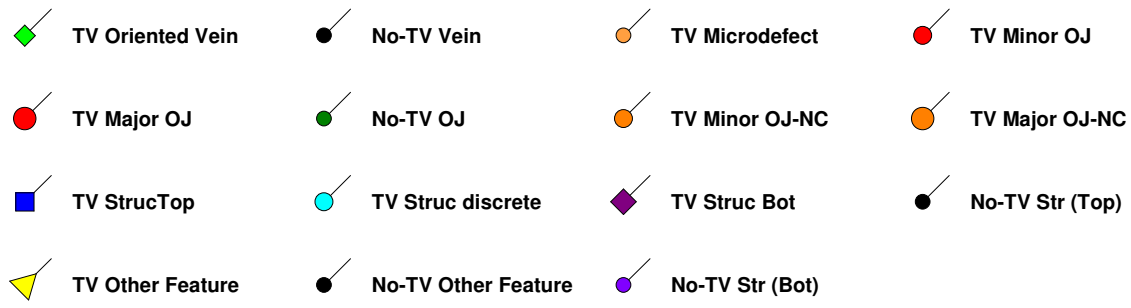
Caliper Arms Used: 9" ARMS **Calibration Points:** 4" & 8"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend



Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-05 (GT-39) ABI40 2G Summary ~44 to 245.40ft

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 10

Max Acoustic Caliper — 2 in 10

Ave Acoustic Caliper — 2 in 10

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 2100

Breakout/Tensile — 0° 90° 180° 270° 0°

Structure — 0° 90° 180° 270° 0°

H16-05 (GT-39) ABI40 2G Summary ~

0° 90° 180° 270° 0°

3-D View — 0°

Tilt — 0 Deg 5

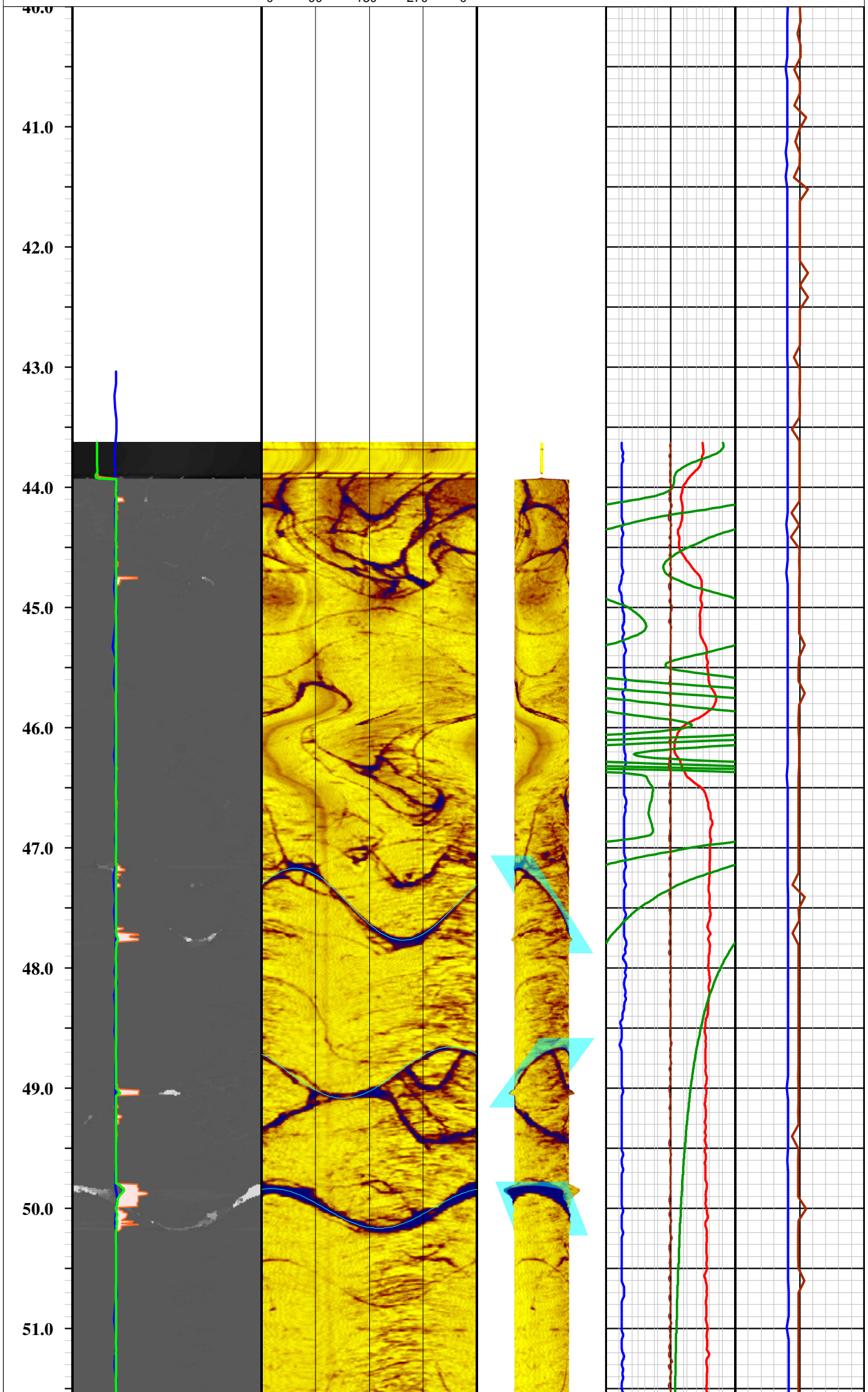
Azimuth — 0 Deg 360

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Temperature — 20 Deg C 30

2ft Diff - Temp — -1 1



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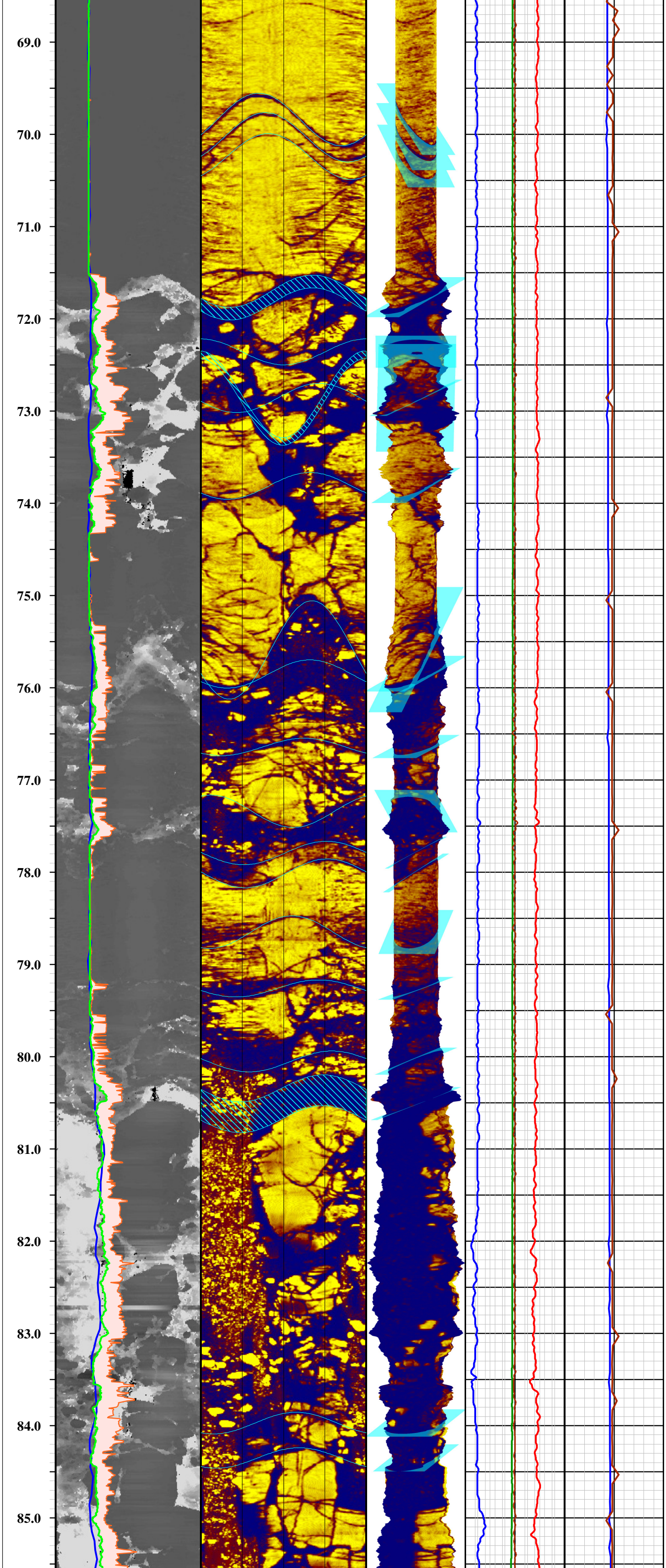
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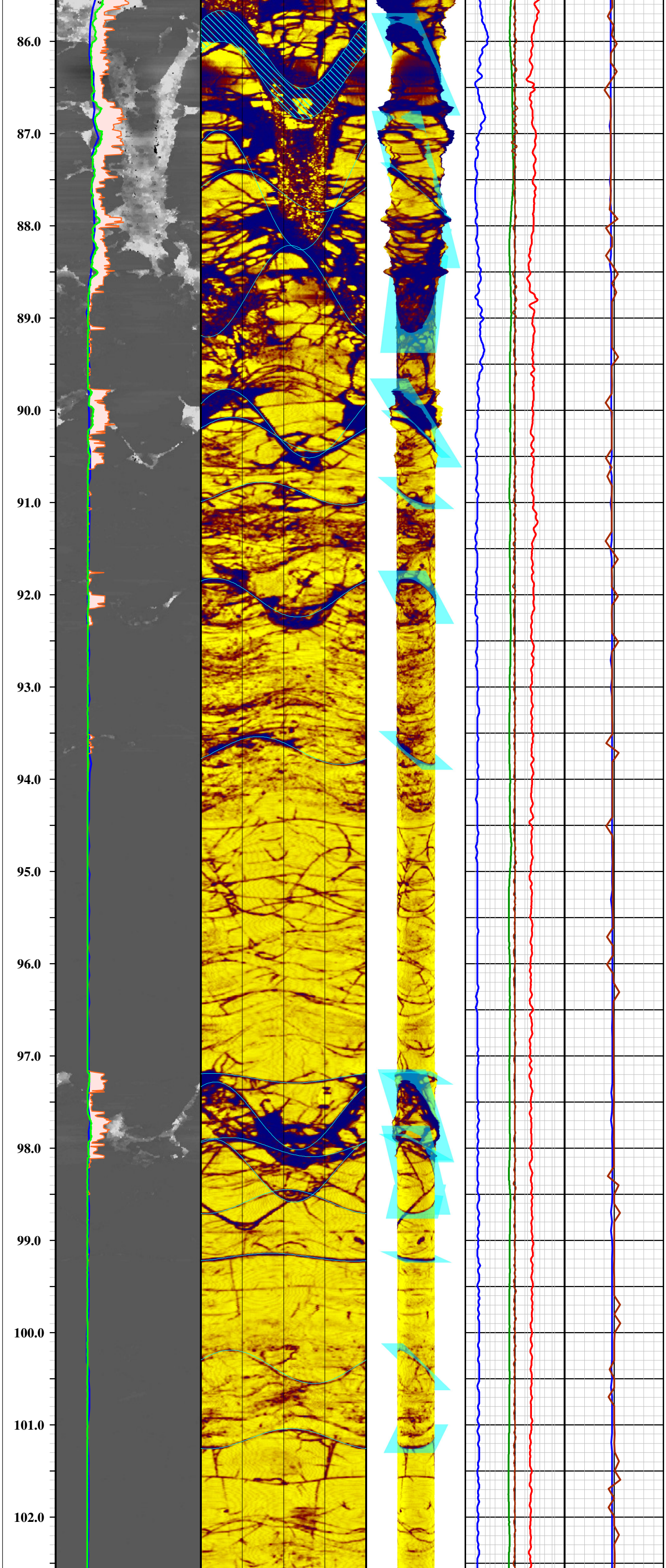
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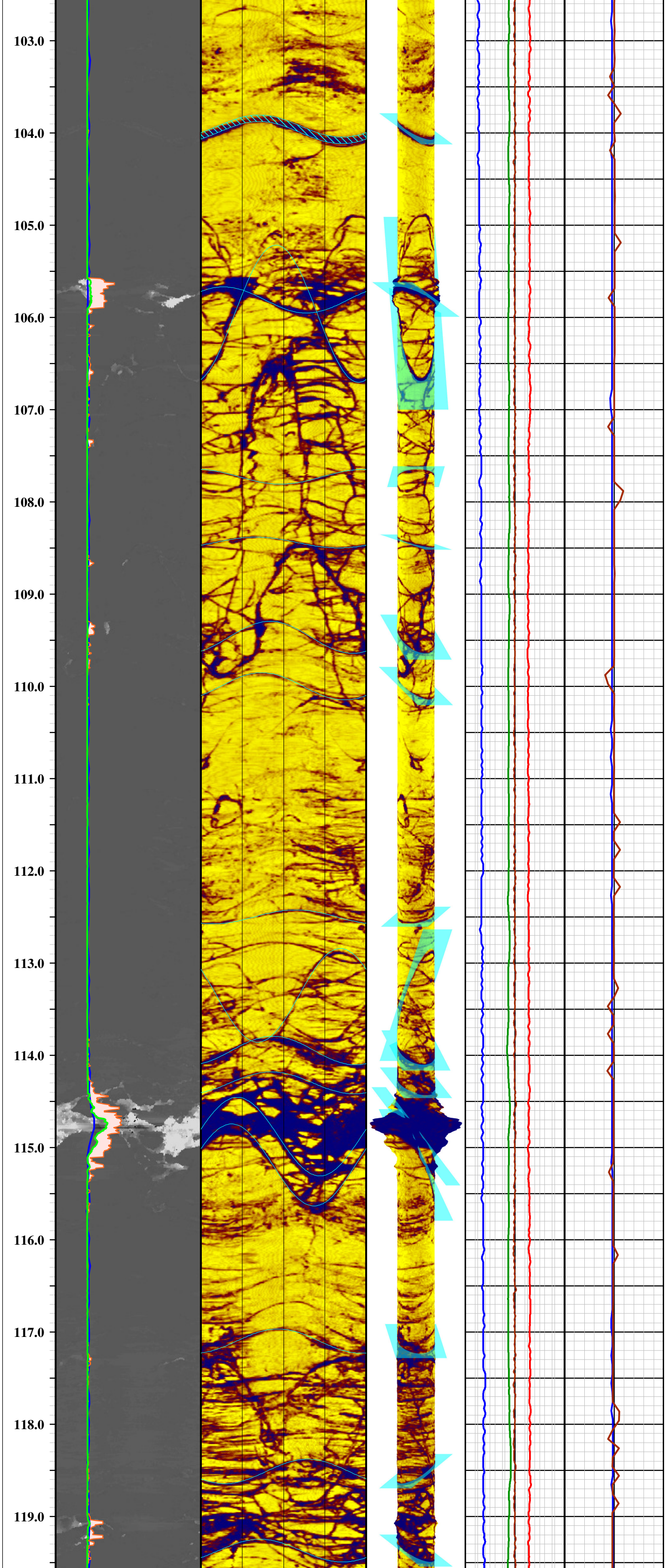
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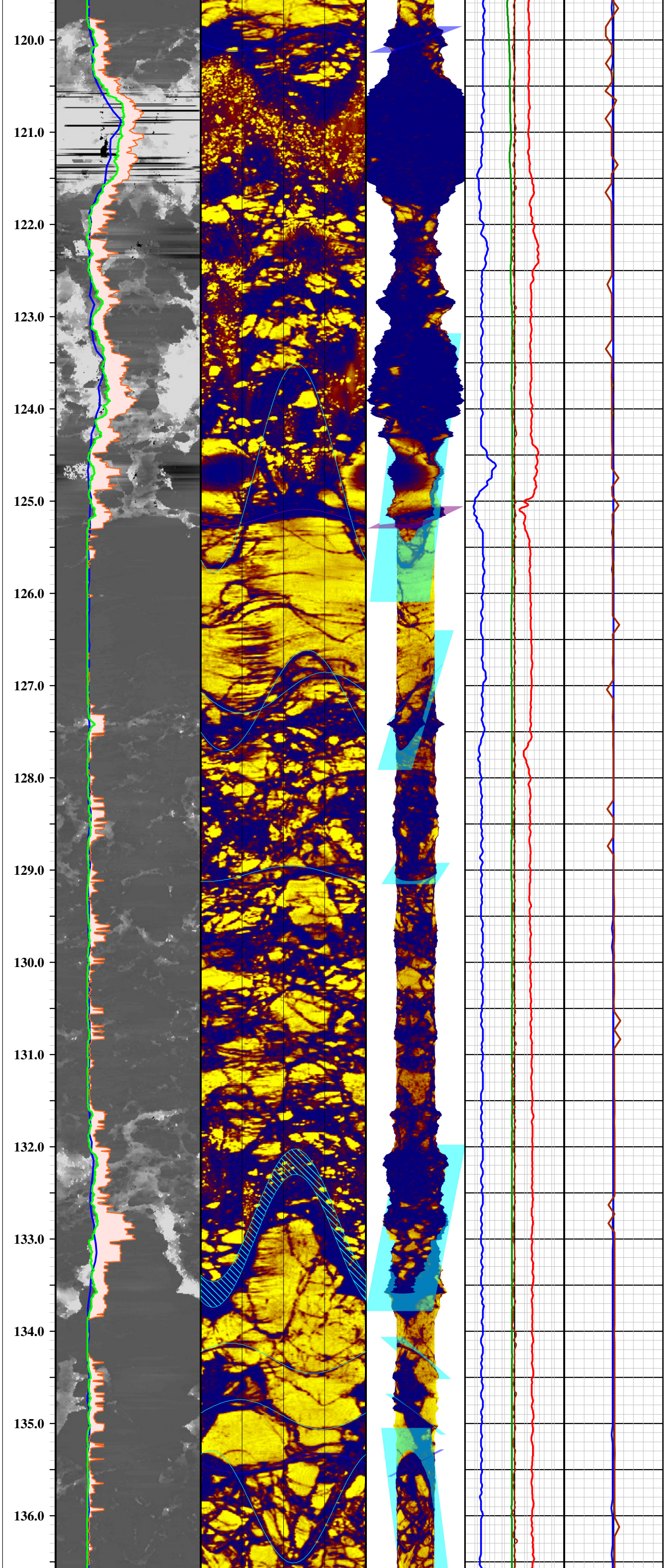
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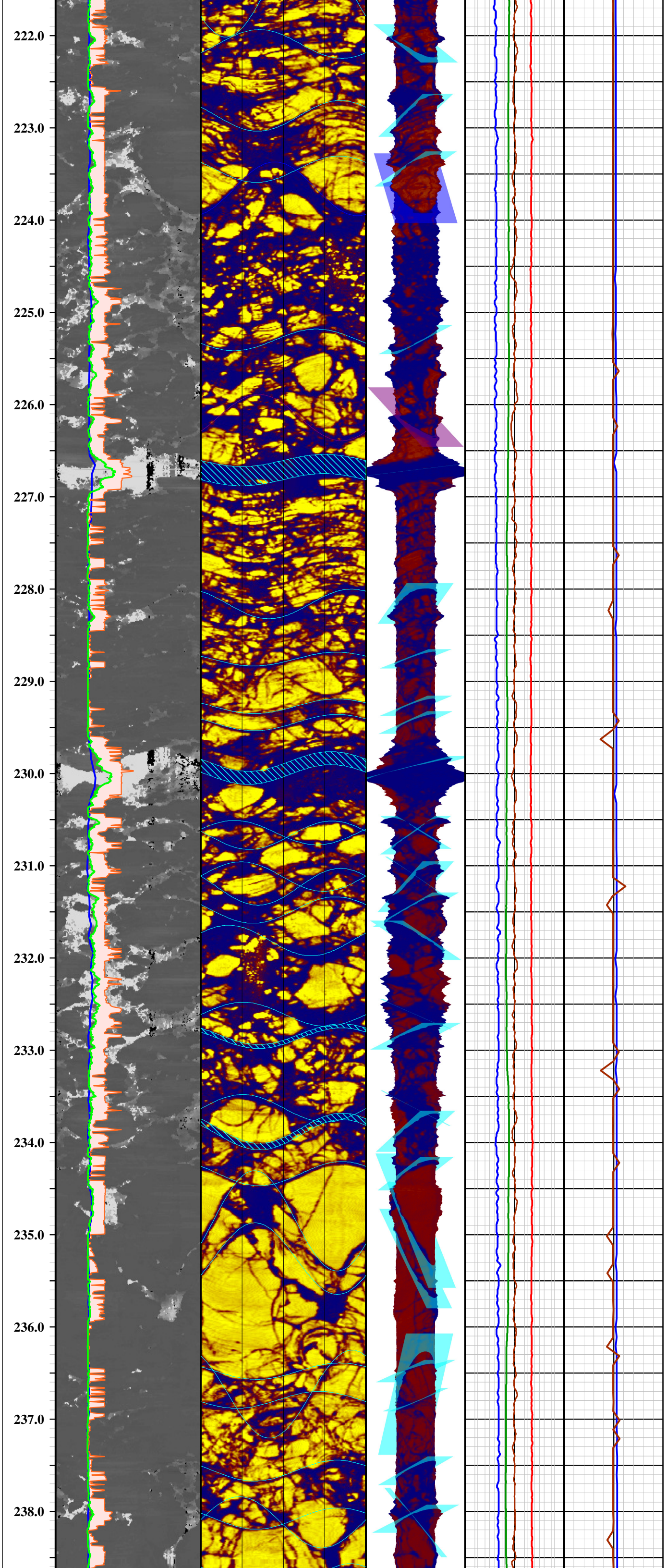
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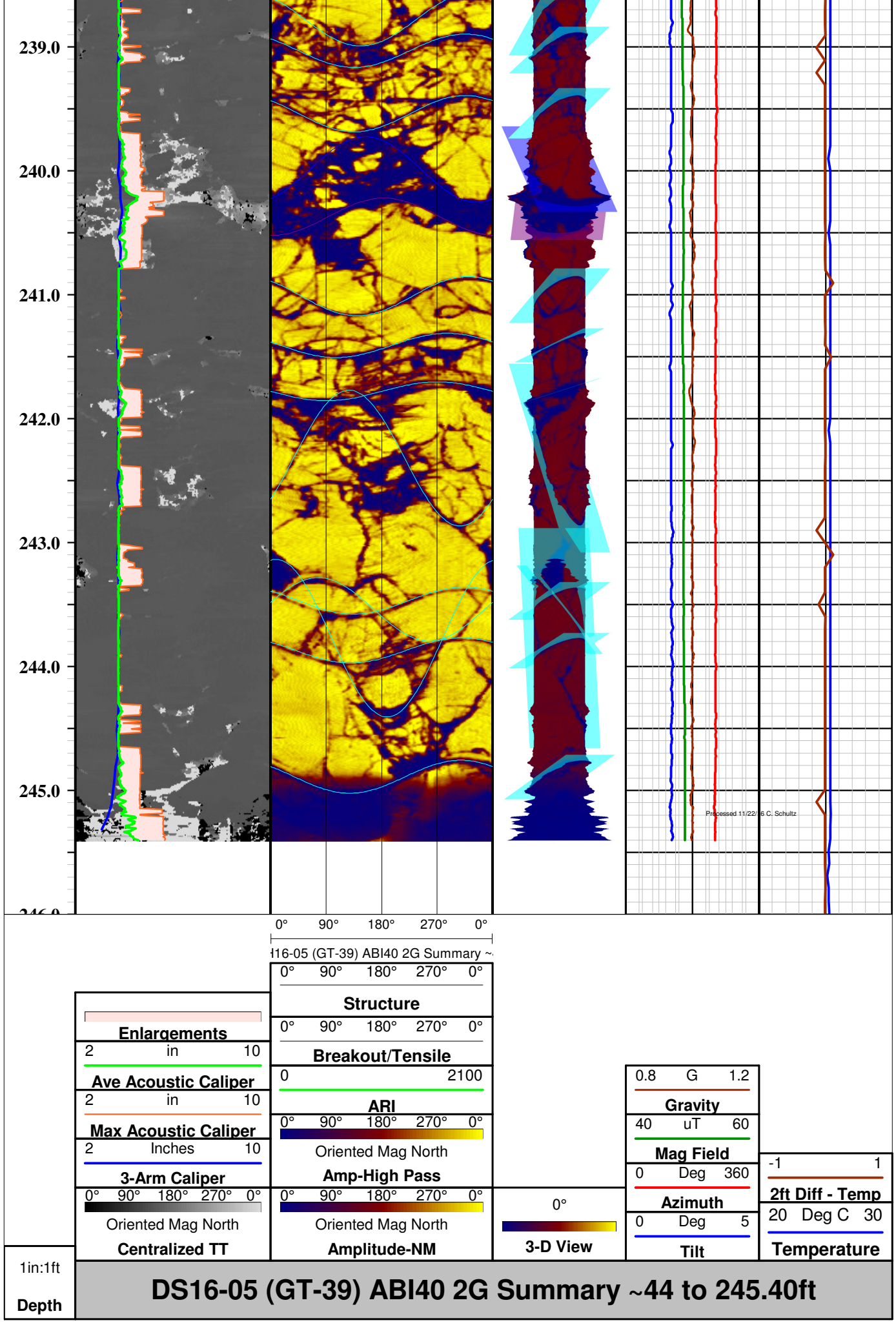
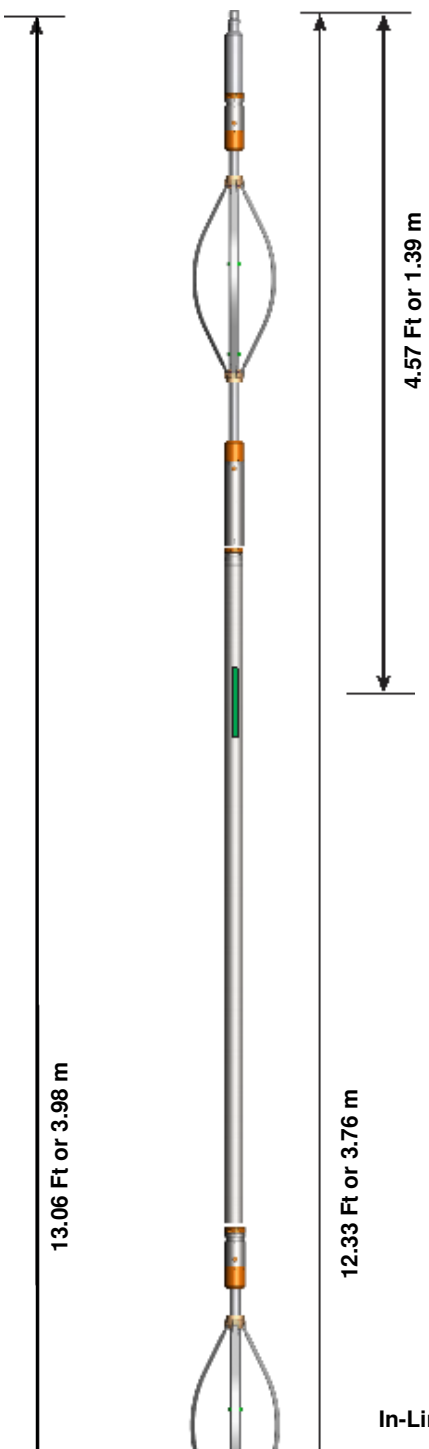


ABI Legend	
Mnemonics	**Description**

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

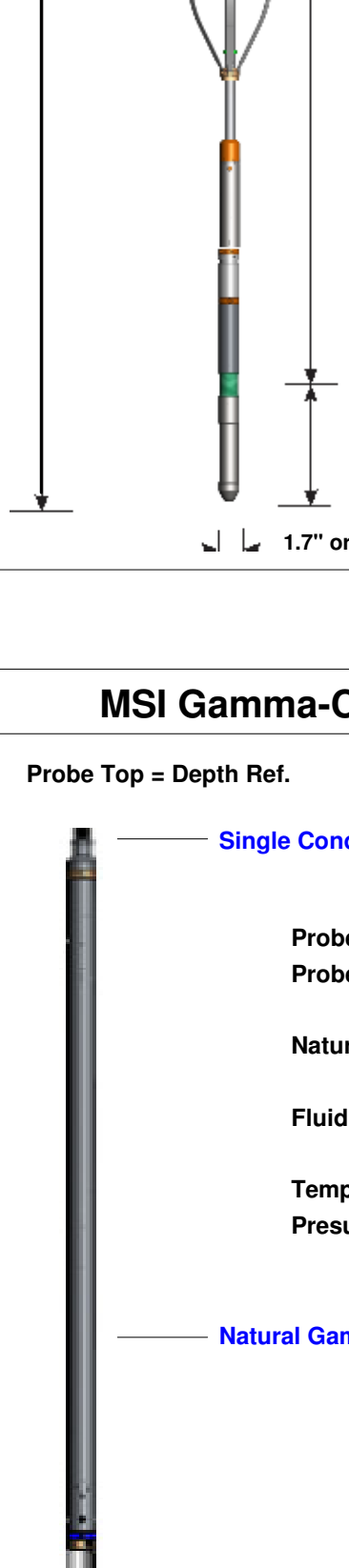
Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs



MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-39
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY RESOLUTION COPPER MINING

WELL ID GT-21 (DH16-06)

FIELD NEAR WEST

COUNTY PINAL STATE ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

LOCATION SEC TWP RGE

OTHER SERVICES
E-LOG
DUAL INDUCTION
OPTICAL TELEVIEWER
SONIC
TEMPERATURE
FLUID RESISTIVITY

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	10-23-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	1 & 5		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	249 FT		LEVEL		~ 103 FT
DEPTH-LOGGER	249 FT		MAX. REC. TEMP.		32.38 Deg C
BTM LOGGED INTERVAL	249 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	101 FT		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	M. QUINONES / E. TURNER		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	GOLDER		LOG TIME:ON SITE/OFF SITE		2:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	10 FT	HWT	STEEL	SURFACE	10 FT
2	HQ	10 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	10-23-16	**Date**	10-23-16	**Date**	10-26-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	COMBO TOOL	**Tool Model**	QL DIL	**Tool Model**	ALT QL OBI40 2G
Tool SN	4953	**Tool SN**	6261	**Tool SN**	152511
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	249 FT	**To**	249 FT	**To**	98 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-23-16	**Operation Check**	10-23-16	**Operation Check**	10-23-16
Calibration Check	10-23-16	**Calibration Check**	10-23-16	**Calibration Check**	N/A
Time Logged	2:20 PM	**Time Logged**	2:45 PM	**Time Logged**	3:10 PM

Date	10-23-16	**Date**	10-23-16	**Date**	10-23-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT 4RX SONIC	**Tool Model**	ALT QL ABI40 2G	**Tool Model**	E-LOG 40GRP
Tool SN	4572	**Tool SN**	143003	**Tool SN**	5514
From	102 FT	**From**	103 FT	**From**	103 FT
To	249 FT	**To**	249 FT	**To**	249 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-23-16	**Operation Check**	10-23-16	**Operation Check**	10-23-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	10-23-16
Time Logged	3:25 PM	**Time Logged**	3:50 PM	**Time Logged**	4:10 PM

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

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GT-21 ABI40 & OBI40 2G Summary

Depth 1in:1ft

Radius Image — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 9000

ABI Features — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Image_10.4'-38.0' — Non Oriented, Rot'd by 123.0' Deg — 0° 90° 180° 270° 0°

OBI Features — DIPA — 0° 90° 180° 270° 0°

Tilt-ABI — 0 Deg 8

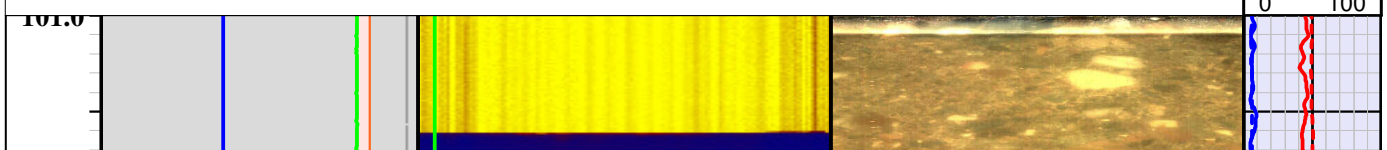
Azi-ABI — 0 360

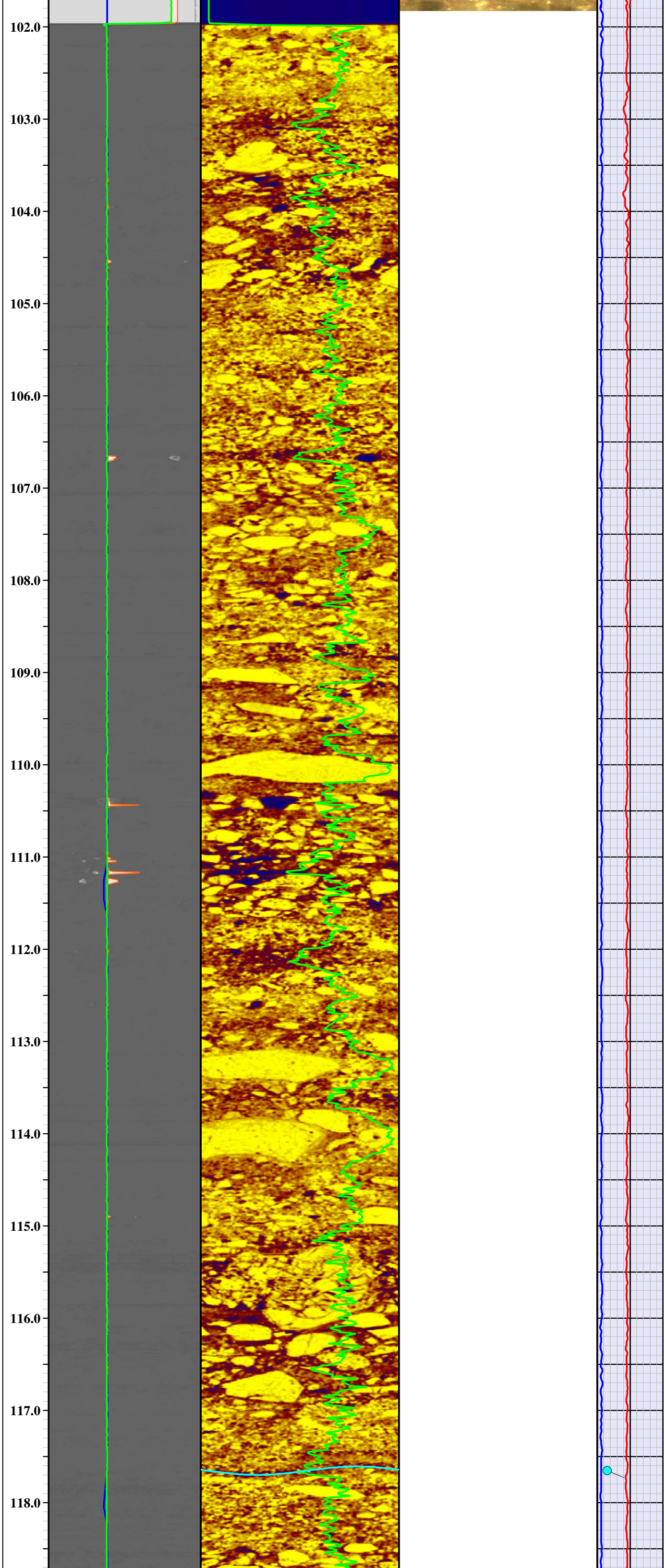
Azi-OBI — 0 360

Tilt-OBI — 0 Deg 8

Tad - ABI — DIPT — 0 100

Tad- OBI — DIPT — 0 100

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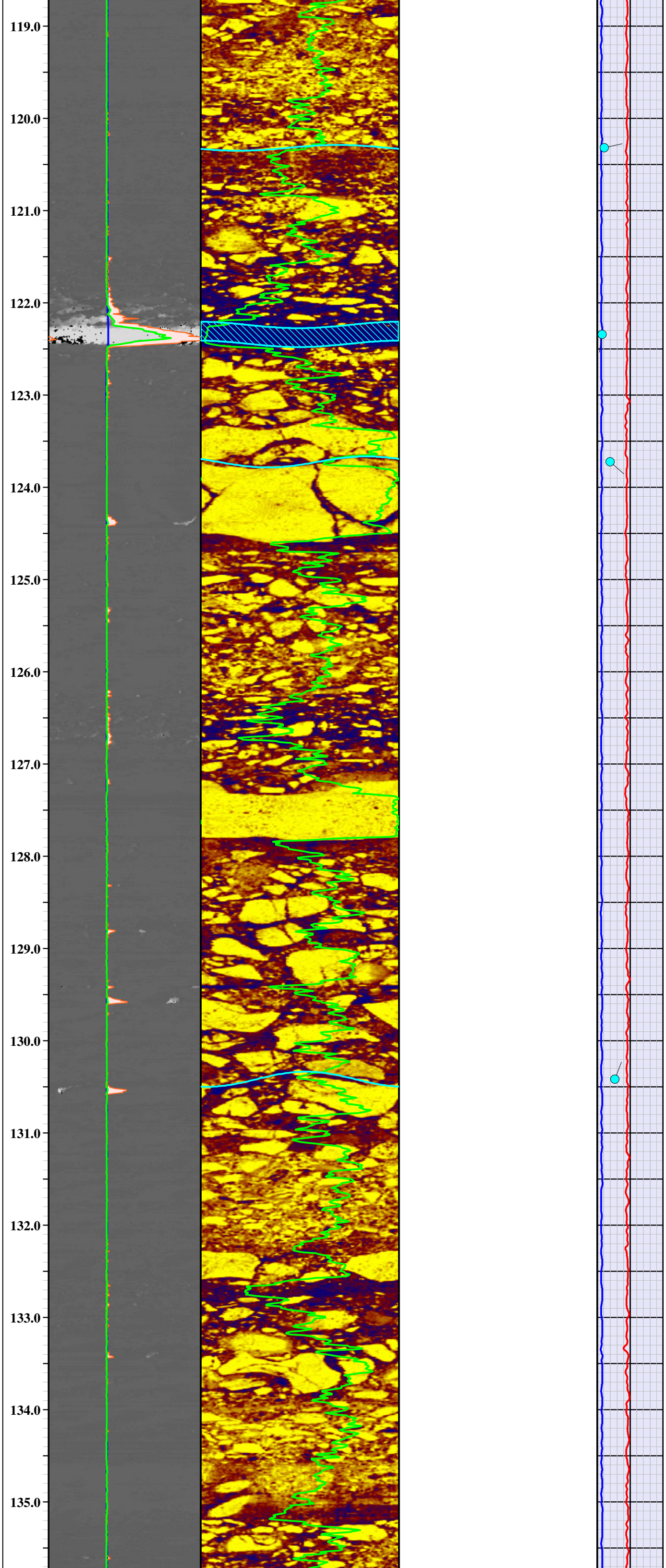
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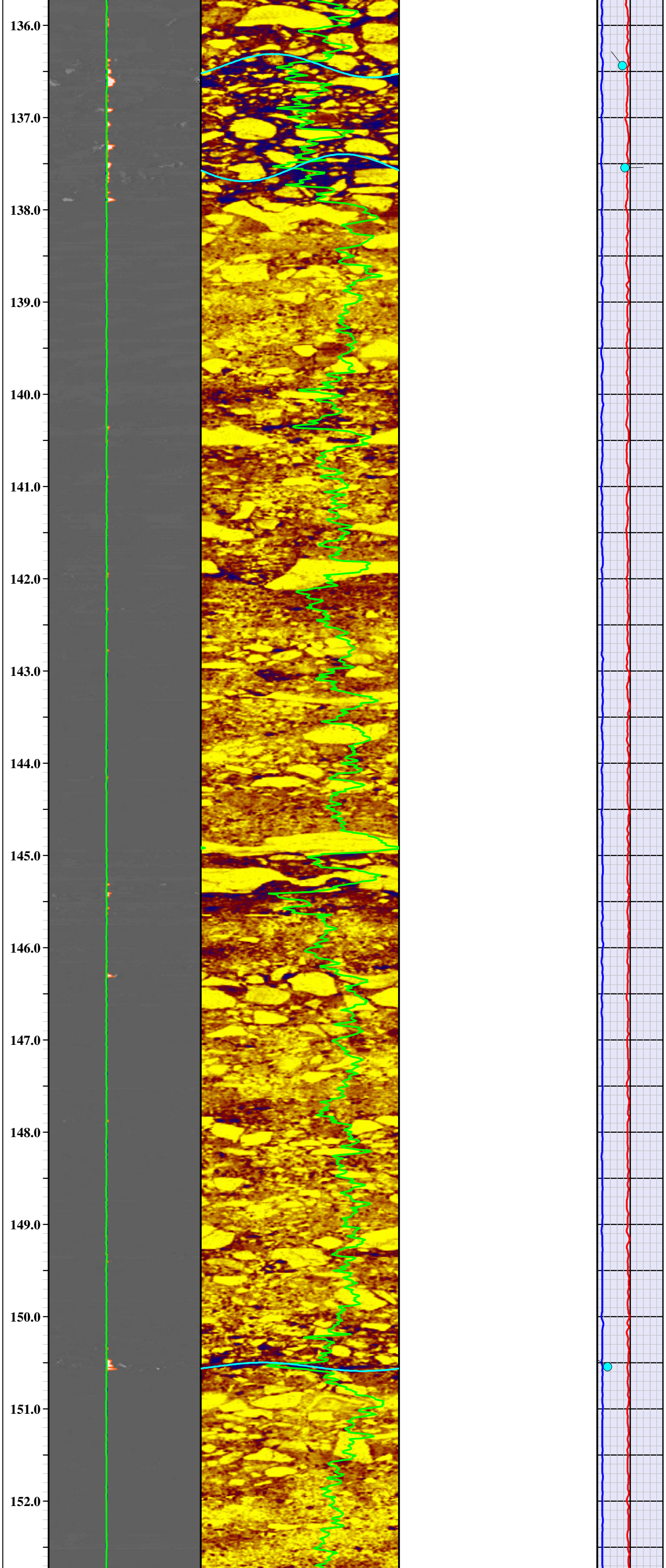
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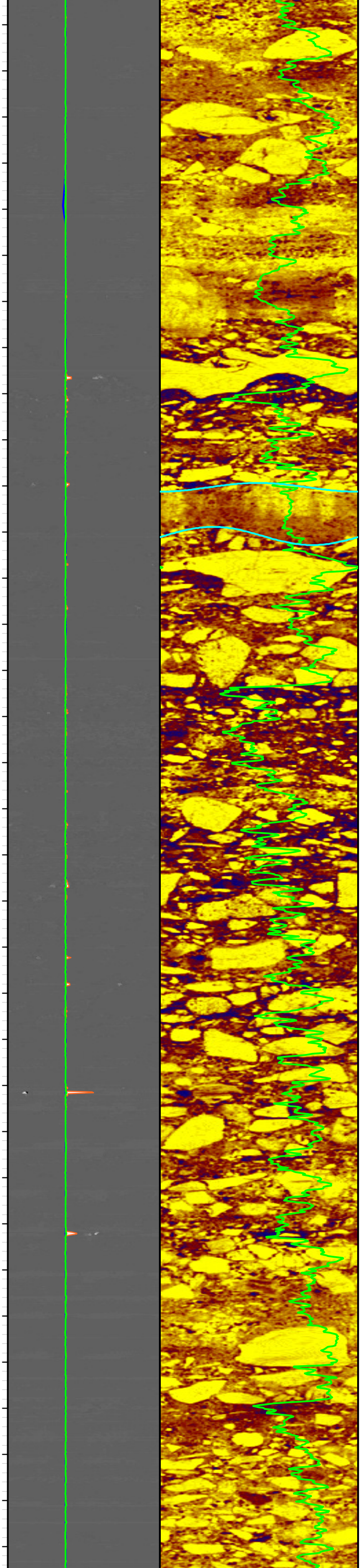

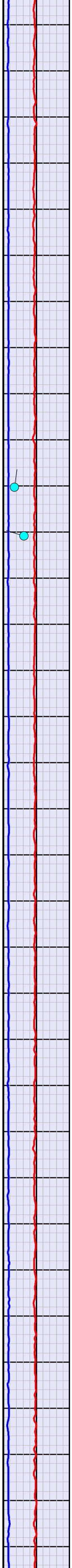

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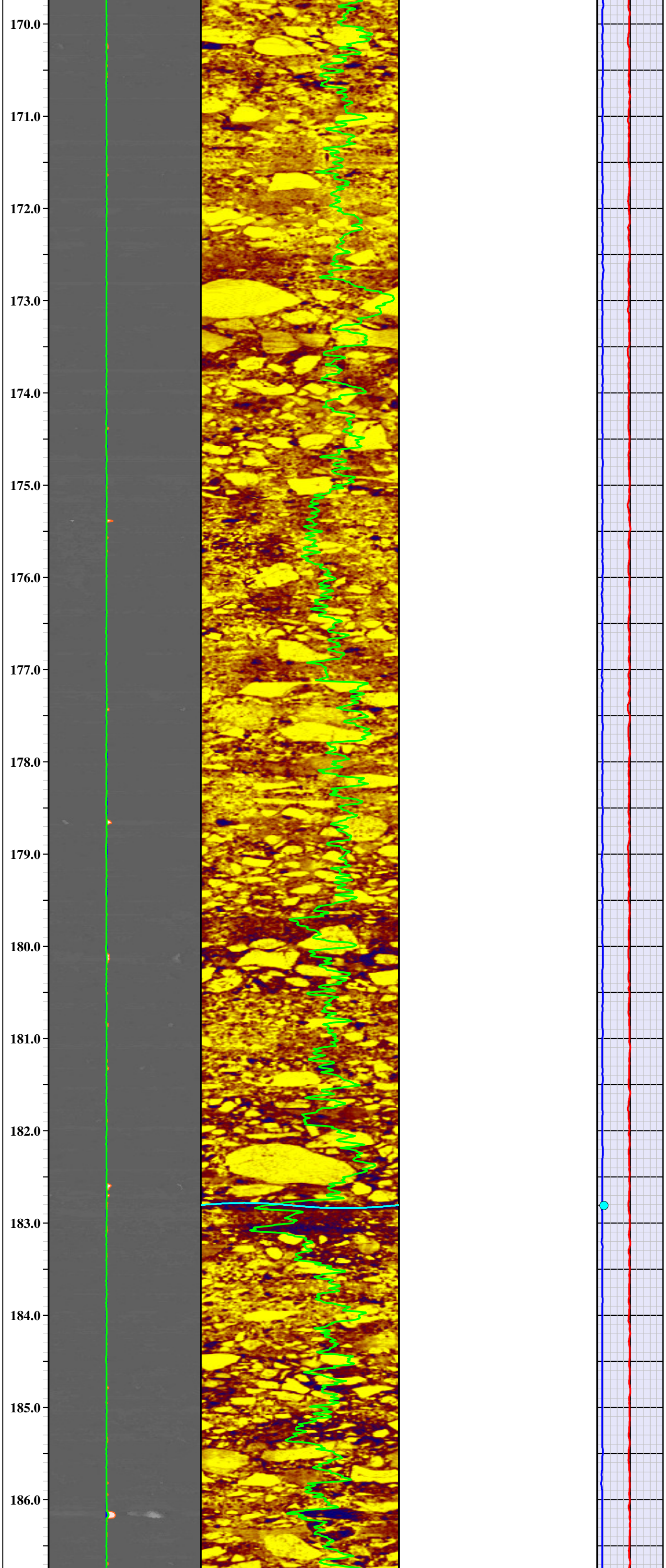

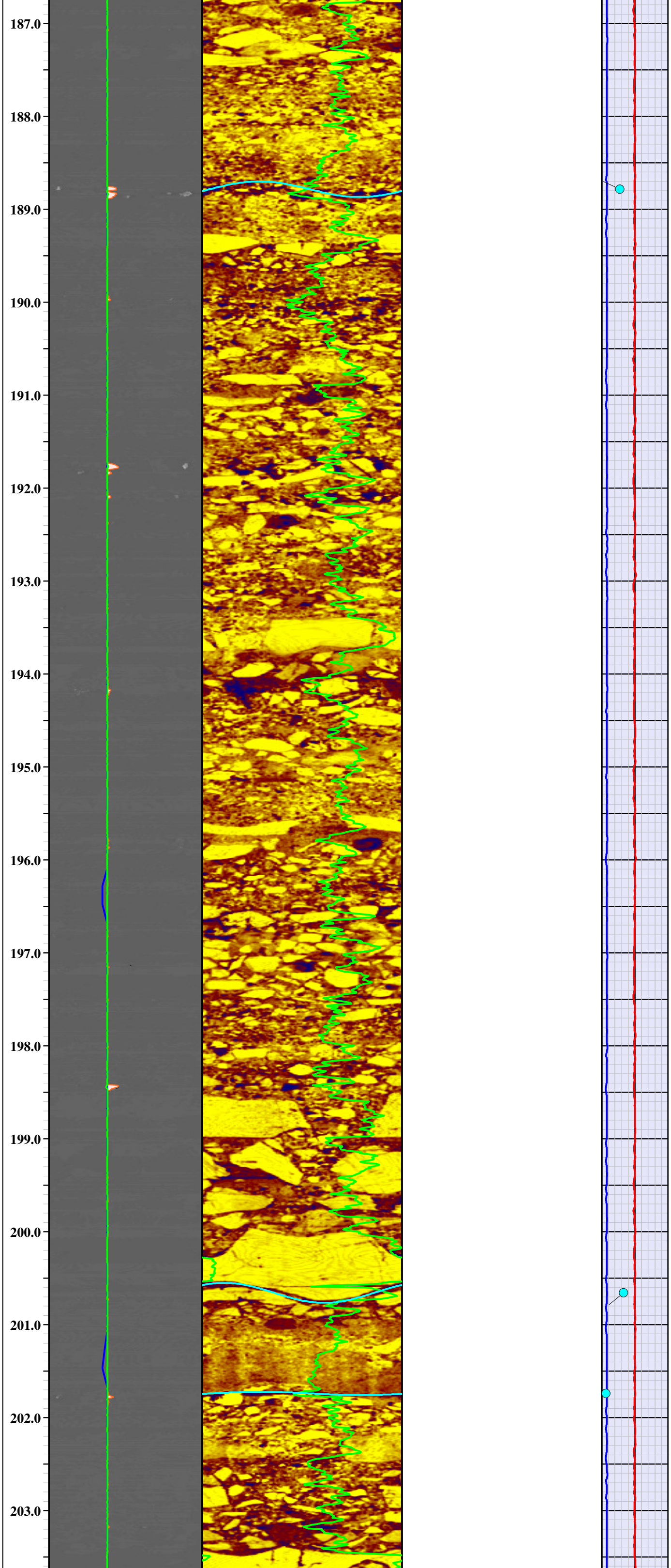
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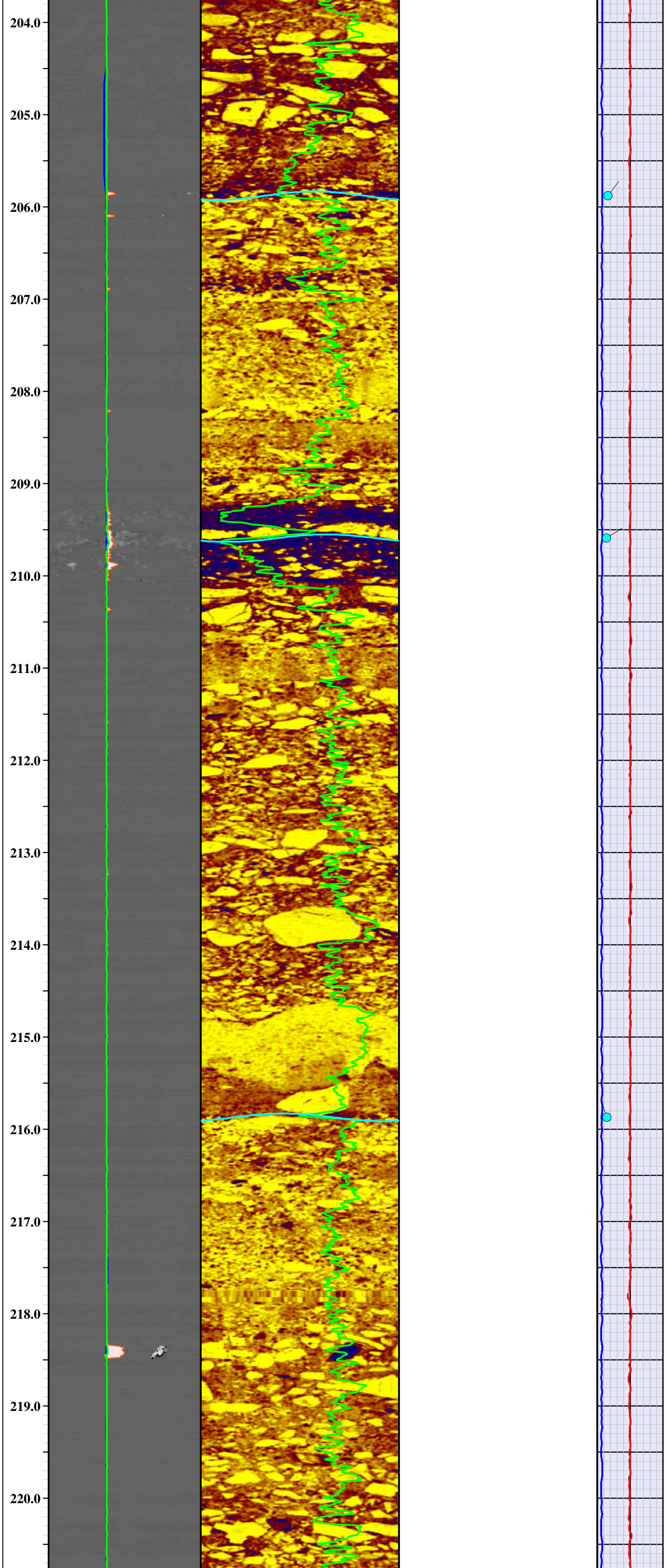
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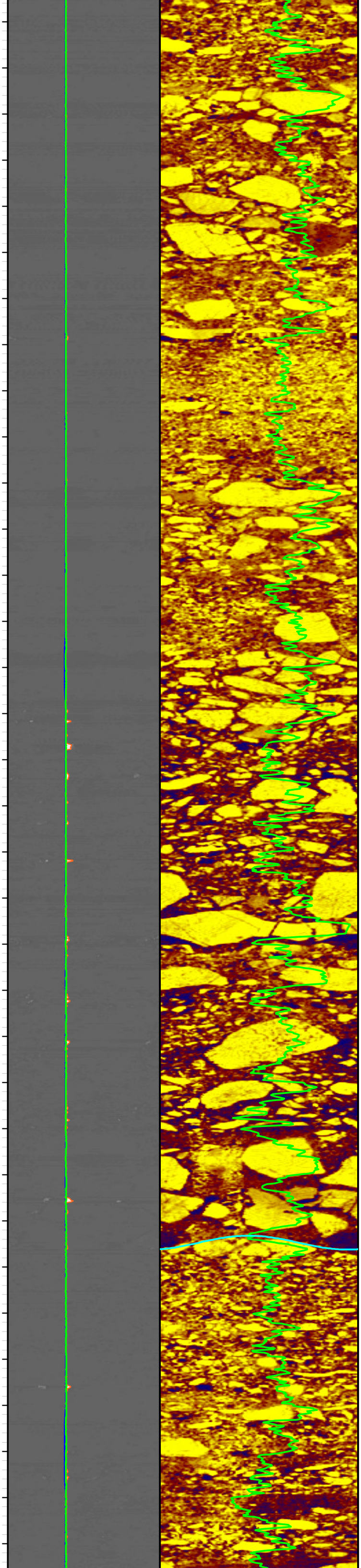

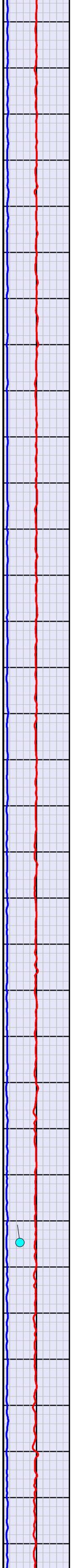

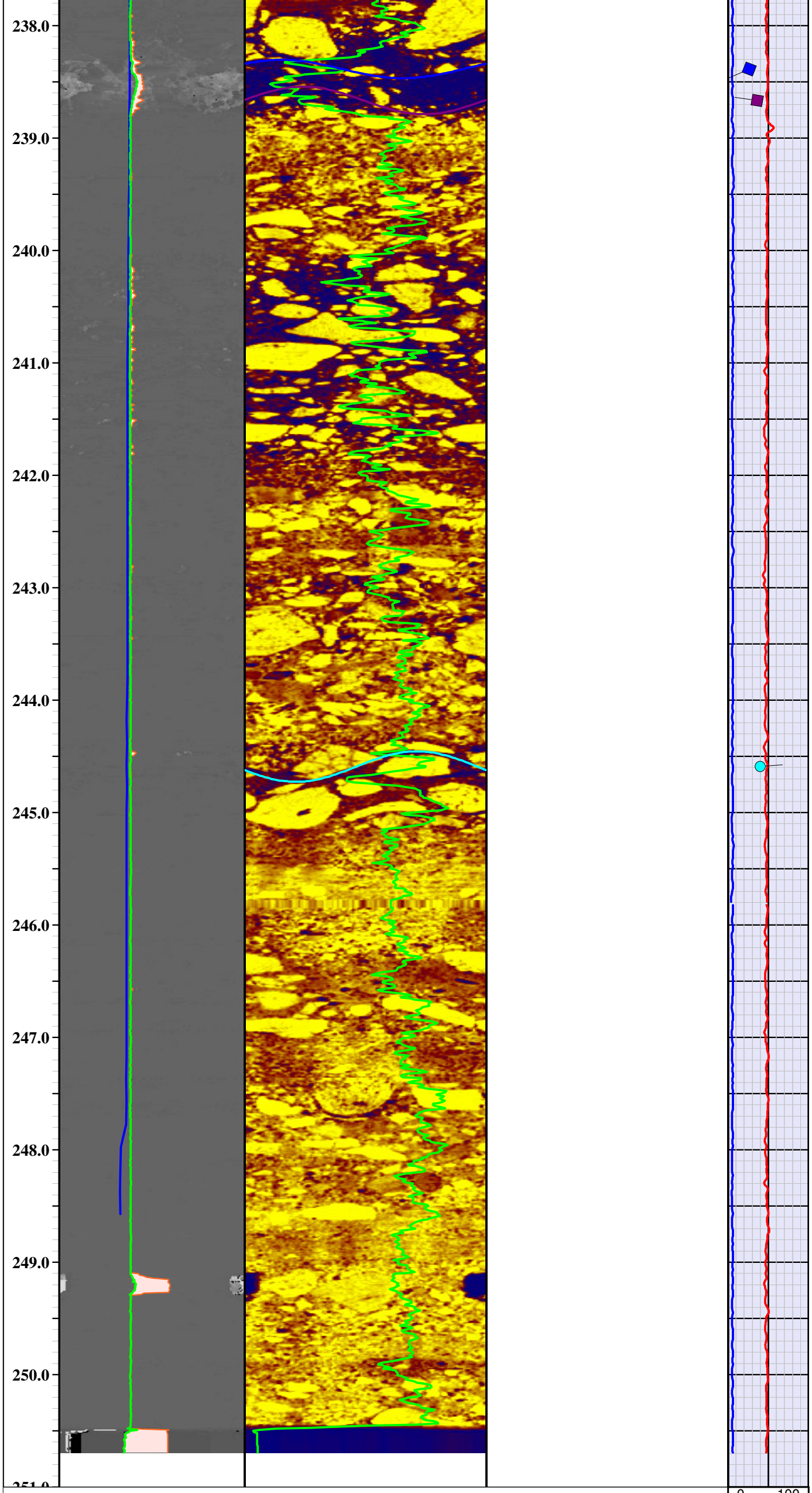

		0° 90° 180° 270° 0° DIPA **ABI Features**	0° 90° 180° 270° 0° DIPA **OBI Features**	0 100 DIPT **Tad- OBI**
		0 9000 **ARI**	0° 90° 180° 270° 0° Non Oriented, Rot'd by 123.0' Deg **Image_10.4'-38.0'**	0 100 DIPT **Tad - ABI**
	Enlargements	0° 90° 180° 270° 0° Oriented Mag North **Amp-High Pass**	0° 90° 180° 270° 0° Oriented Mag North **Image-NM**	0 Deg 8 **Tilt-OBI**
	2 Inches 7 **Ave Acoustic Caliper**	0° 90° 180° 270° 0° Oriented Mag North **Amplitude-Static**		0 360 **Azi-OBI**
	2 Inches 7 **Max-Acoustic Caliper**		0.8 G 1.2 **Gravity**	0 360 **Azi-ABI**
	2 Inches 7 **3-Arm Caliper**	0° 90° 180° 270° 0° Oriented Mag North **Amplitude-NM**	0° **3-D View**	0 Deg 8 **Tilt-ABI**
	0° 90° 180° 270° 0° Oriented Mag North **Radius Image**		40 uT 60 **Mag Field**	
1in:1ft **Depth**	**GT-21 ABI40 & OBI40 2G Summary**			

QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)



3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-21
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	GT-20 (DH16-07)				
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS:	**ACOUSTIC TELEVIEWER**			OTHER SERVICES	GAMMA
MORE:	**3-ARM CALIPER**				TEMPERATURE
LOCATION					FLUID RESISTIVITY
					E-LOGS
					SONIC
	SEC	TWP	RGE		
PERMANENT DATUM		ELEVATION		K.B.	
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM		D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

DATE	10-27-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	1 & 4		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	249 FT.		LEVEL		-34 FT.
DEPTH-LOGGER	249 FT.		MAX. REC. TEMP.		33.62 DEG. C
BTM LOGGED INTERVAL	249 FT.		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	30 FT.		SAMPLE INTERVAL		0.01 FT.
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	KYLE - GOLDER		LOG TIME:ON SITE/OFF SITE		1:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	15 FT.	HWT	STEEL	SURFACE	15 FT.
2	HQ	15 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	10-27-16	**Date**	10-27-16	**Date**	10-27-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	COMBO TOOL	**Tool Model**	E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5514	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	249 FT.	**To**	249 FT.	**To**	249 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-26-16	**Operation Check**	10-26-16	**Operation Check**	10-26-16
Calibration Check	10-26-16	**Calibration Check**	10-26-16	**Calibration Check**	N/A
Time Logged	2:00 P.M.	**Time Logged**	2:15 P.M.	**Time Logged**	2:30 P.M.

Date	10-27-16	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143003	**Tool SN**		**Tool SN**	
From	30 FT.	**From**		**From**	
To	249 FT.	**To**		**To**	
Recorded By	A. OLSON	**Recorded By**		**Recorded By**	
Truck No	310	**Truck No**		**Truck No**	
Operation Check	10-26-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	2:50 P.M.	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

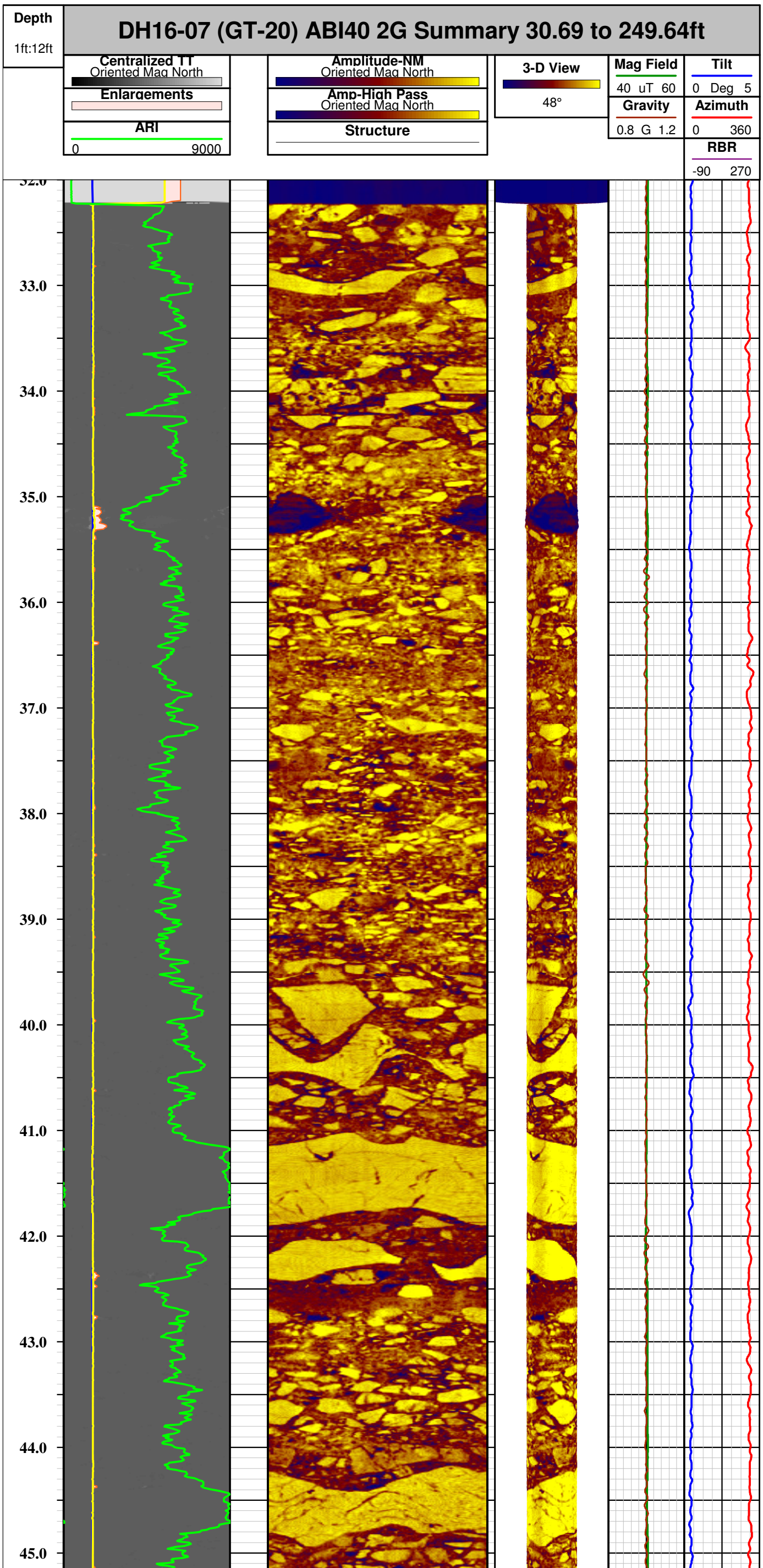
Acoustic Image Features Legend

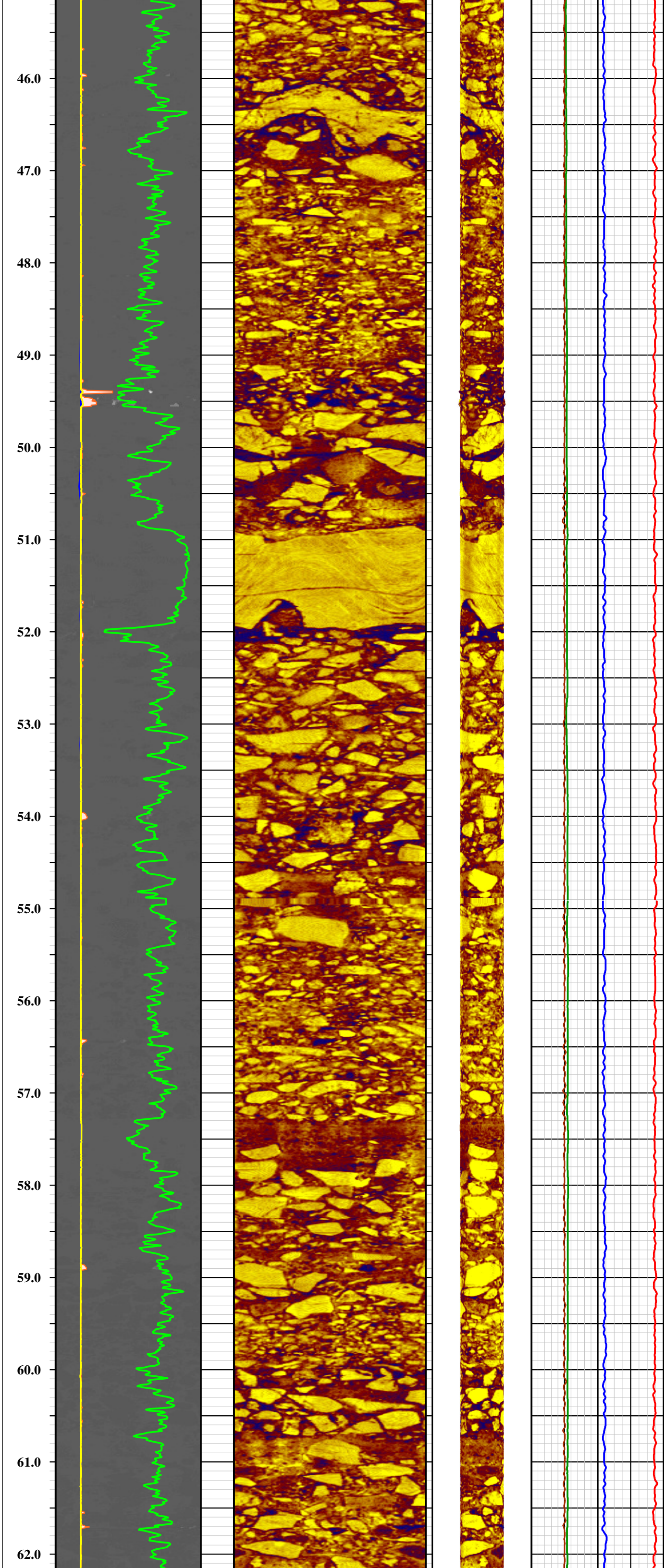
TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

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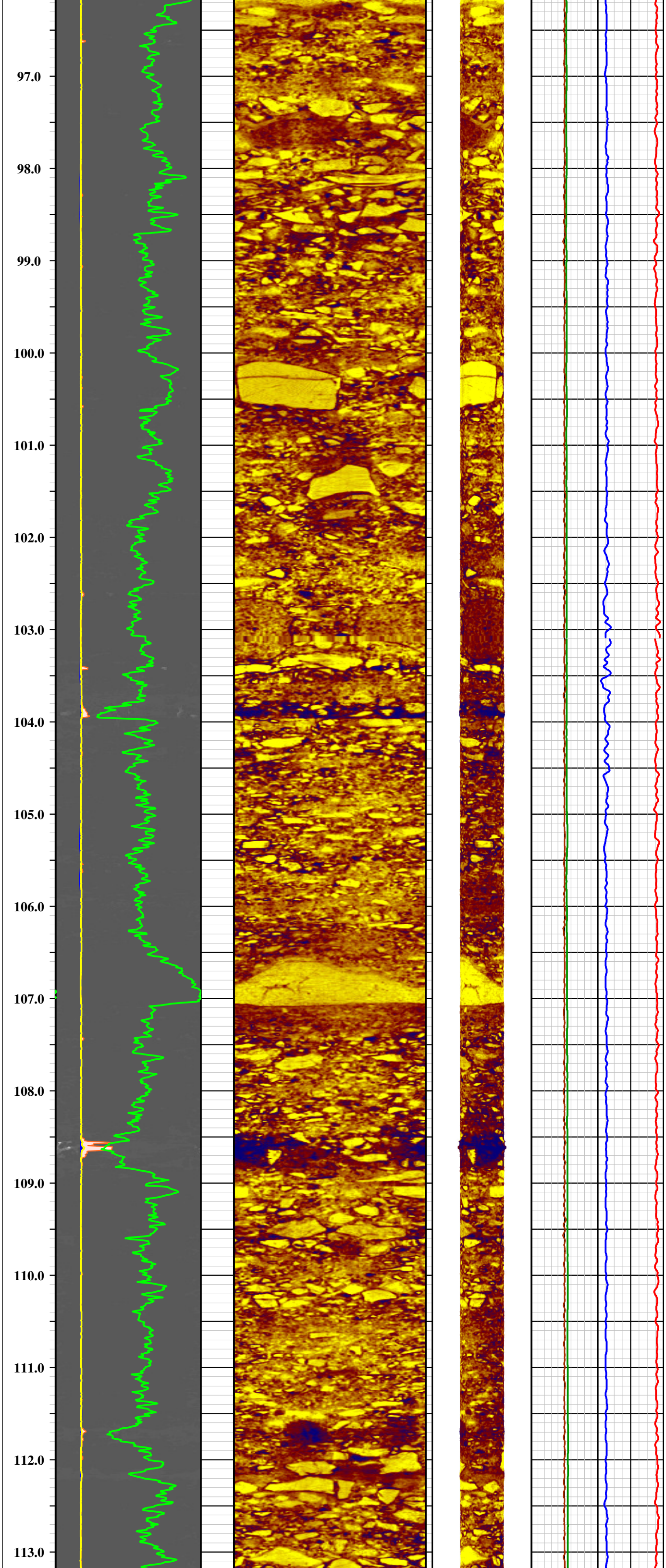
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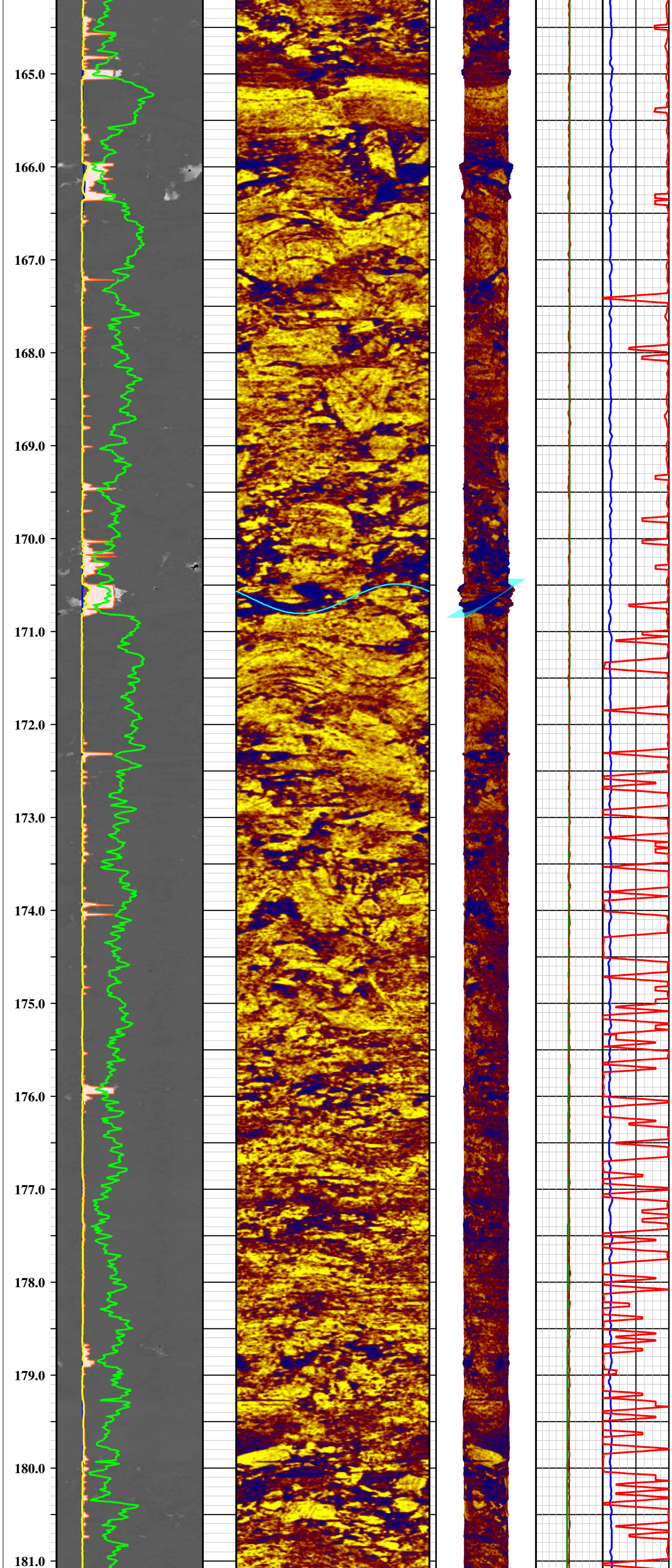
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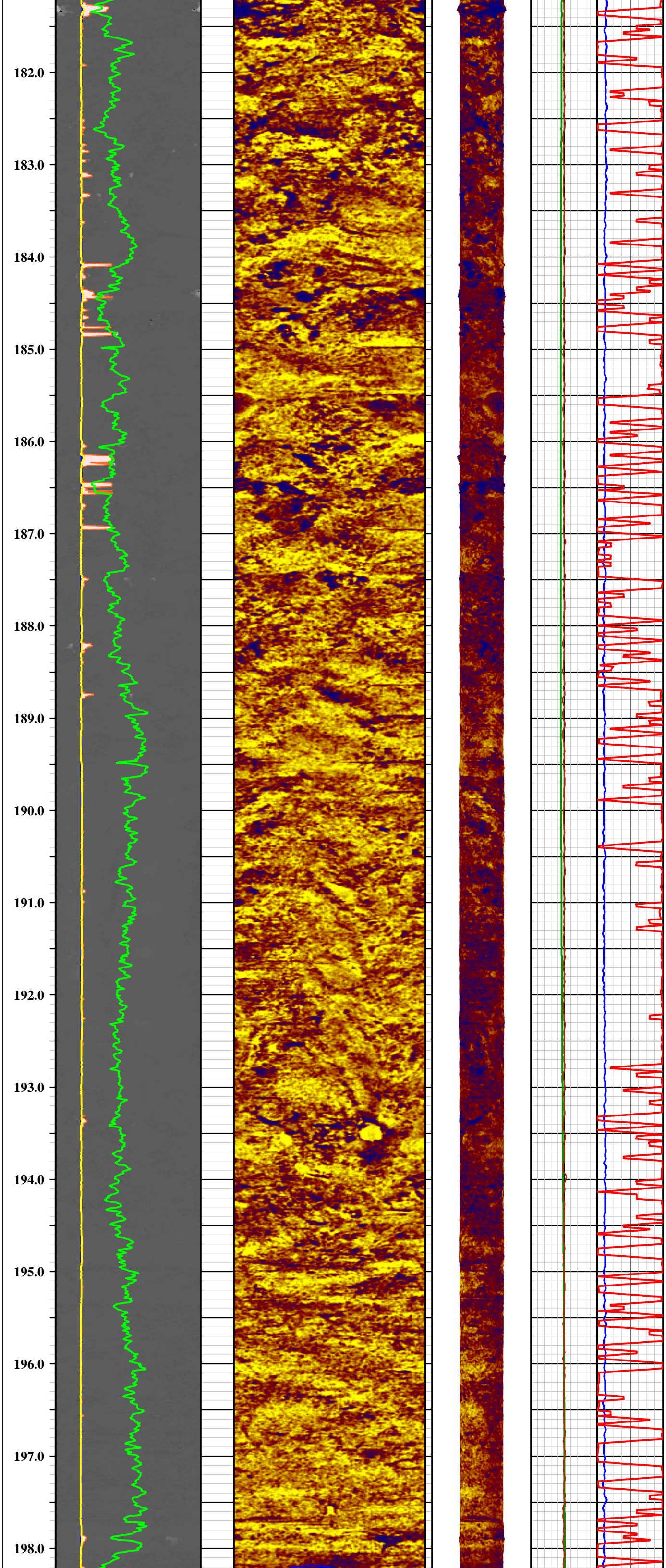
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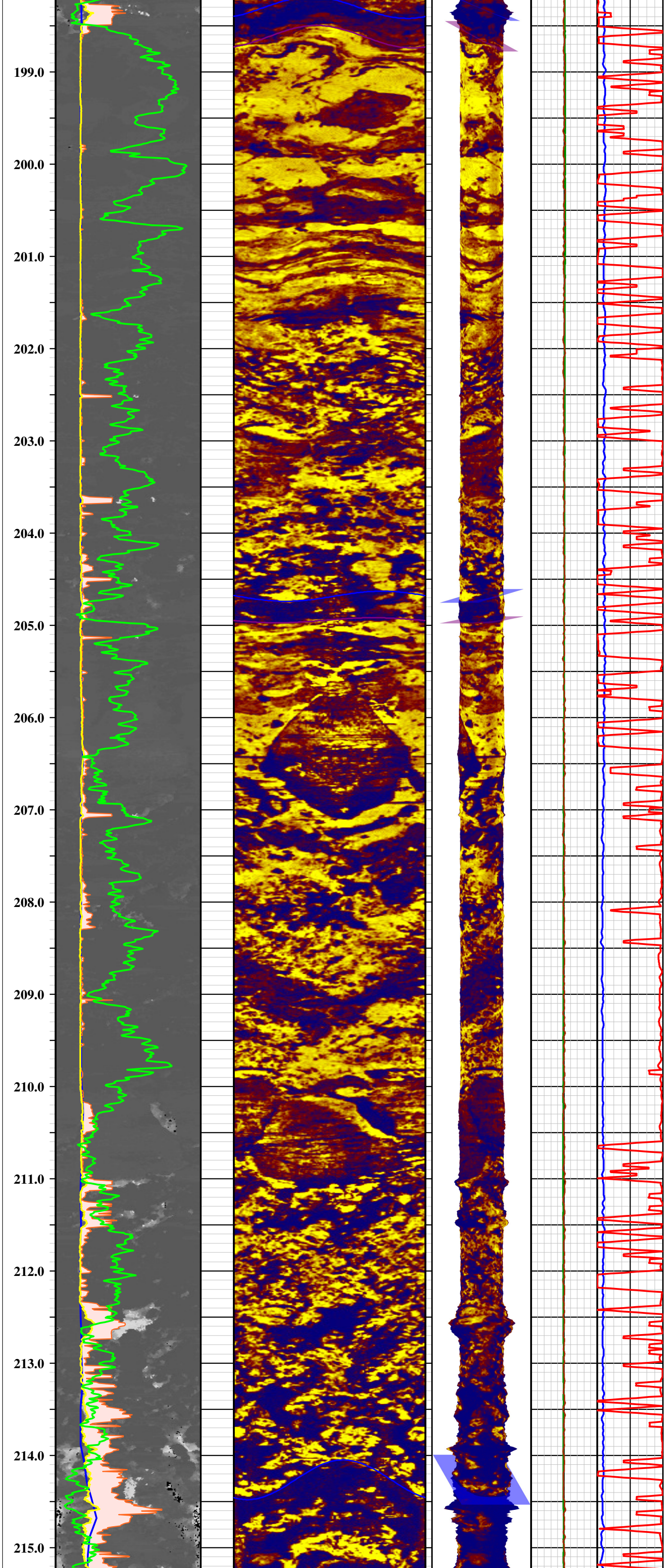
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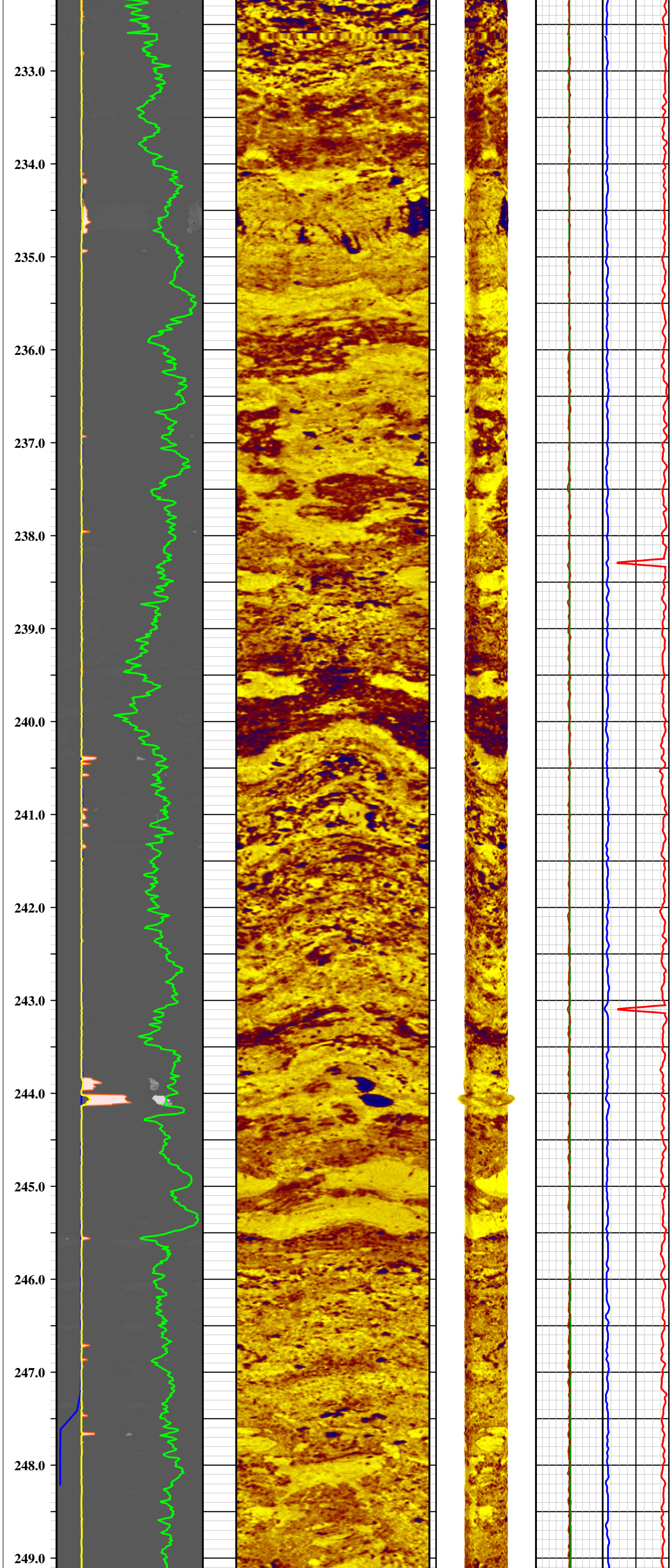
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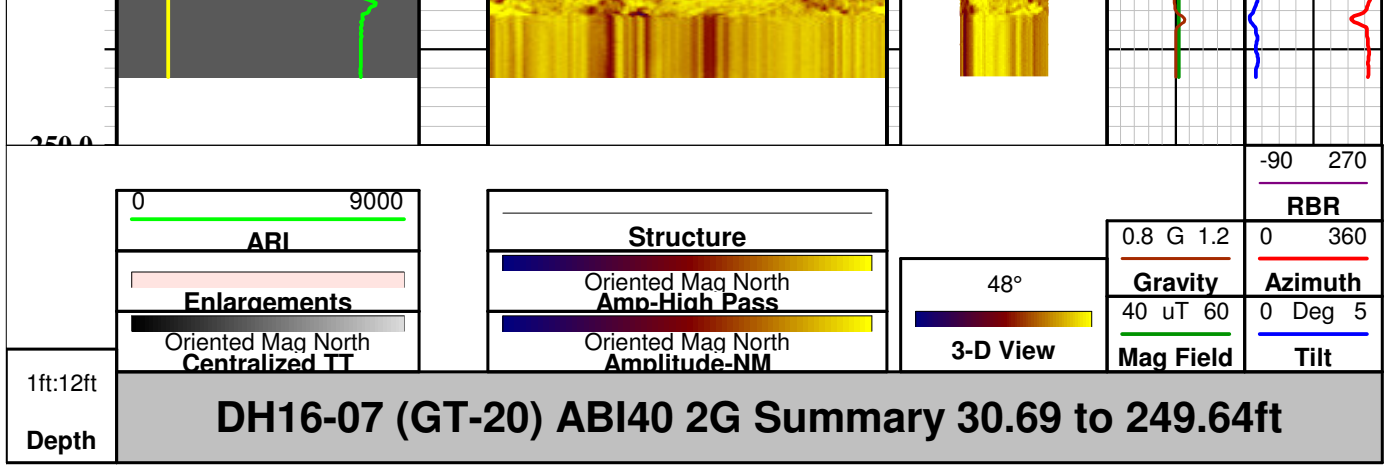


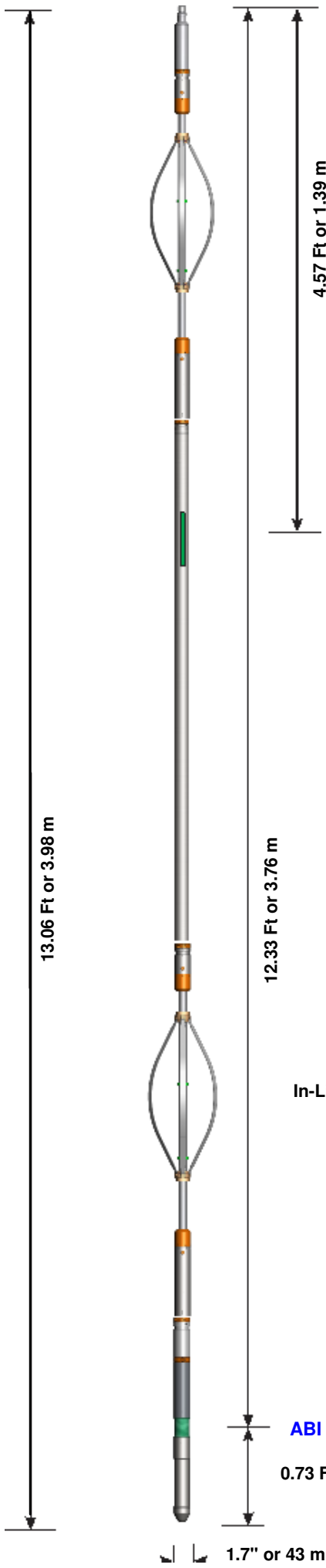
ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

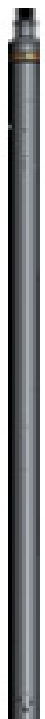
Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

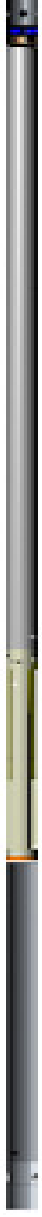
Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)



NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-20 (DH16-07)
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-15 / DH16-08		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA
TYPE OF LOGS:	**ACOUSTIC TELEVIEWER**	OTHER SERVICES	GAMMA
MORE:	**3-ARM CALIPER**		TEMPERATURE
LOCATION			FLUID RESISTIVITY
			E-LOGS
			SONIC

SEC		TWP		RGE	
PERMANENT DATUM			ELEVATION		K.B.
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM		D.F.
DRILLING MEAS. FROM	GROUND LEVEL				G.L.
DATE	11-1-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	1 & 4		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	249 FT.		LEVEL		-30 FT.
DEPTH-LOGGER	249 FT.		MAX. REC. TEMP.		30.16 DEG. C
BTM LOGGED INTERVAL	249 FT.		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	30 FT.		SAMPLE INTERVAL		0.010 FT.
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	GOLDER		LOG TIME:ON SITE/OFF SITE		12:00 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	30 FT.	HWT	STEEL	SURFACE	30 FT.
2	HQ	30 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	11-1-16	**Date**	11-1-16	**Date**	11-1-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	COMBO TOOL	**Tool Model**	E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5514	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	249 FT.	**To**	249 FT.	**To**	249 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-31-16	**Operation Check**	10-31-16	**Operation Check**	10-31-16
Calibration Check	10-31-16	**Calibration Check**	10-31-16	**Calibration Check**	N/A
Time Logged	12:20 P.M.	**Time Logged**	12:45 P.M.	**Time Logged**	1:05 P.M.

Date	11-1-16	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143003	**Tool SN**		**Tool SN**	
From	30 FT.	**From**		**From**	
To	249 FT.	**To**		**To**	
Recorded By	A. OLSON	**Recorded By**		**Recorded By**	
Truck No	310	**Truck No**		**Truck No**	
Operation Check	120-31-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	1:30 P.M.	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

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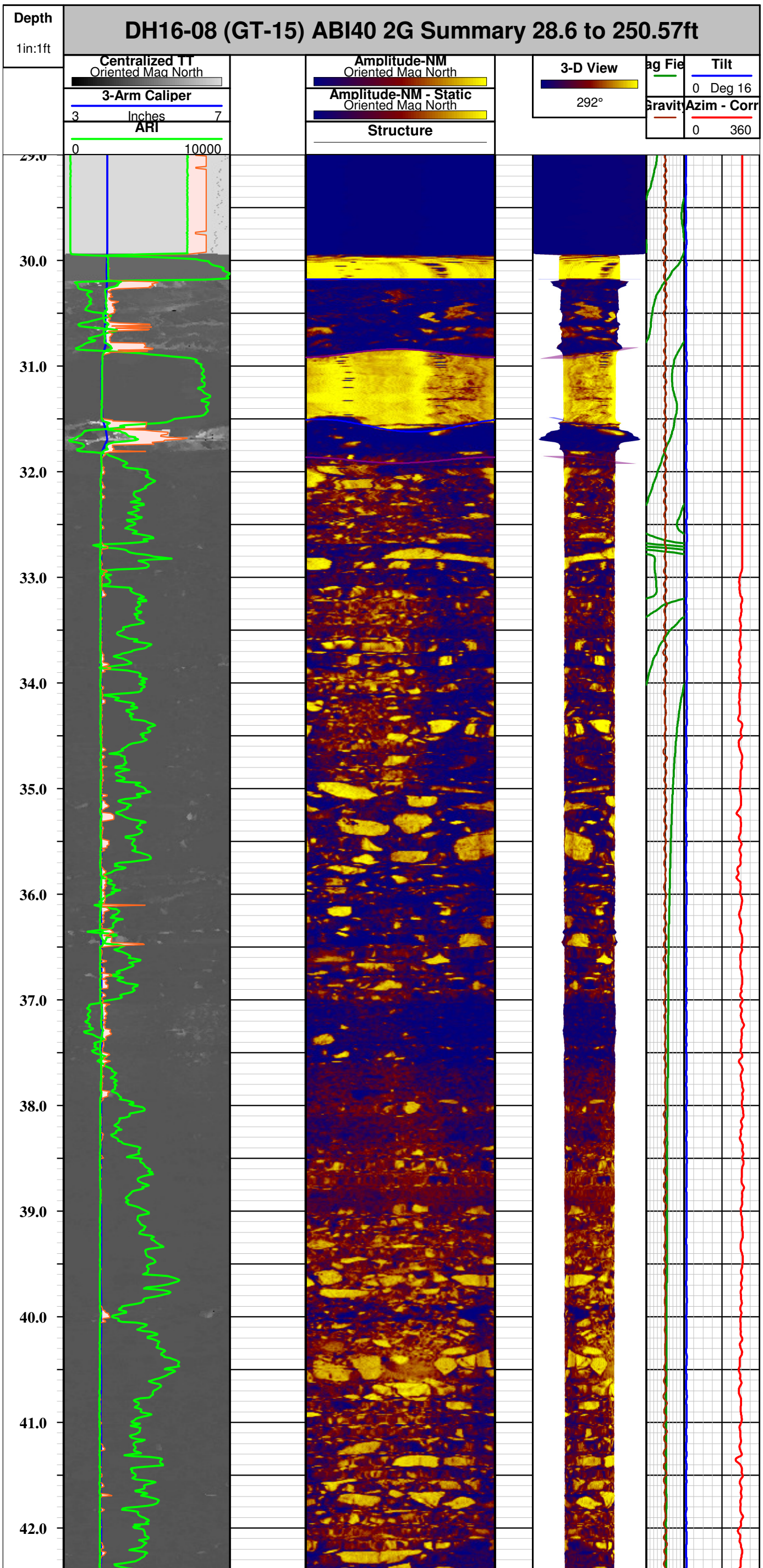
Acoustic Image Features Legend

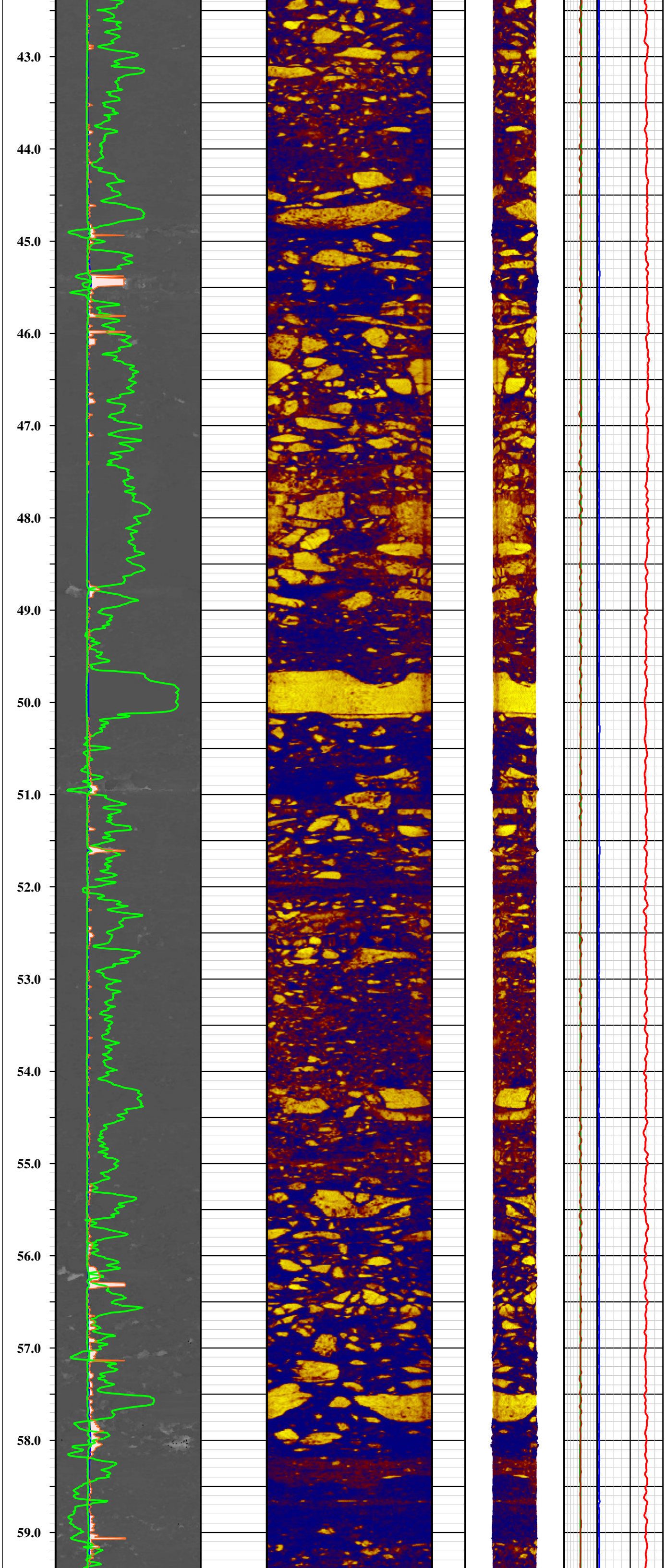
TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

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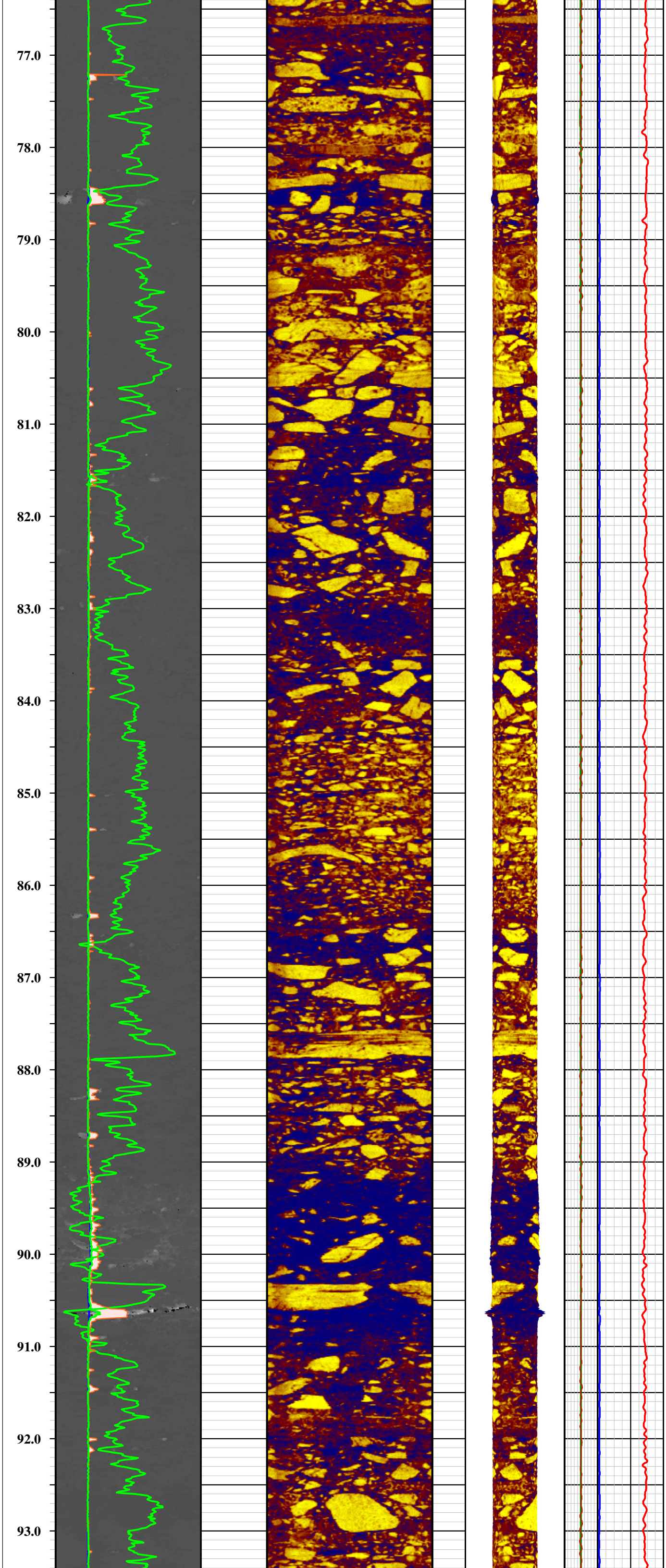
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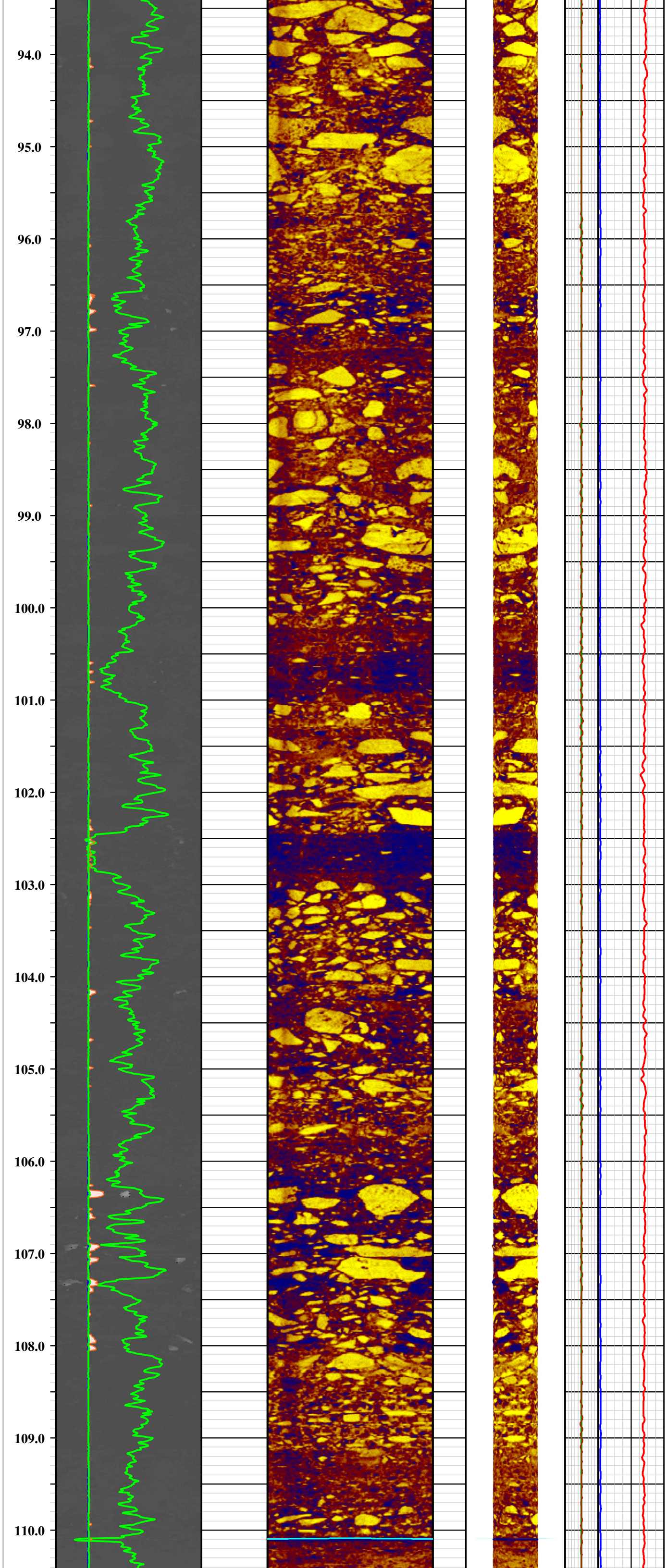
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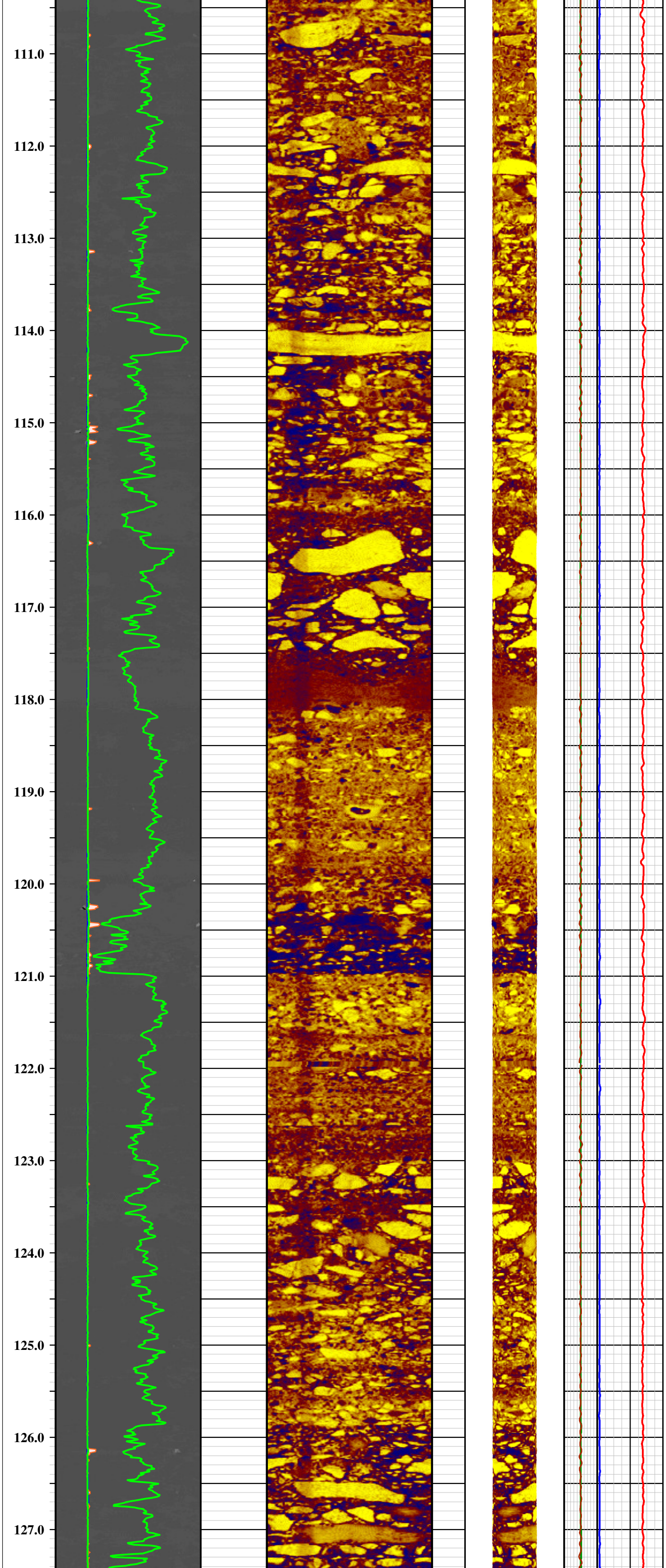
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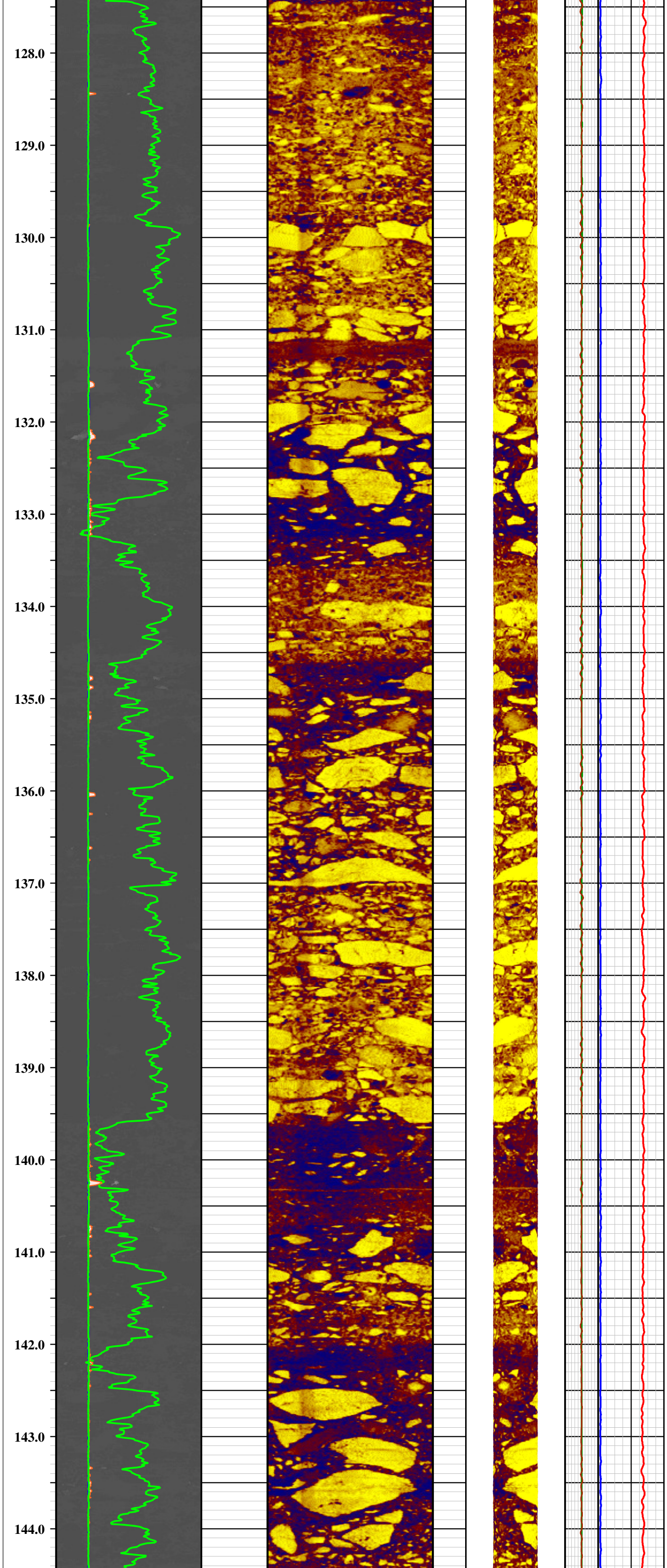
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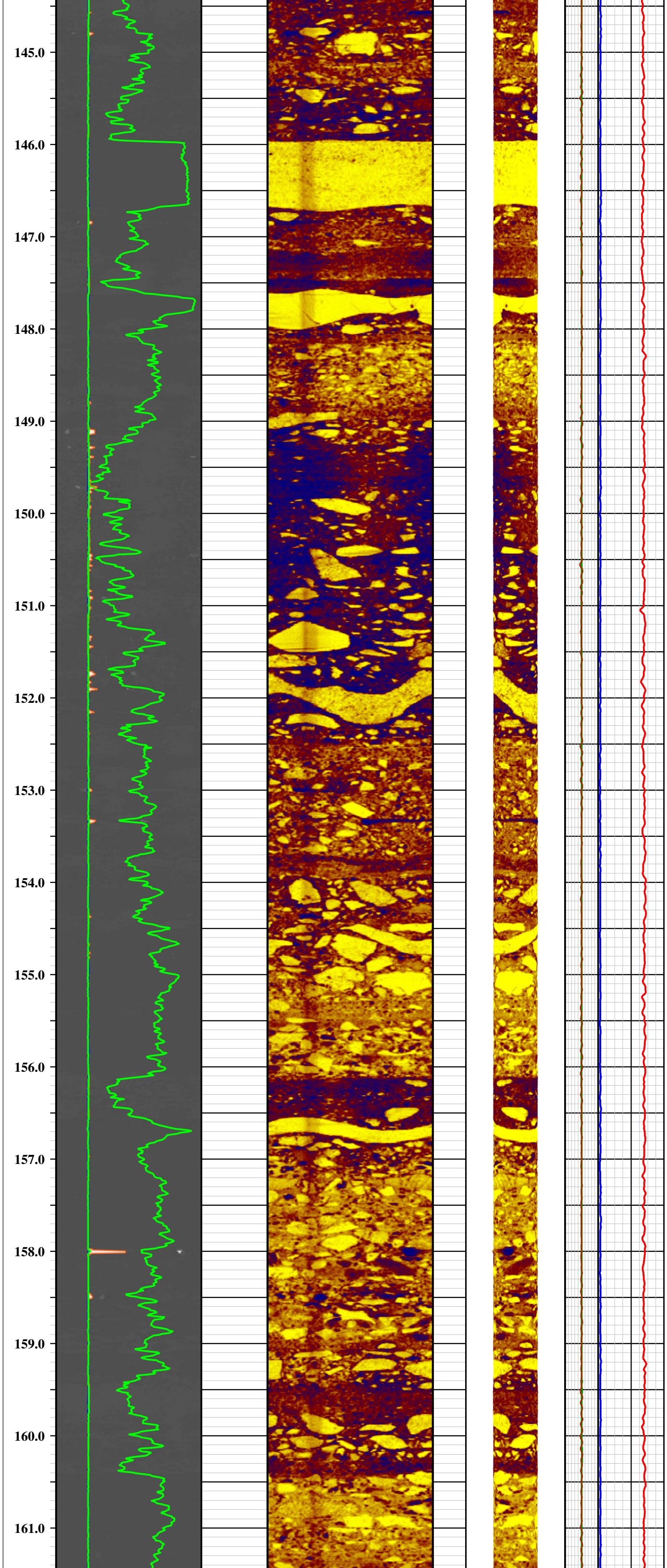
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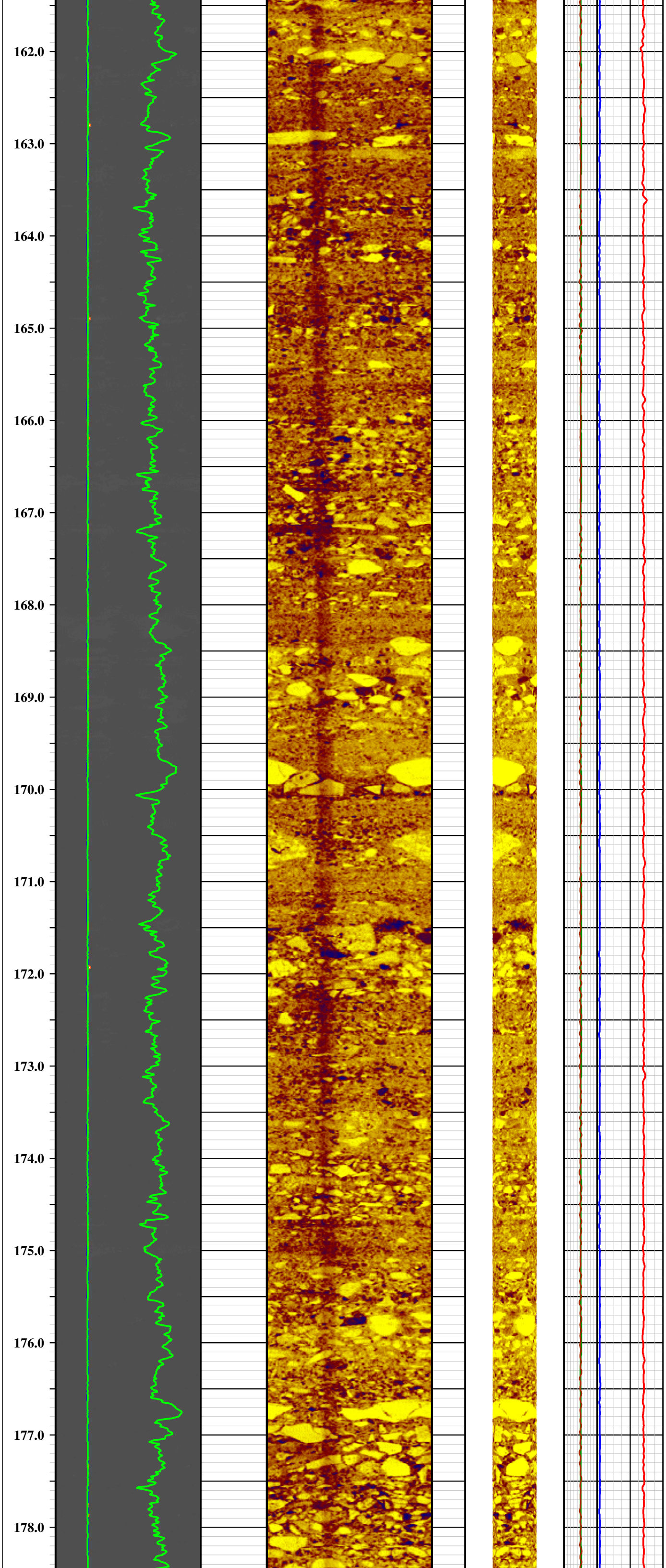
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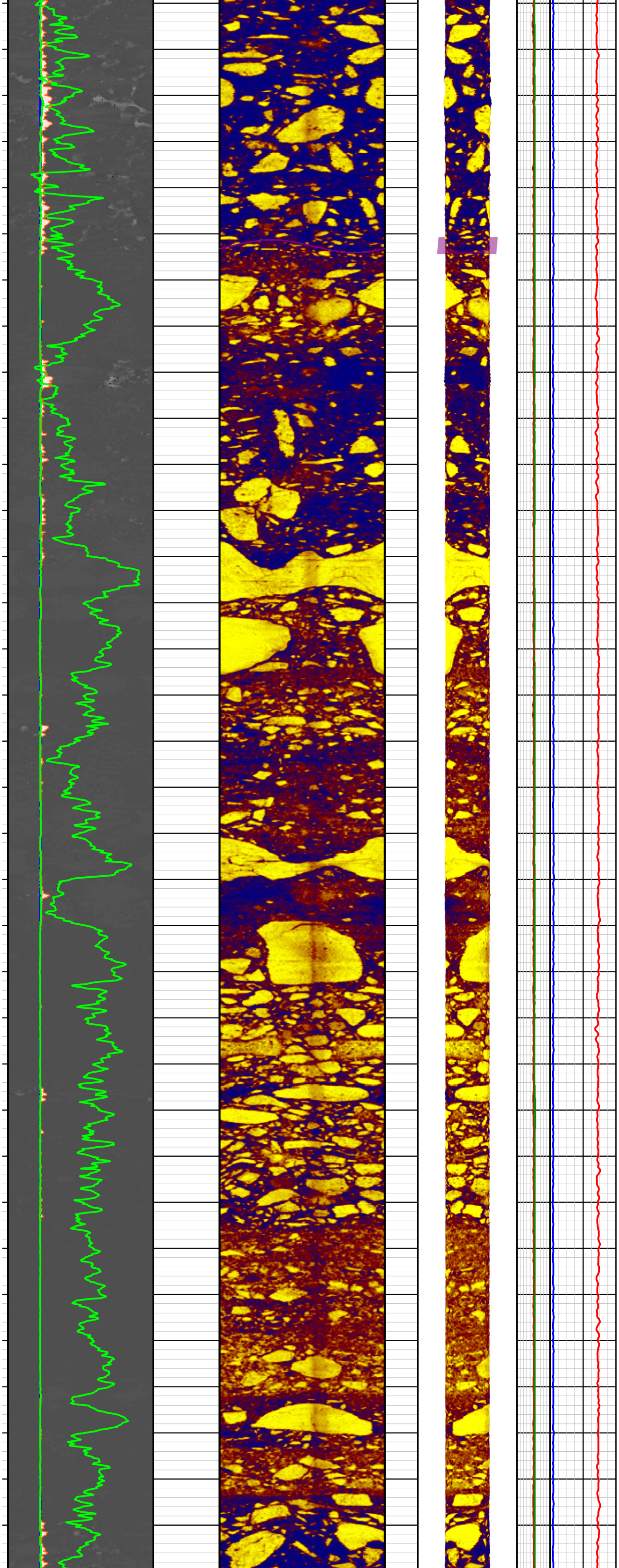

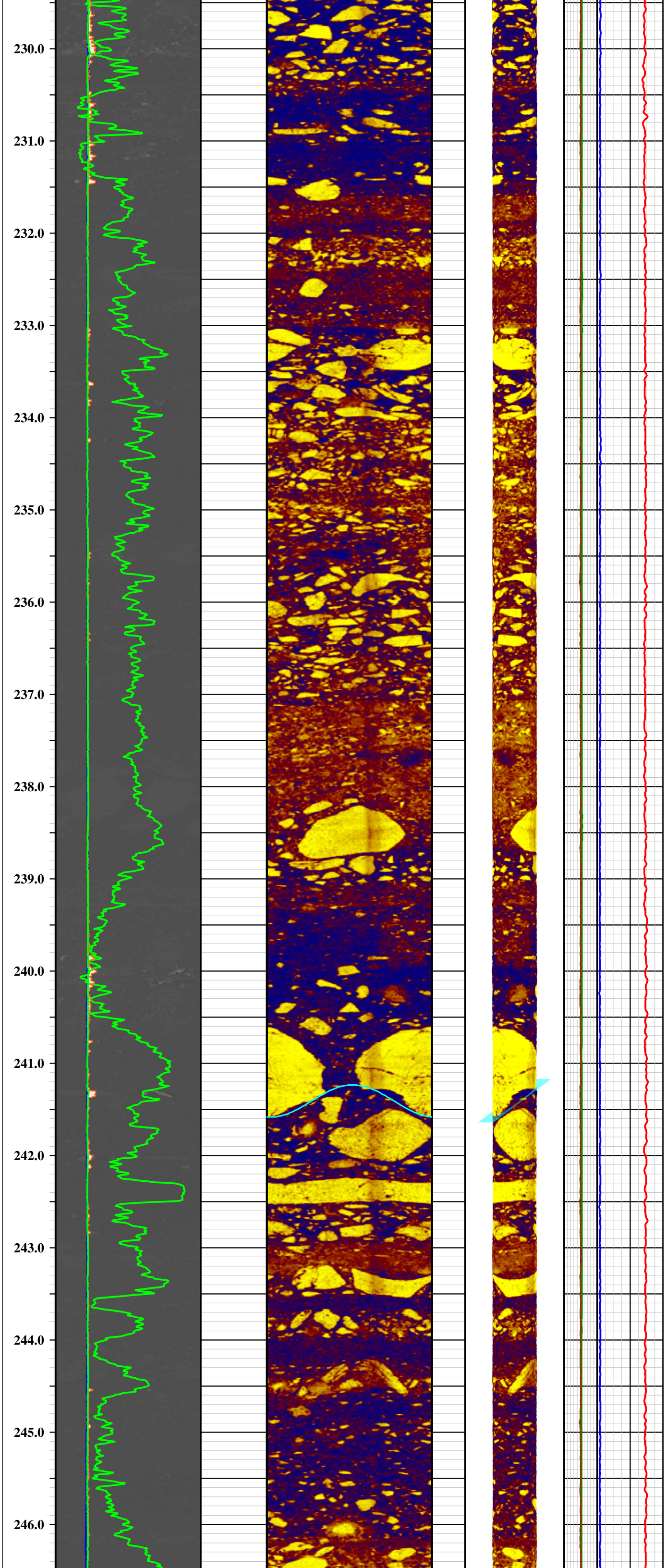
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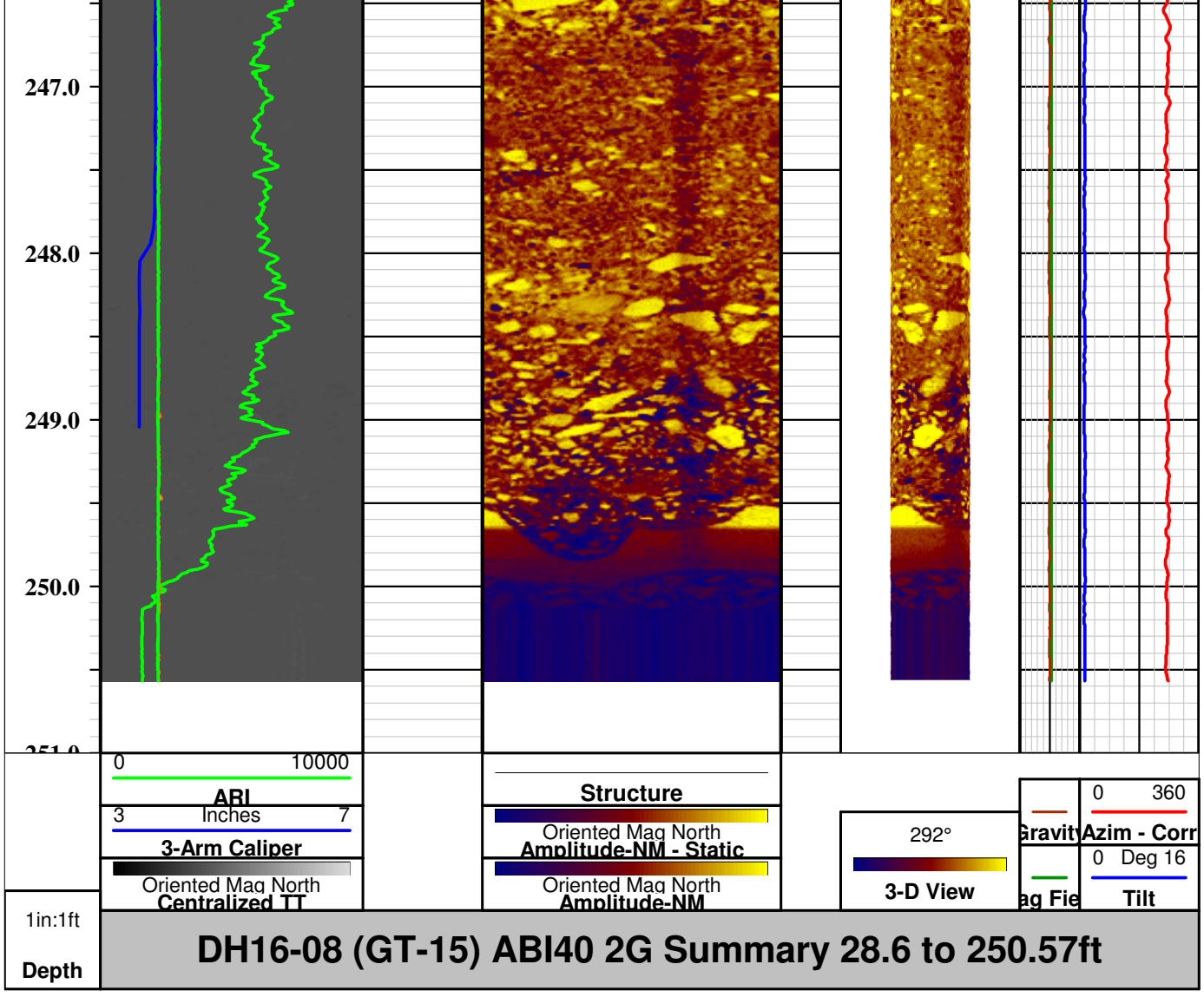
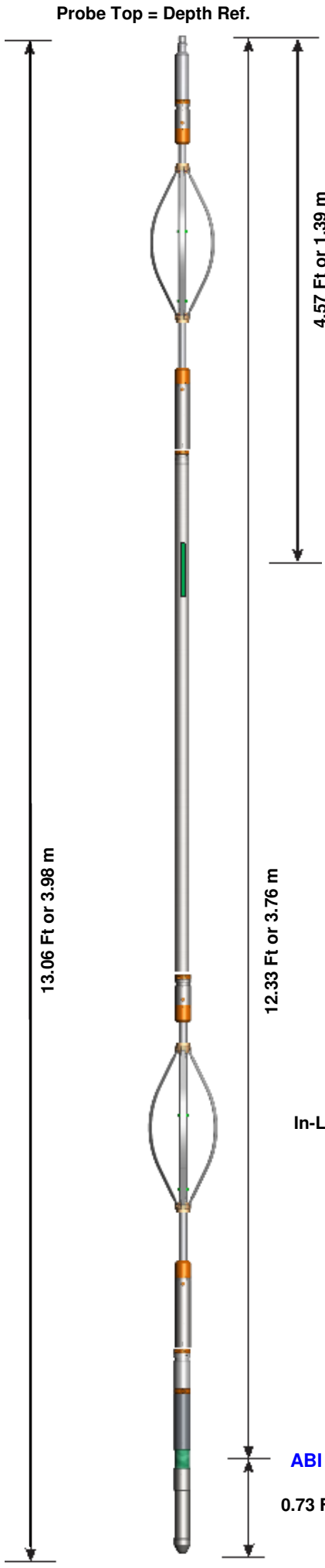


ABI Legend	
Mnemonics	**Description**

ABI-43 Acoustic Borehole Imager



Tool SN: 111801 & 091601

APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

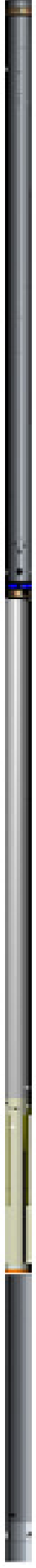
Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top



Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-15 / DH16-08
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-32 (DH16-09)		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA
TYPE OF LOGS:	**ACOUSTIC TELEVIEWER**	OTHER SERVICES	E-LOG
MORE:	**CALIPER**		DUAL INDUCTION
LOCATION			OPTICAL TELEVIEWER
			GAMMA
			TEMPERATURE

PERMANENT DATUM			ELEVATION	K.B.	
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	
DATE	11-07-16		TYPE FLUID IN HOLE	FORMATION WATER	
RUN No	5		MUD WEIGHT	N/A	
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY	N/A	
DEPTH-DRILLER	250.0 FT		LEVEL	~152 FT	
DEPTH-LOGGER	205.0 FT		MAX. REC. TEMP.	21.9 Deg C	
BTM LOGGED INTERVAL	205.0 FT		IMAGE ORIENTED TO:	MAGNETIC NORTH	
TOP LOGGED INTERVAL	152.0 FT		SAMPLE INTERVAL	0.010 FT	
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK	TRUCK #H-001	
RECORDED BY / Logging Eng.	K. MITCHELL / E. BEAM		TOOL STRING/SN	ALT QL ABI40 2G SN 143009	
WITNESSED BY	GOLDER		LOG TIME:ON SITE/OFF SITE	6:45 AM	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	5 FT	HWT	STEEL	SURFACE	5 FT
2	HQ	5 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	11-07-16	**Date**	11-07-16	**Date**	11-07-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	2CAA-F	**Tool Model**	QL DIL	**Tool Model**	E-LOG 40GRP
Tool SN	2299	**Tool SN**	6261	**Tool SN**	5514
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	205.0 FT	**To**	205.0 FT	**To**	205.0 FT
Recorded By	K. MITCHELL	**Recorded By**	K. MITCHELL	**Recorded By**	K. MITCHELL
Truck No	H-001	**Truck No**	H-001	**Truck No**	H-001
Operation Check	11-06-16	**Operation Check**	11-06-16	**Operation Check**	11-06-16
Calibration Check	11-06-16	**Calibration Check**	11-06-16	**Calibration Check**	N/A
Time Logged	8:00 AM	**Time Logged**	9:45 AM	**Time Logged**	10:00 AM

Date	11-07-16	**Date**	11-07-16	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL OBI40 2G	**Tool Model**	ALT QL ABI40 2G	**Tool Model**	
Tool SN	145010	**Tool SN**	143009	**Tool SN**	
From	SURFACE	**From**	152.0 FT	**From**	
To	149.0 FT	**To**	202.0 FT	**To**	
Recorded By	K. MITCHELL	**Recorded By**	K. MITCHELL	**Recorded By**	
Truck No	H-001	**Truck No**	H-001	**Truck No**	
Operation Check	11-06-16	**Operation Check**	11-06-16	**Operation Check**	
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	10:30 AM	**Time Logged**	11:10 AM	**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend

TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DH16-09 (GT-32) ABI40/OBI40 2G Summary 152.46 to 202.69ft

Depth
1in:1ft

Centralized TT
riented Mag Nor

3-Arm Caliper
3 Inches 7

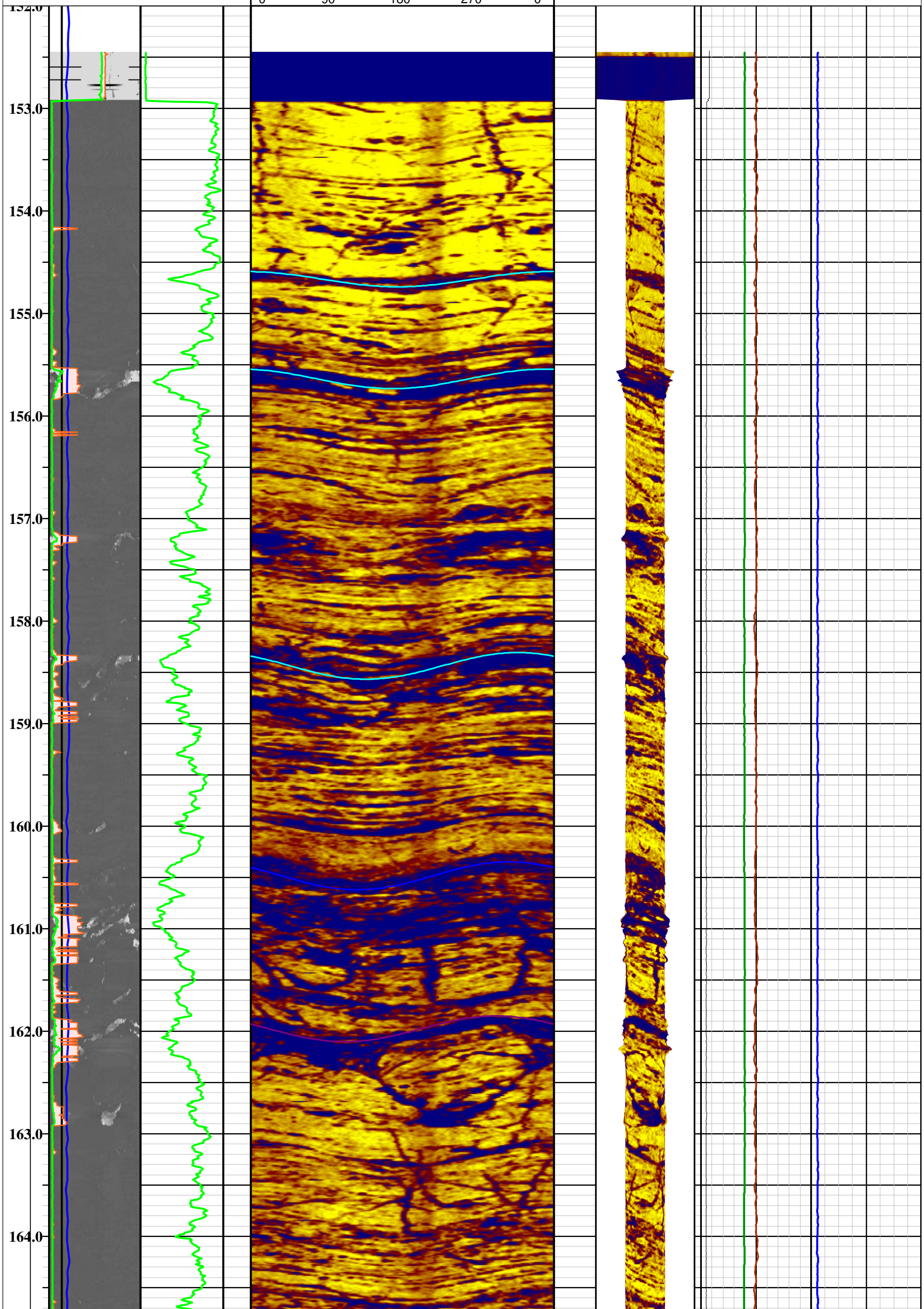
Amplitude-NM
Oriented Mag North
0° 90° 180° 270° 0°

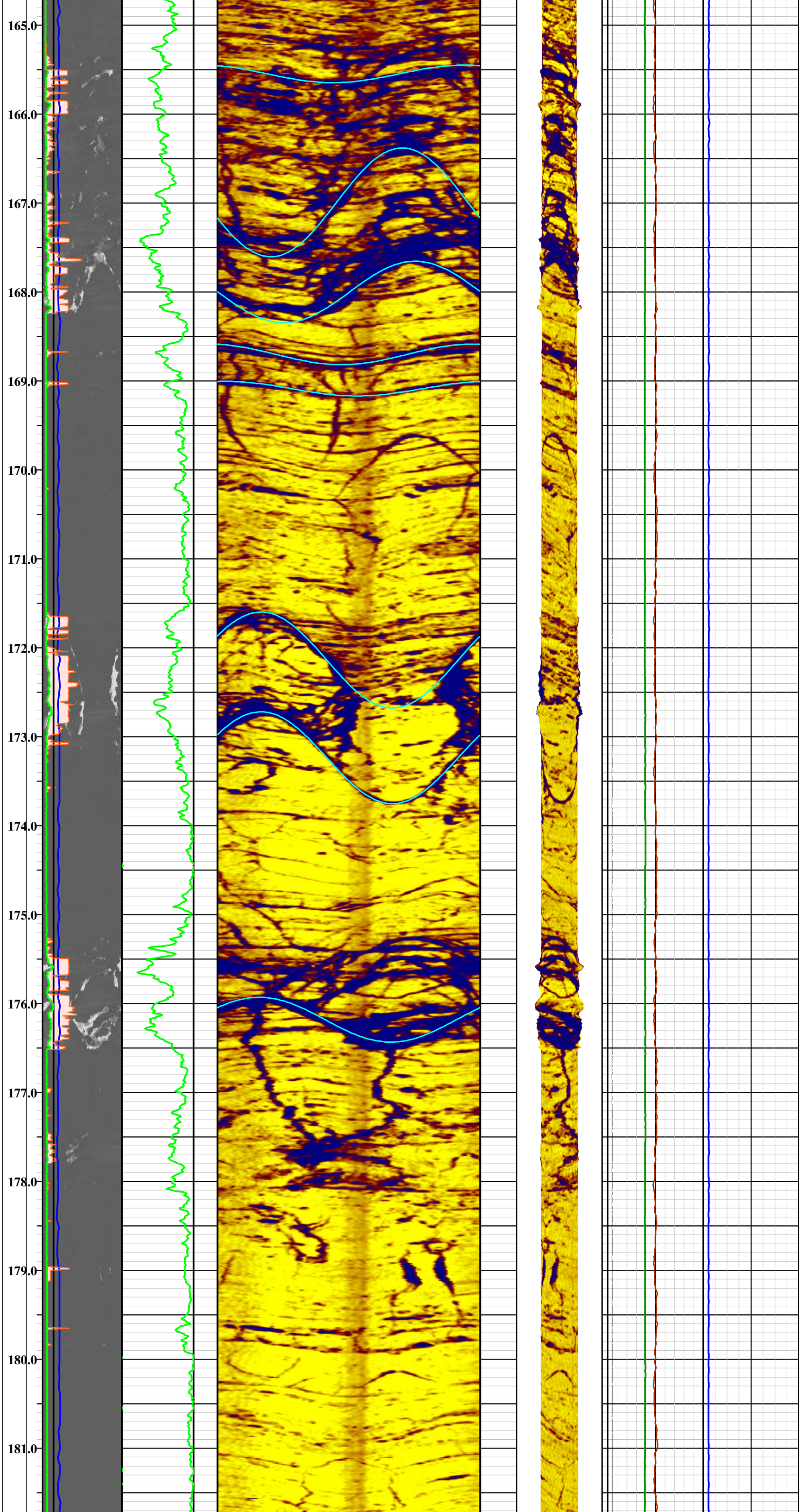
Amp-High Pass
Oriented Mag North
0° 90° 180° 270° 0°

Structure
0° 90° 180° 270° 0°

3-D View
249°

WndTime			Tilt		
0	us	50	0	Deg	16
Mag Field			**RBR**		
40	uT	60	-90	Deg	270
Gravity			**Azi-Edited**		
0.8	G	1.2	0	Deg	360

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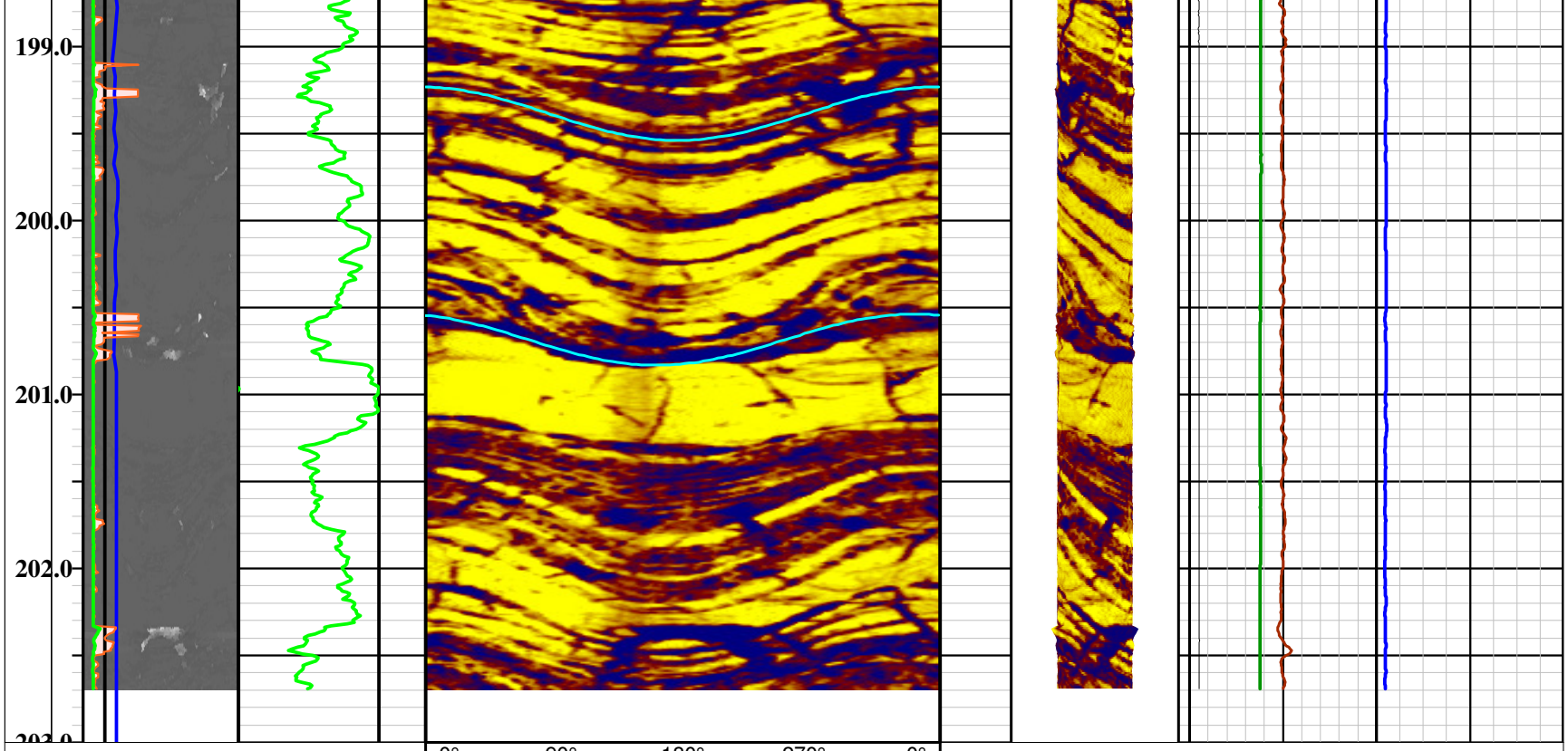
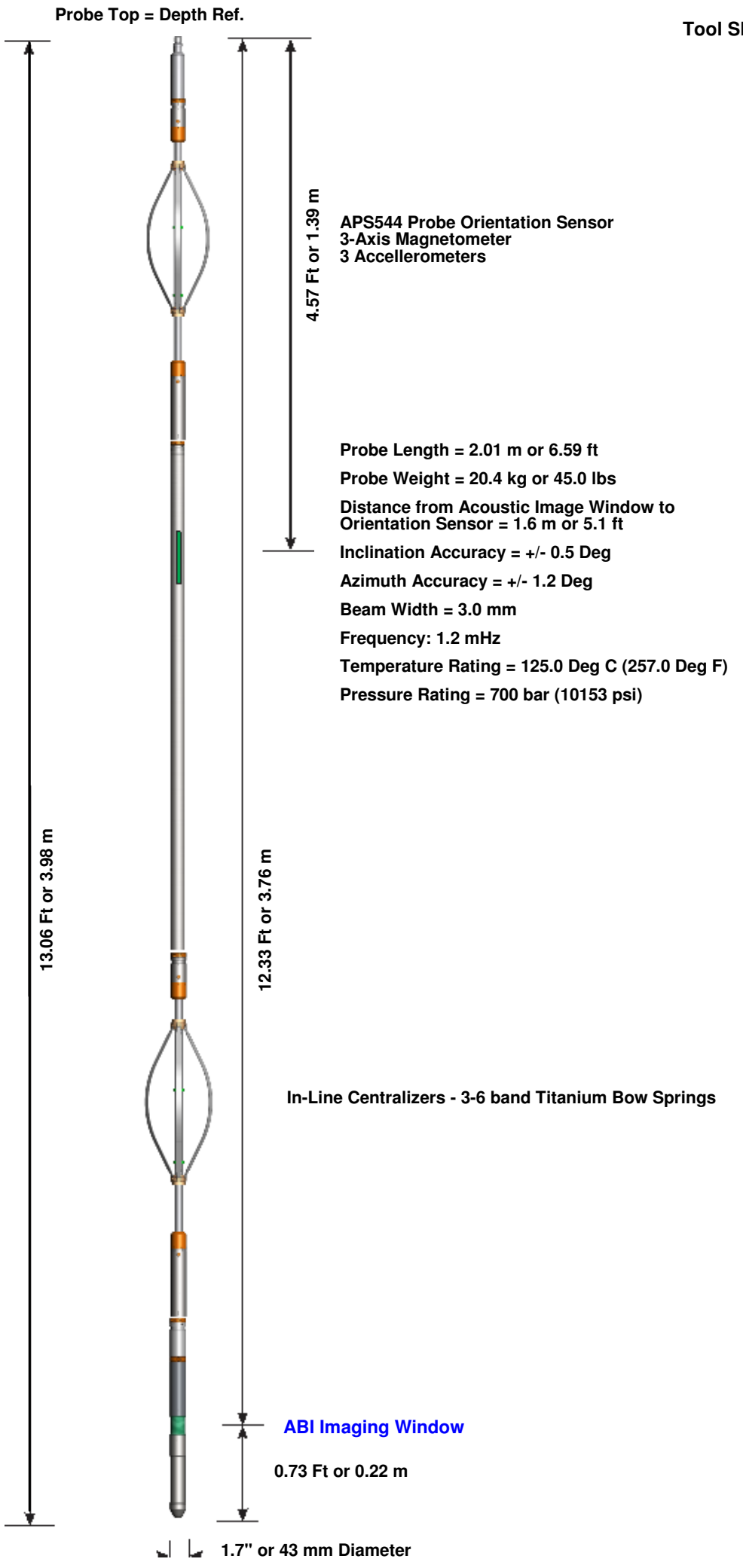


DH16-09 (GT-32) ABI40/OBI40 2G Summary 152.46 to 202.69ft

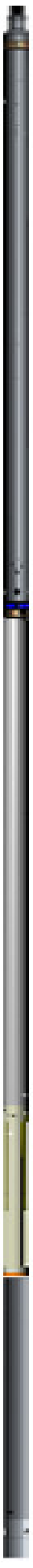
ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager



MSI Gamma-Caliper-Temperature-Fluid Resistivity



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-32
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	GT-31 (DH16-10)				
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER				OTHER SERVICES	
MORE: CALIPER				OPTICAL TELEVIEWER	
LOCATION				GAMMA	
				TEMP / FLUID COND.	
SEC	TWP	RGE			
PERMANENT DATUM		ELEVATION	K.B.		
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.		
DRILLING MEAS. FROM	GROUND LEVEL		G.L.		

DATE	11-11-16	TYPE FLUID IN HOLE		FORMATION WATER	
RUN No	4	MUD WEIGHT		N/A	
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY		N/A	
DEPTH-DRILLER	254.0 FT	LEVEL		-211 FT	
DEPTH-LOGGER	252.0 FT	MAX. REC. TEMP.		27.4 Deg C	
BTM LOGGED INTERVAL	252.0 FT	IMAGE ORIENTED TO:		MAGNETIC NORTH	
TOP LOGGED INTERVAL	211.0 FT	SAMPLE INTERVAL		0.010 FT	
DRILLER / RIG#	BOART LONGYEAR	LOGGING TRUCK		TRUCK #H-001	
RECORDED BY / Logging Eng.	K. MITCHELL / E. BEAM	TOOL STRING/SN		ALT QL ABI40 2G SN 143009	
WITNESSED BY	GOLDER	LOG TIME:ON SITE/OFF SITE		8:00 AM	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	8 FT	HQ	STEEL	SURFACE	8 FT
2	HQ	8 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	11-11-16	**Date**	11-11-16	**Date**	11-11-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	2PCA-2PGA	**Tool Model**	QL FTC	**Tool Model**	ALT QL OBI40 2G
Tool SN	2252	**Tool SN**	6039	**Tool SN**	145010
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	252.0 FT	**To**	252.0 FT	**To**	212.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	H-001	**Truck No**	H-001	**Truck No**	H-001
Operation Check	11-10-16	**Operation Check**	11-10-16	**Operation Check**	11-10-16
Calibration Check	11-10-16	**Calibration Check**	11-10-16	**Calibration Check**	N/A
Time Logged	9:15 AM	**Time Logged**	9:45 AM	**Time Logged**	10:15 AM

Date	11-11-16	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143009	**Tool SN**		**Tool SN**	
From	211.0 FT	**From**		**From**	
To	252.0 FT	**To**		**To**	
Recorded By	E. BEAM	**Recorded By**		**Recorded By**	
Truck No	H-001	**Truck No**		**Truck No**	
Operation Check	11-10-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	11:00 PM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: N/A **Calibration Points:** N/A

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Acoustic Image Features Legend

TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DH16-10 (GT-31) ABI40/OBI40 2G Summary Surface to 251.2ft

Depth
1in:0.6ft

Centralized TT
Oriented Mag North
0° 90° 180° 270° 0°

3-Arm Caliper
3 Inches 8

Max Acoustic Calipe
3 in 8

Amplitude-NM
Oriented Mag North
0° 90° 180° 270° 0°

Amplitude-High Pass
Oriented Mag North
0° 90° 180° 270° 0°

Structure
0° 90° 180° 270° 0°

3-D View
110°

Mag Field
40 uT 60

Gravity
0.8 G 1.2

Tilt
0 Deg 16

Azimuth
0 Deg 360

211.0
212.0
213.0
214.0
215.0
216.0
217.0
218.0

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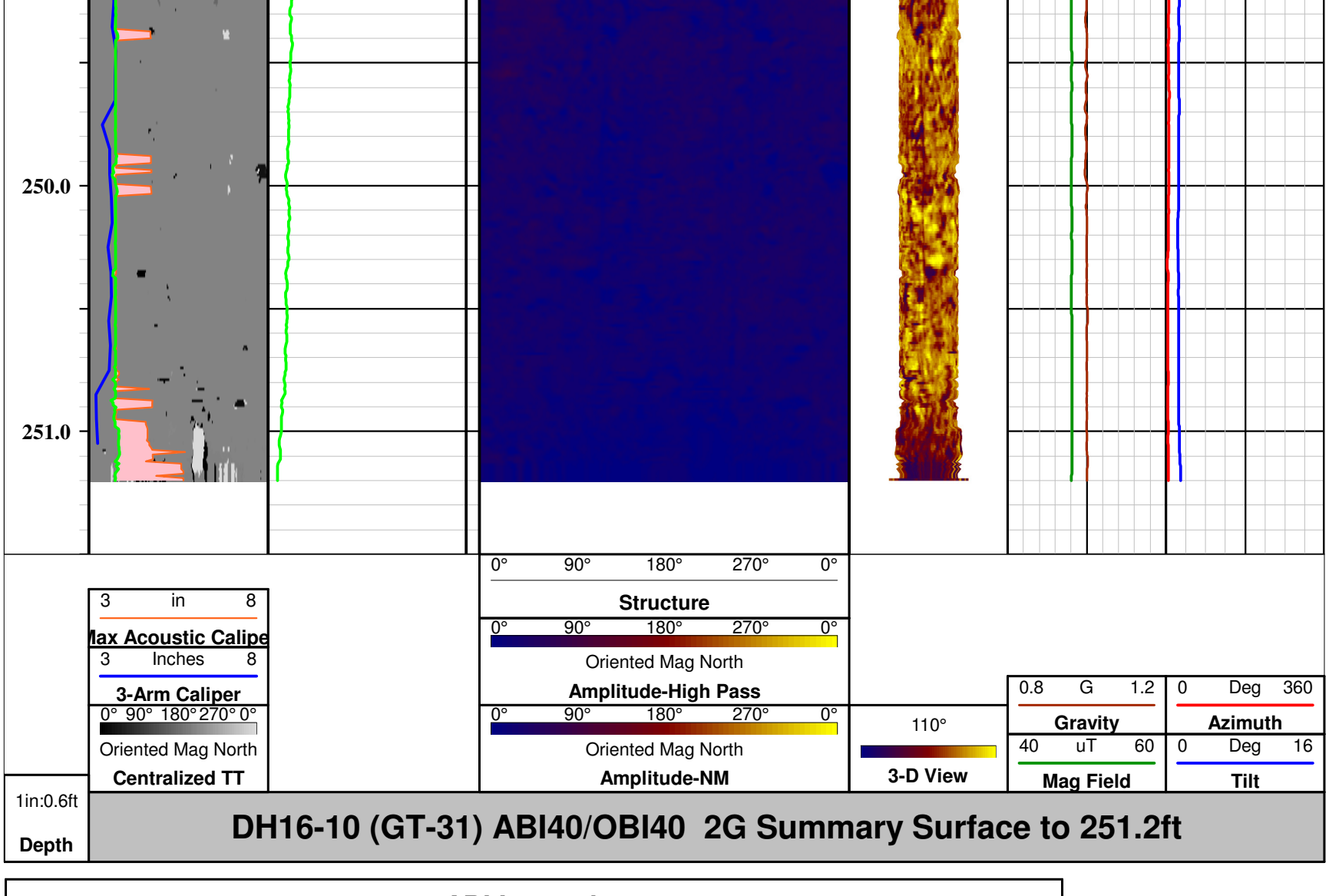
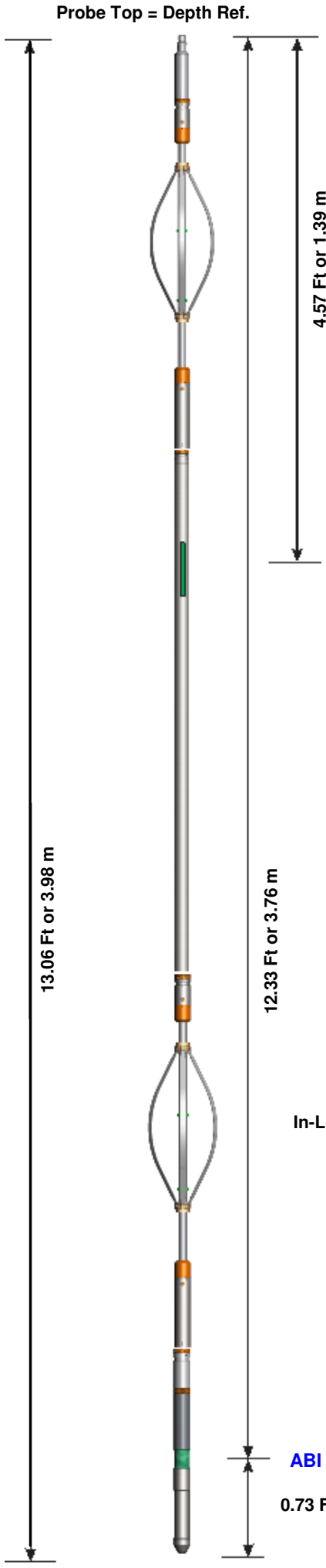


ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager



Tool SN: 111801 & 091601

APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

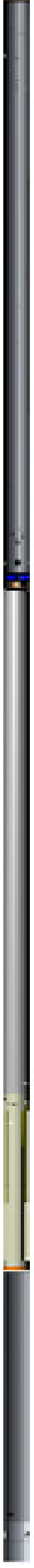
In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top



Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-31
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-01 (DH16-14)		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

OTHER SERVICES
E-LOGS
SONIC
OPTICAL TELEVIEWER
GAMMA
TEMP/FLUID RES

LOCATION	SEC	TWP	RGE		
PERMANENT DATUM			ELEVATION	K.B.	
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

DATE	12-2-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	1 & 4		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	238 FT.		LEVEL		-38 FT.
DEPTH-LOGGER	218.5 FT.		MAX. REC. TEMP.		25.09 DEG. C
BTM LOGGED INTERVAL	218.5 FT.		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	30 FT.		SAMPLE INTERVAL		0.01 FT.
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	GOLDER		LOG TIME:ON SITE/OFF SITE		4:00 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	30 FT.	HWT	STEEL	SURFACE	30 FT.
2	HQ	30 FT.	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	12-2-16	**Date**	12-2-16	**Date**	12-2-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	COMBO TOOL	**Tool Model**	E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5514	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	220 FT.	**To**	220 FT.	**To**	220 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	12-2-16	**Operation Check**	12-2-16	**Operation Check**	12-2-16
Calibration Check	12-2-16	**Calibration Check**	12-2-16	**Calibration Check**	N/A
Time Logged	4:40 P.M.	**Time Logged**	4:50 P.M.	**Time Logged**	5:00 P.M.

Date	12-2-16	**Date**	12-2-16	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**	ALT QL OBI40 2G	**Tool Model**	
Tool SN	143003	**Tool SN**	152511	**Tool SN**	
From	30 FT.	**From**	30 FT.	**From**	
To	218.5 FT.	**To**	60 FT.	**To**	
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	
Truck No	310	**Truck No**	310	**Truck No**	
Operation Check	12-2-16	**Operation Check**	12-2-16	**Operation Check**	
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	5:25 P.M.	**Time Logged**	5:40 P.M.	**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

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GT-12 ABI40 2G Summary

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

Cent TT_108.1'-135.0' — Non Oriented, Rot'd by 2.5 Deg — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude_108.1'-135.0' — Non Oriented, Rot'd by 2.5 Deg — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 9000

ABI Features — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Tadpole — DIPT — 0 100

Tilt — 0 Deg 8

Azimuth — 0 360

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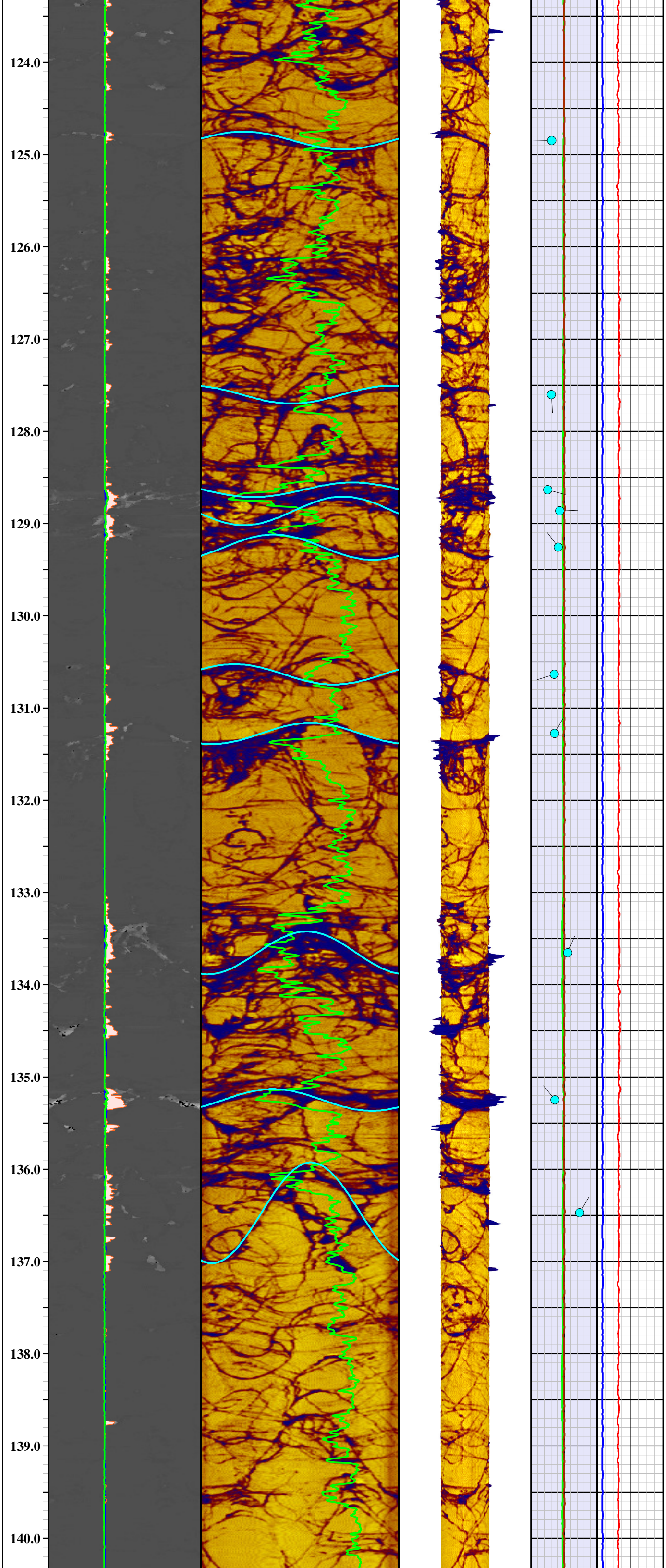
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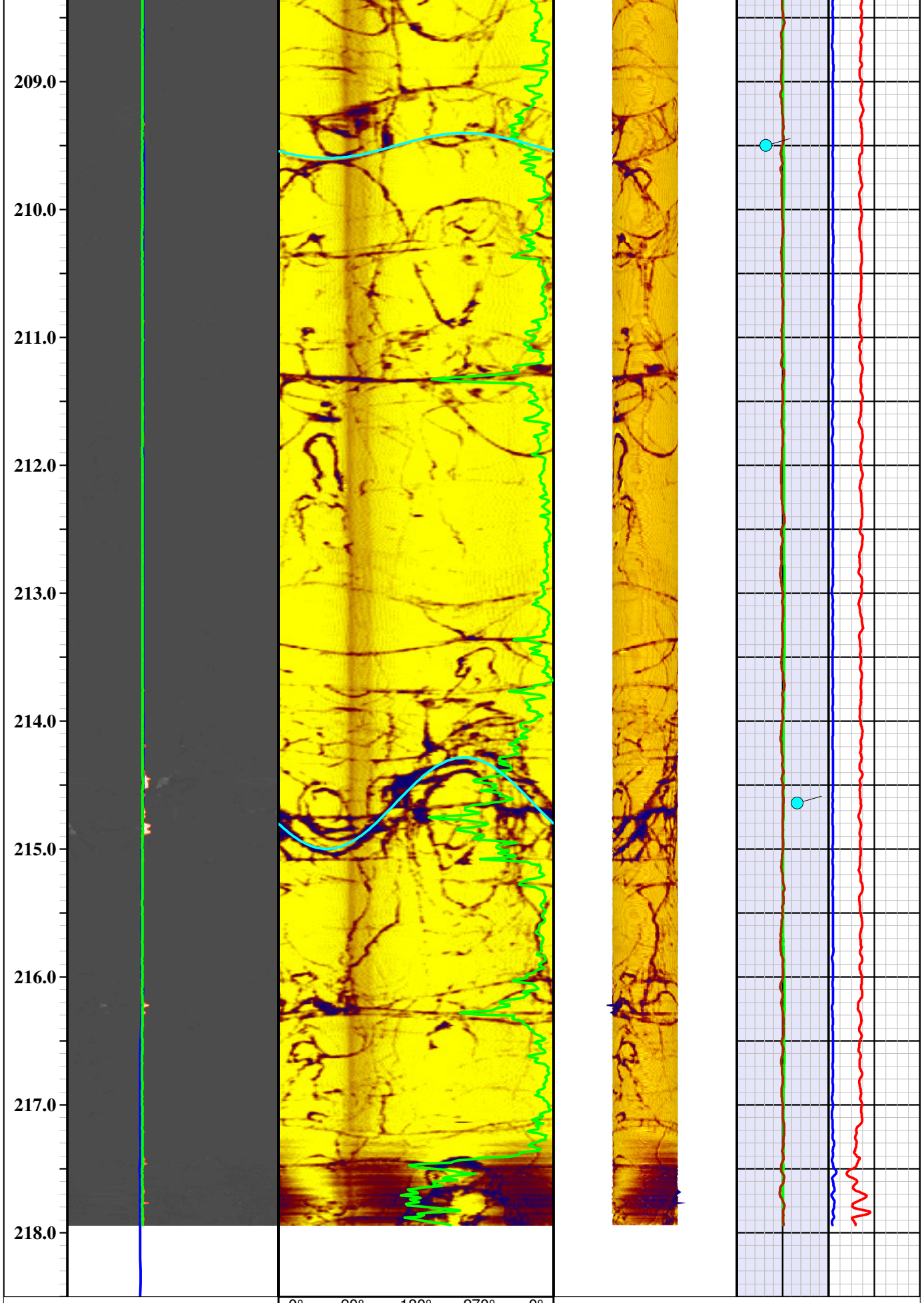


		0° 90° 180° 270° 0° DIPA **ABI Features**				
	Enlargements	0 9000 **ARI**				
	2 Inches 7 **Ave-Acoustic Caliper**	0° 90° 180° 270° 0° Oriented Mag North **Amp-High Pass**				
	2 Inches 7 **Max-Acoustic Caliper**	0° 90° 180° 270° 0° Oriented Mag North **Amplitude-Static**			0 100 DIPT **Tadpole**	
	2 Inches 7 **3-Arm Caliper**				0.8 G 1.2 **Gravity**	0 360 **Azimuth**
	0° 90° 180° 270° 0° Non Oriented, Rot'd by 2.5 Deg **Cent TT_108.1'-135.0'**	0° 90° 180° 270° 0° Non Oriented, Rot'd by 2.5 Deg **Amplitude_108.1'-135.0'**		0° **3-D View**	40 uT 60 **Mag Field**	0 Deg 8 **Tilt**
	0° 90° 180° 270° 0° Oriented Mag North **Centralized TT**	0° 90° 180° 270° 0° Oriented Mag North **Amplitude-NM**				
1in:1ft **Depth**	**GT-12 ABI40 2G Summary**					

QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor

3-Axis Magnetometer

3-Axis Accellerometer



Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

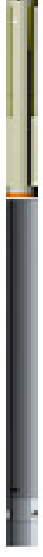
Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"



TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-01 (DH16-14)
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-01 (DH16-14)		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

OTHER SERVICES
E-LOGS
SONIC
OPTICAL TELEVIEWER
GAMMA
TEMP/FLUID RES

LOCATION	SEC	12-2-16	TWP	RGE	
PERMANENT DATUM				ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL			ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL				G.L.
DATE		12-2-16		TYPE FLUID IN HOLE	FORMATION WATER
RUN No		1 & 4		MUD WEIGHT	N/A
TYPE LOG		ACOUSTIC TELEVIEWER		VISCOSITY	N/A
DEPTH-DRILLER		238 FT.		LEVEL	-38 FT.
DEPTH-LOGGER		160 FT.		MAX. REC. TEMP.	25.09 DEG. C
BTM LOGGED INTERVAL		90 FT.		IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL		30 FT.		SAMPLE INTERVAL	0.01 FT.
DRILLER / RIG#		BOART LONGYEAR		LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.		A. OLSON / E. TURNER		TOOL STRING/SN	ALT QL ABI40 2G SN 143003
WITNESSED BY		GOLDER		LOG TIME:ON SITE/OFF SITE	4:00 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	30 FT.	HWT	STEEL	SURFACE	30 FT.
2	HQ	30 FT.	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	12-2-16	**Date**	12-2-16	**Date**	12-2-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	COMBO TOOL	**Tool Model**	E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5514	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	220 FT.	**To**	220 FT.	**To**	220 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	12-2-16	**Operation Check**	12-2-16	**Operation Check**	12-2-16
Calibration Check	12-2-16	**Calibration Check**	12-2-16	**Calibration Check**	N/A
Time Logged	4:40 P.M.	**Time Logged**	4:50 P.M.	**Time Logged**	5:00 P.M.

Date	12-2-16	**Date**	12-2-16	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**	ALT QL OBI40 2G	**Tool Model**	
Tool SN	143003	**Tool SN**	152511	**Tool SN**	
From	30 FT.	**From**	30 FT.	**From**	
To	218.5 FT.	**To**	60 FT.	**To**	
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	
Truck No	310	**Truck No**	310	**Truck No**	
Operation Check	12-2-16	**Operation Check**	12-2-16	**Operation Check**	
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	5:25 P.M.	**Time Logged**	5:40 P.M.	**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

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GT-12 ABI40 & OBI40 2G Summary

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 10000

ABI Feature — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Image_30.3'-59.1' — Non Oriented, Rot'd by 150.0 Deg — 0° 90° 180° 270° 0°

OBI Features — DIPA — 0° 90° 180° 270° 0°

Tilt - ABI — 0 Deg 10

Azi - ABI — 0 360

Azi-Edited — OBI

Tilt - OBI — 0 Deg 10

Tad - OBI — DIPT — 0 100

Tad - ABI — DIPT — 0 100



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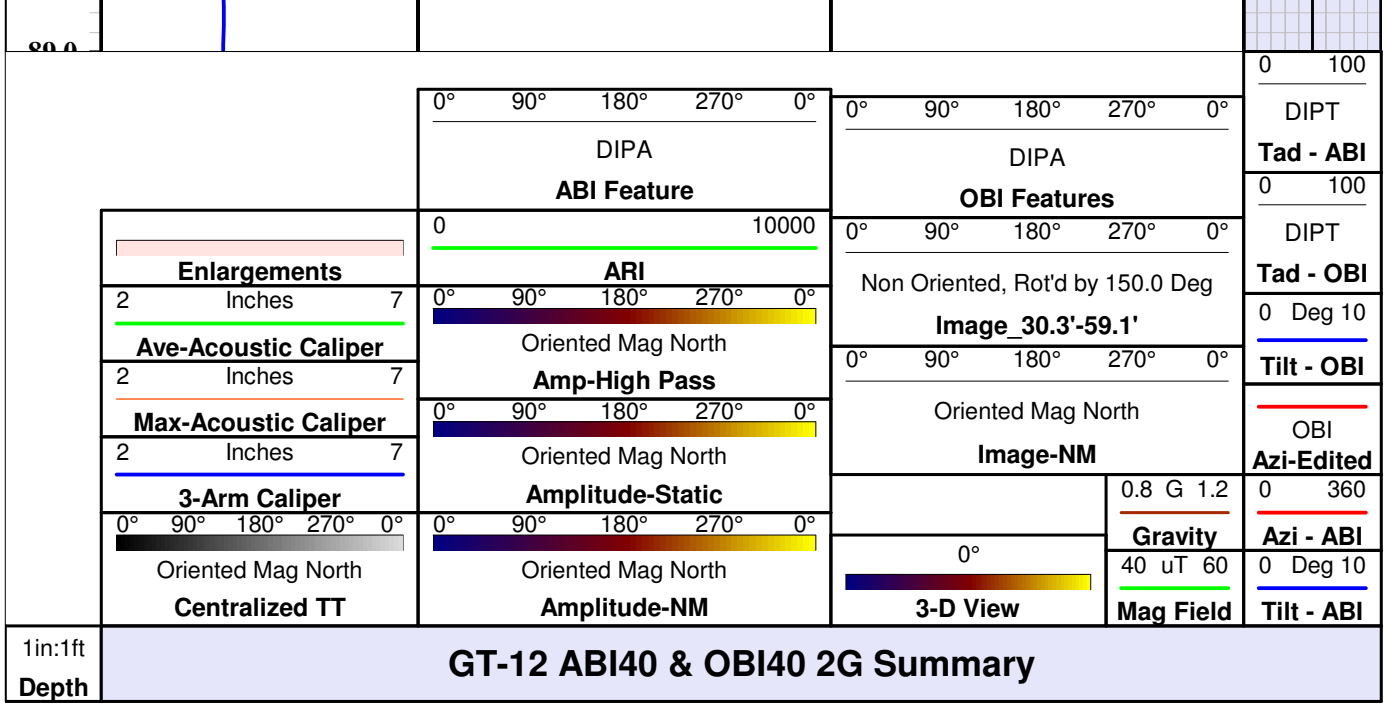


QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

ABI Imaging Window

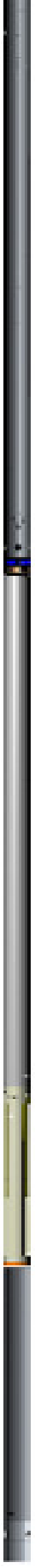
1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Single Conductor MSI Probe Top



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Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

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Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-01 (DH16-14)
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	GT-16 (DH16-15)				
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS:	**ACOUSTIC TELEVIEWR**				OTHER SERVICES
MORE:	**CALIPER**				E-LOGS
LOCATION					SONIC
					GAMMA
					TEMPERATURE
					FLUID RESISTIVITY
					OPTICAL TELEVIEWER
SEC		TWP		RGE	
PERMANENT DATUM			ELEVATION		K.B.
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM		D.F.
DRILLING MEAS. FROM	GROUND LEVEL				G.L.

DATE	12-4-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	1 & 4		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	250 FT.		LEVEL		~ 32 FT.
DEPTH-LOGGER	250 FT.		MAX. REC. TEMP.		25.22 DEG. C
BTM LOGGED INTERVAL	250 FT.		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	SURFACE		SAMPLE INTERVAL		0.01 FT.
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	GOLDER		LOG TIME:ON SITE/OFF SITE		3:00 P.M.

RUN	BOREHOLE RECORD		CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT.	HWT	STEEL	SURFACE	20 FT.
2	HQ	20 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	12-4-16	**Date**	12-4-16	**Date**	12-4-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	COMBO TOOL	**Tool Model**	E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5514	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	250 FT.	**To**	250 FT.	**To**	250 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	12-2-16	**Operation Check**	12-2-16	**Operation Check**	12-2-16
Calibration Check	12-2-16	**Calibration Check**	12-2-16	**Calibration Check**	N/A
Time Logged	3:45 P.M.	**Time Logged**	4:10 P.M.	**Time Logged**	4:20 P.M.

Date	12-4-16	**Date**	12-4-16	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**	ALT QL OBI40 2G	**Tool Model**	
Tool SN	143003	**Tool SN**	152511	**Tool SN**	
From	33 FT.	**From**	SURFACE	**From**	
To	250 FT.	**To**	50 FT.	**To**	
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	
Truck No	310	**Truck No**	310	**Truck No**	
Operation Check	12-2-16	**Operation Check**	12-2-16	**Operation Check**	
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	4:45 P.M.	**Time Logged**	5:25 P.M.	**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

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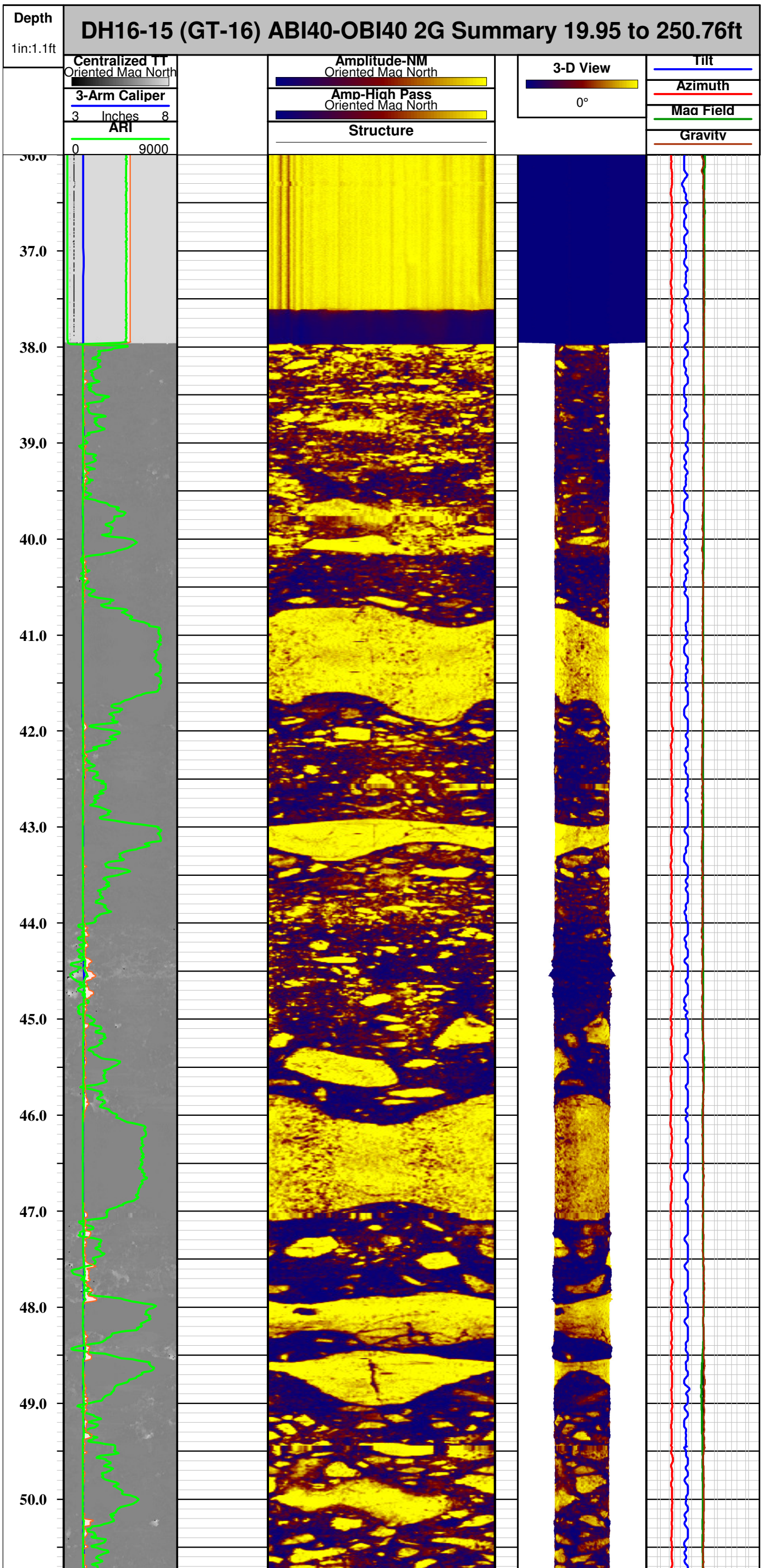
Acoustic Image Features Legend

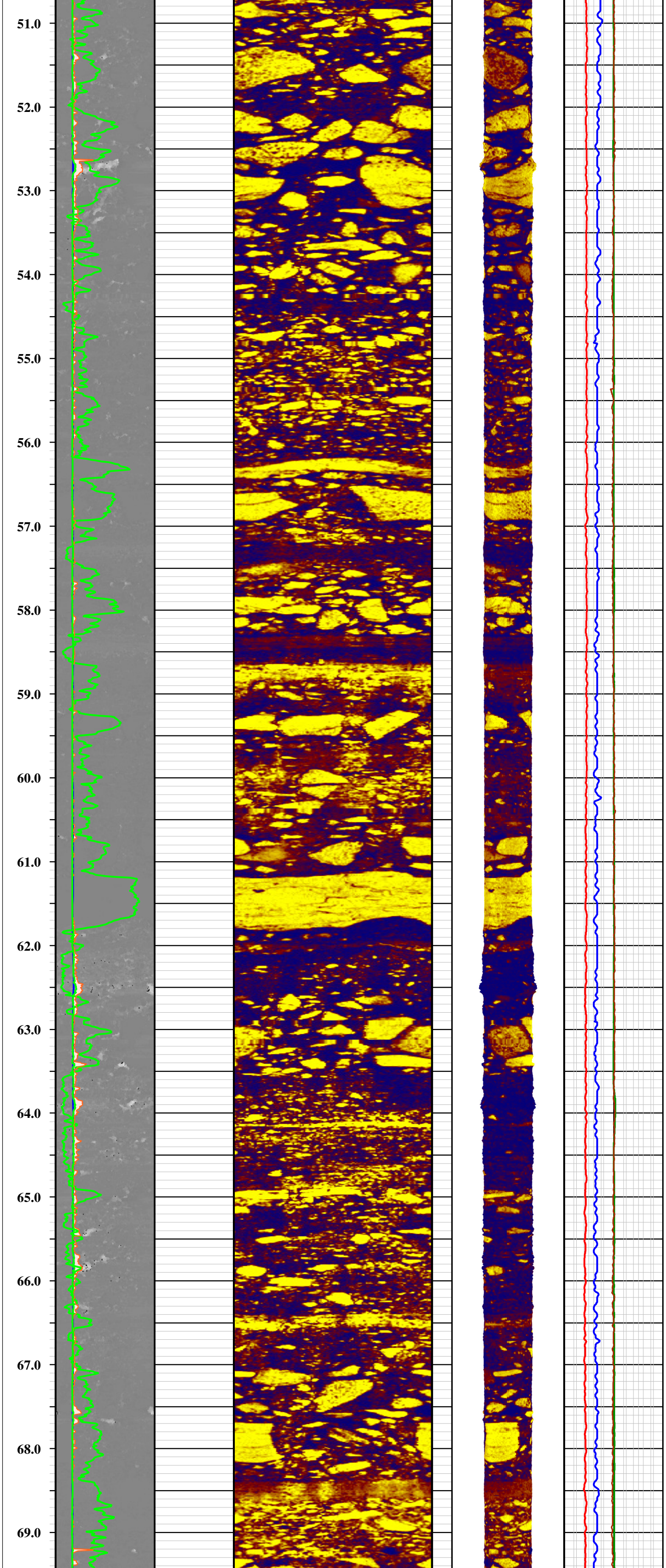
TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

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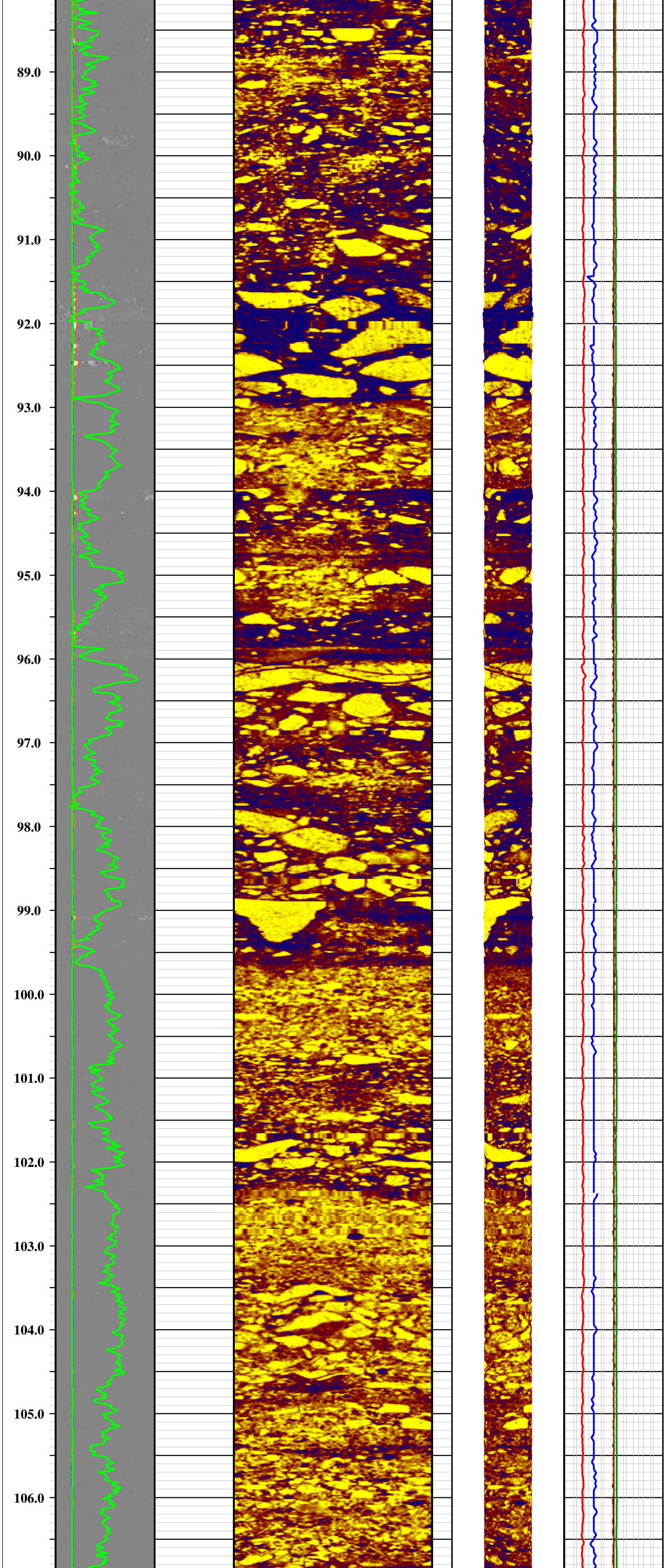
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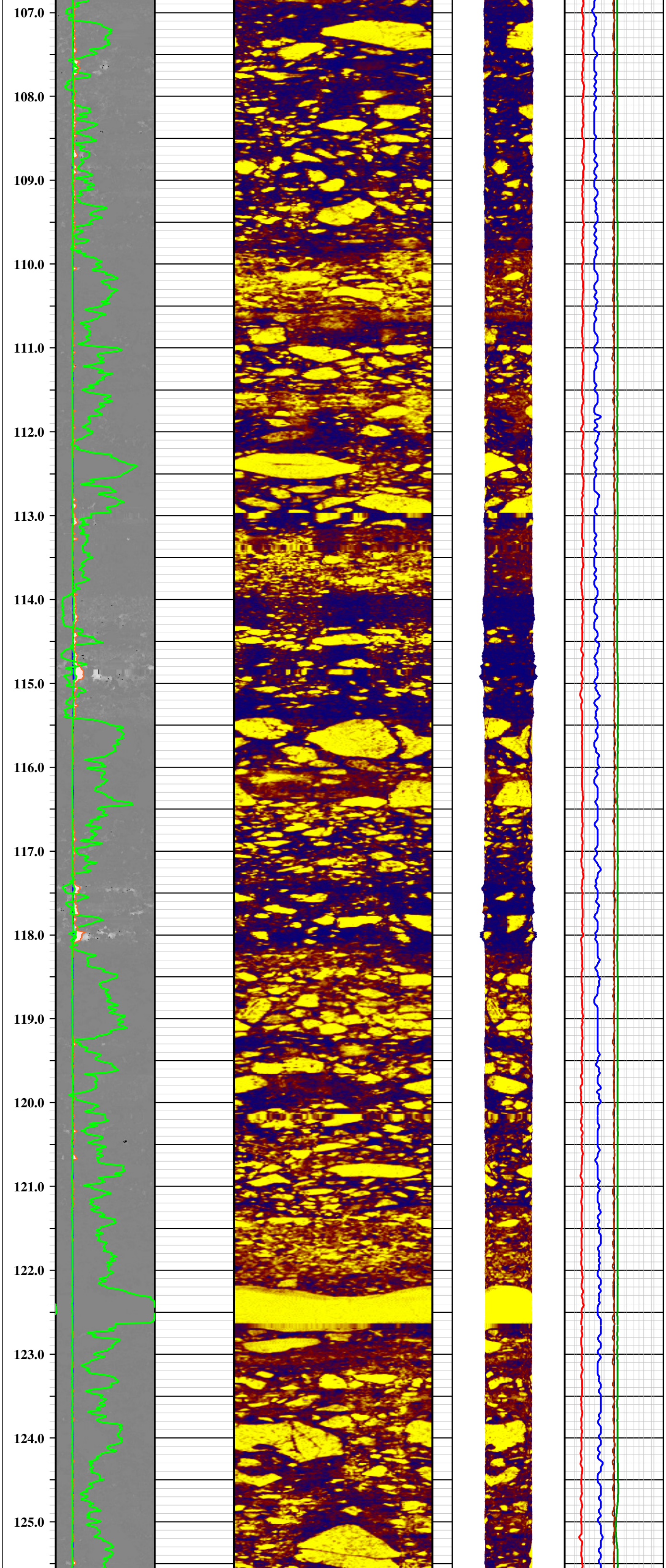
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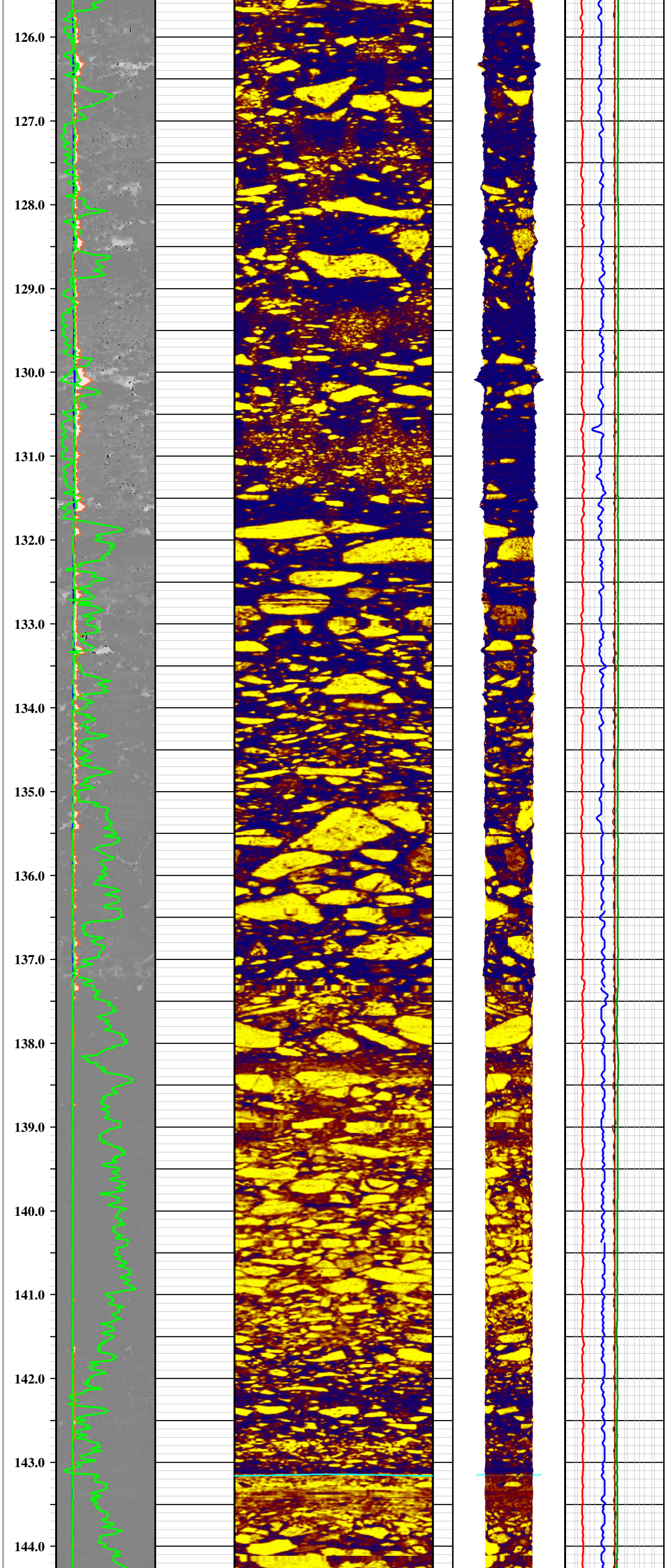
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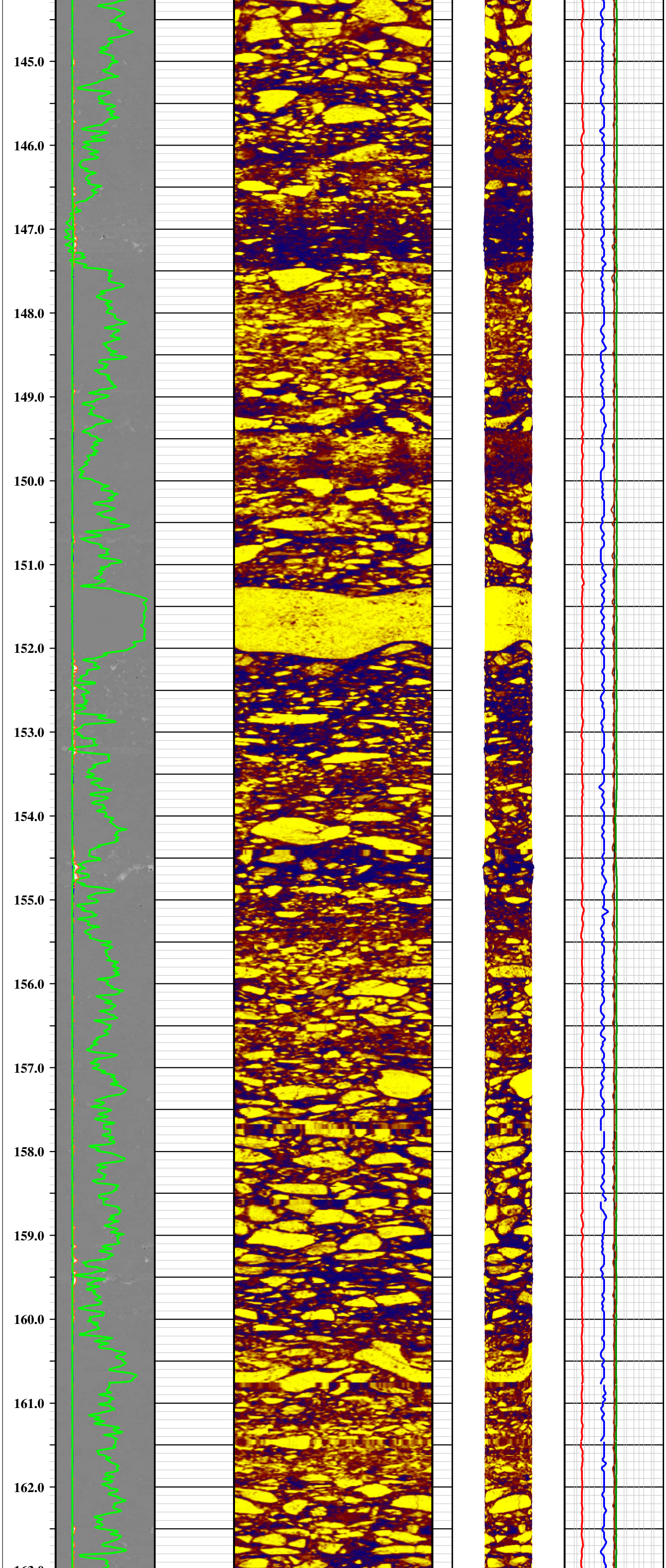
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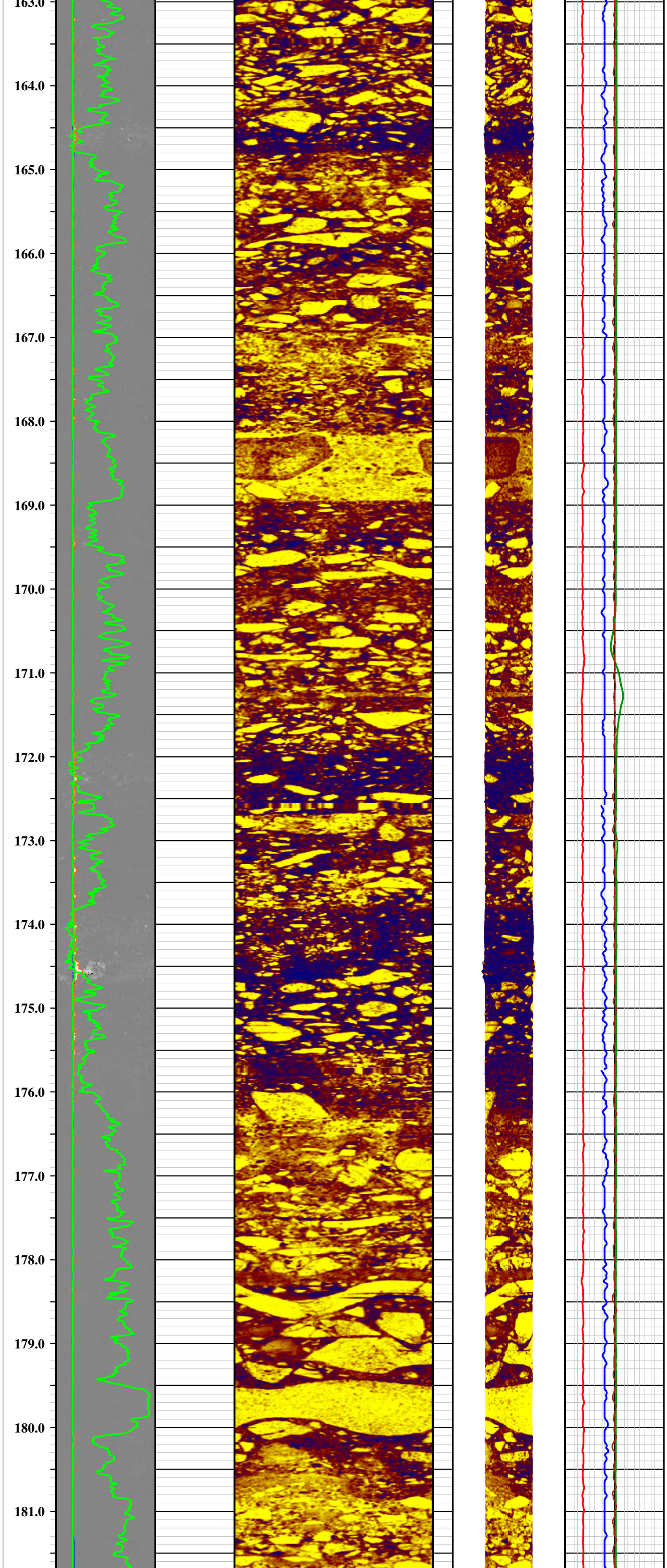
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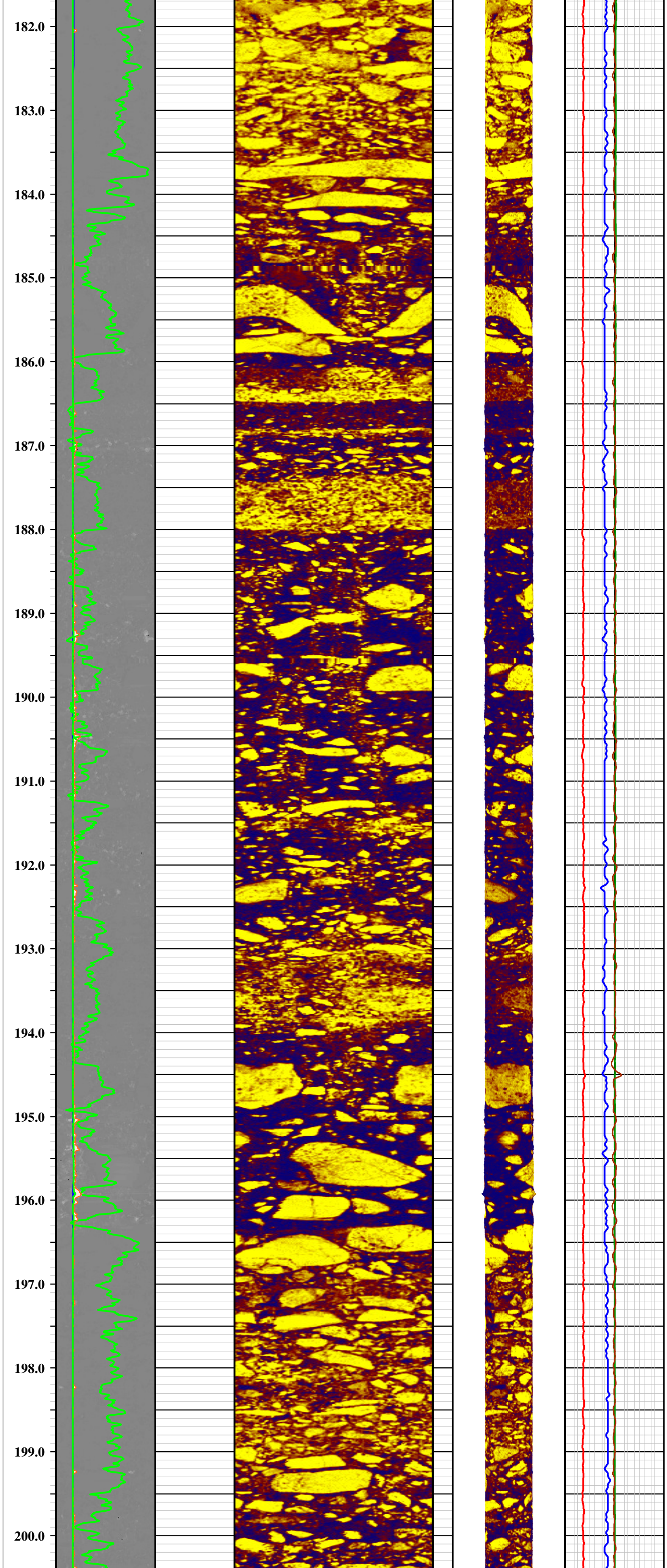
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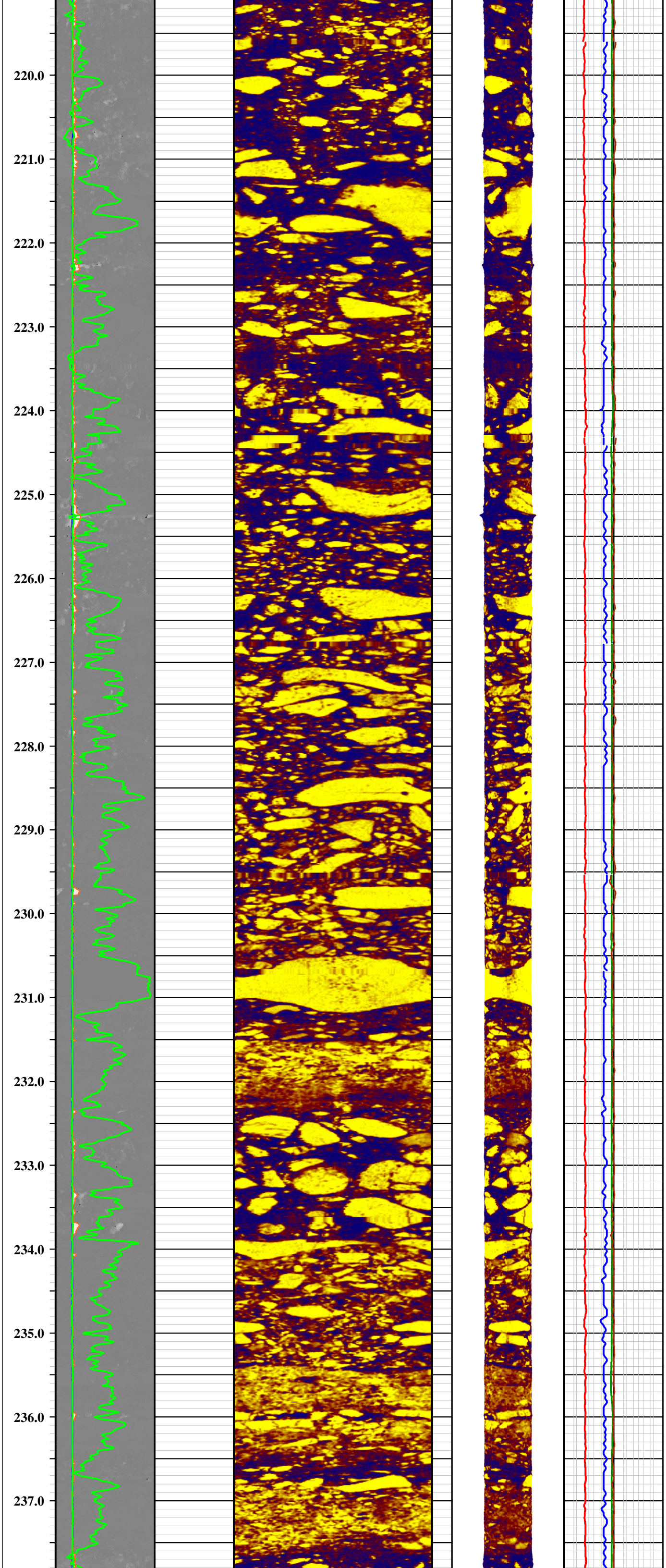
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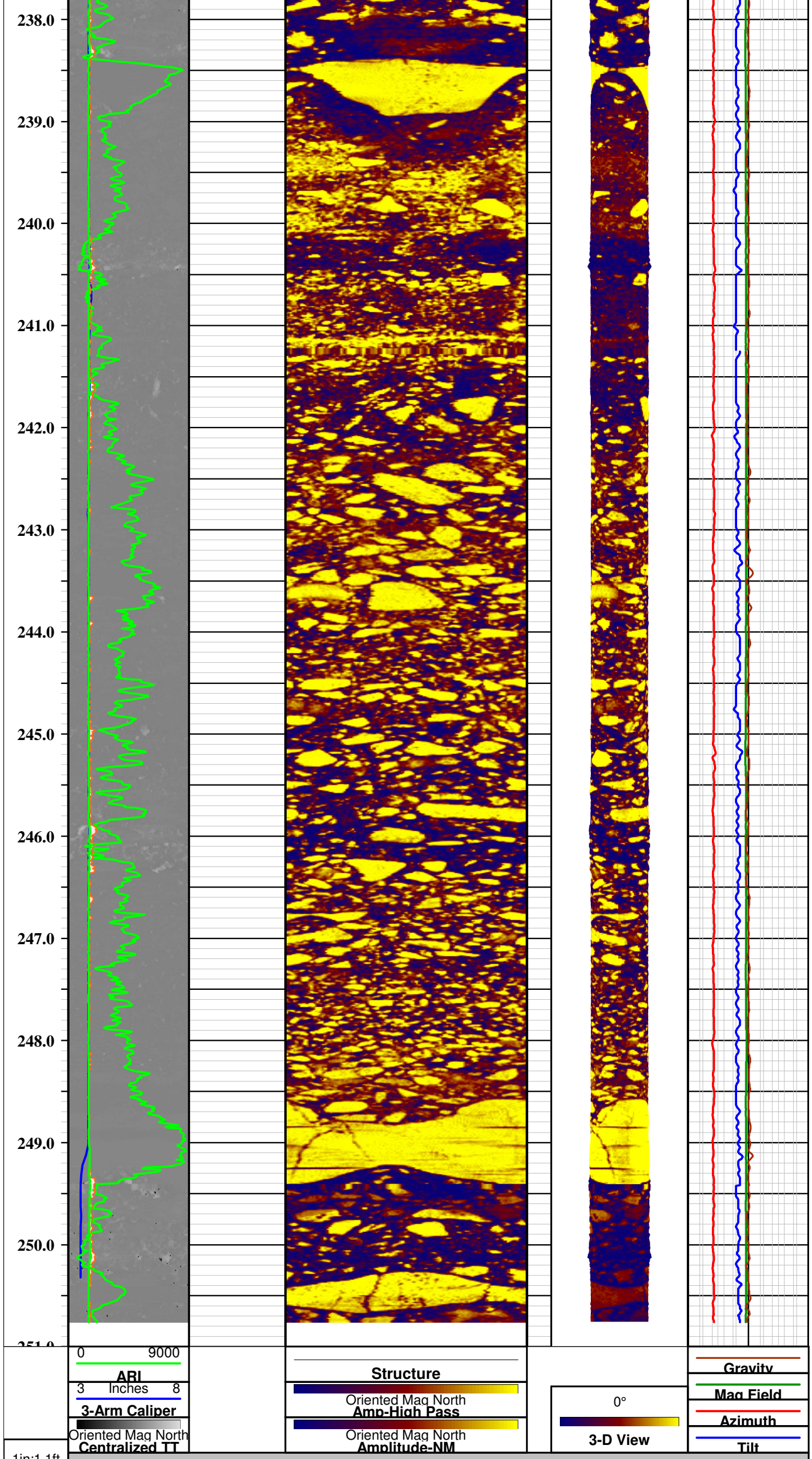


ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



4.57 Ft or 1.39 m

APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

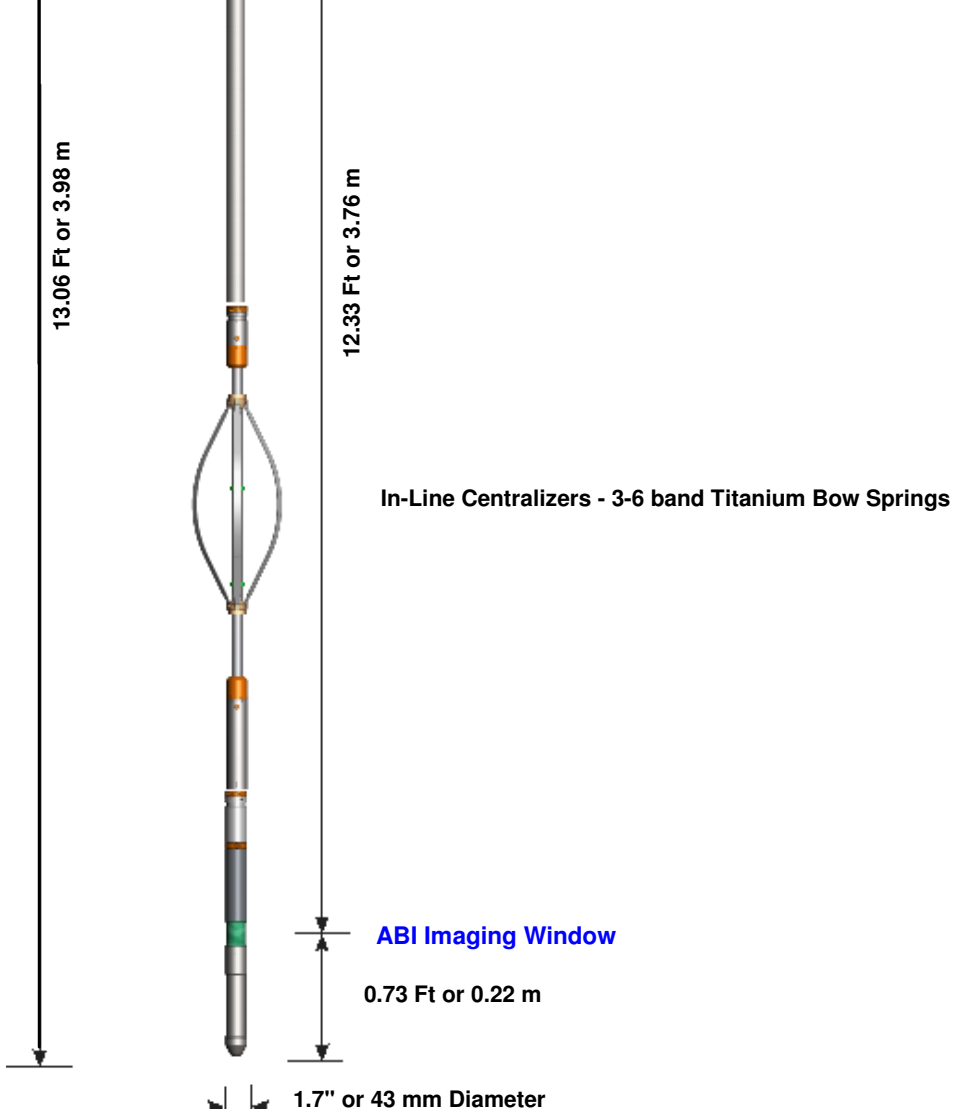
Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

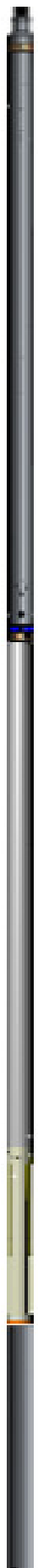
Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)



MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)



1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-16 (DH16-15)
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-04 / DH16-19		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER			OTHER SERVICES
MORE: CALIPER			E-LOGS GAMMA 4RX SONIC CALIPER TEMP / FLUID RES
LOCATION			
SEC	TWP	RGE	

PERMANENT DATUM		ELEVATION		K.B.	
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM		D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	
DATE	12-14-16	TYPE FLUID IN HOLE		FORMATION WATER	
RUN No	4	MUD WEIGHT		N/A	
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY		N/A	
DEPTH-DRILLER	249.0 FT	LEVEL		-20 FT	
DEPTH-LOGGER	249.0 FT	MAX. REC. TEMP.		29.6 DEG. C	
BTM LOGGED INTERVAL	249.0 FT	IMAGE ORIENTED TO:		MAGNETIC NORTH	
TOP LOGGED INTERVAL	30.0 FT	SAMPLE INTERVAL		0.096 FT	
DRILLER / RIG#	BOART LONGYEAR	LOGGING TRUCK		TRUCK#H-001	
RECORDED BY / Logging Eng.	K. MITCHELL/M.QUINONES	TOOL STRING/SN		ALT QL ABI40 2G SN 143002	
WITNESSED BY	BOART	LOG TIME:ON SITE/OFF SITE		2:30 PM	5:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	32 FT	HWT	STEEL	SURFACE	32 FT
2	HQ	30 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	12-14-16	**Date**	12-14-16	**Date**	12-14-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI 2CAA	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	ALT 4 RX SONIC
Tool SN	2299	**Tool SN**	5019	**Tool SN**	5185
From	SURFACE	**From**	SURFACE	**From**	20.0 FT
To	249.0 FT	**To**	249.0 FT	**To**	249.0 FT
Recorded By	K. MITCHELL	**Recorded By**	K. MITCHELL	**Recorded By**	K. MITCHELL
Truck No	H-001	**Truck No**	H-001	**Truck No**	H-001
Operation Check	12-12-16	**Operation Check**	12-12-16	**Operation Check**	12-12-16
Calibration Check	12-12-16	**Calibration Check**	12-12-16	**Calibration Check**	N/A
Time Logged	2:45 PM	**Time Logged**	3:30 PM	**Time Logged**	4:00 PM

Date	12-14-16	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143002	**Tool SN**		**Tool SN**	
From	30.0 FT	**From**		**From**	
To	249.0 FT	**To**		**To**	
Recorded By	K. MITCHELL	**Recorded By**		**Recorded By**	
Truck No	H-001	**Truck No**		**Truck No**	
Operation Check	12-12-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	4:30 PM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 2" & 4"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

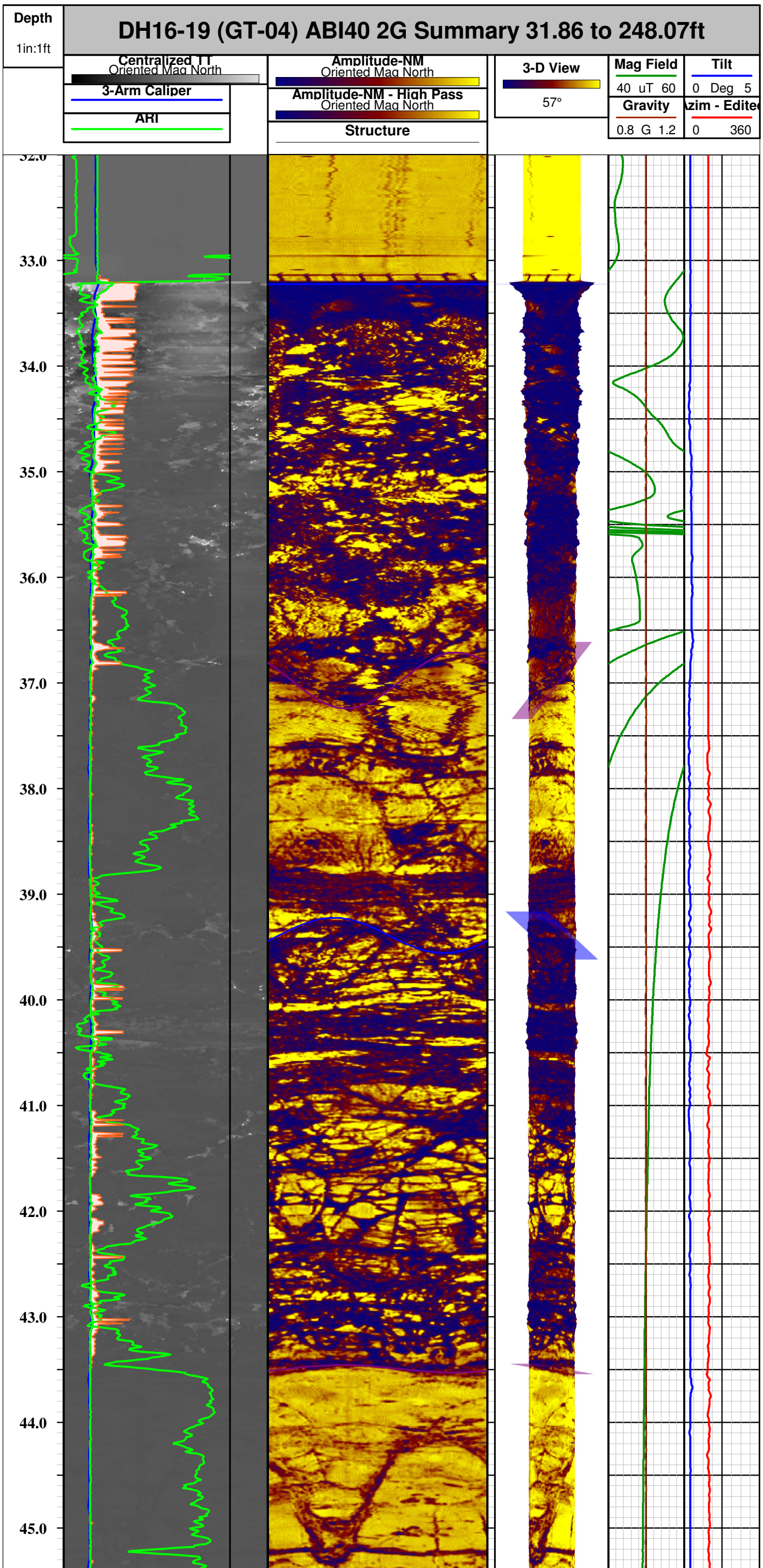
Acoustic Image Features Legend

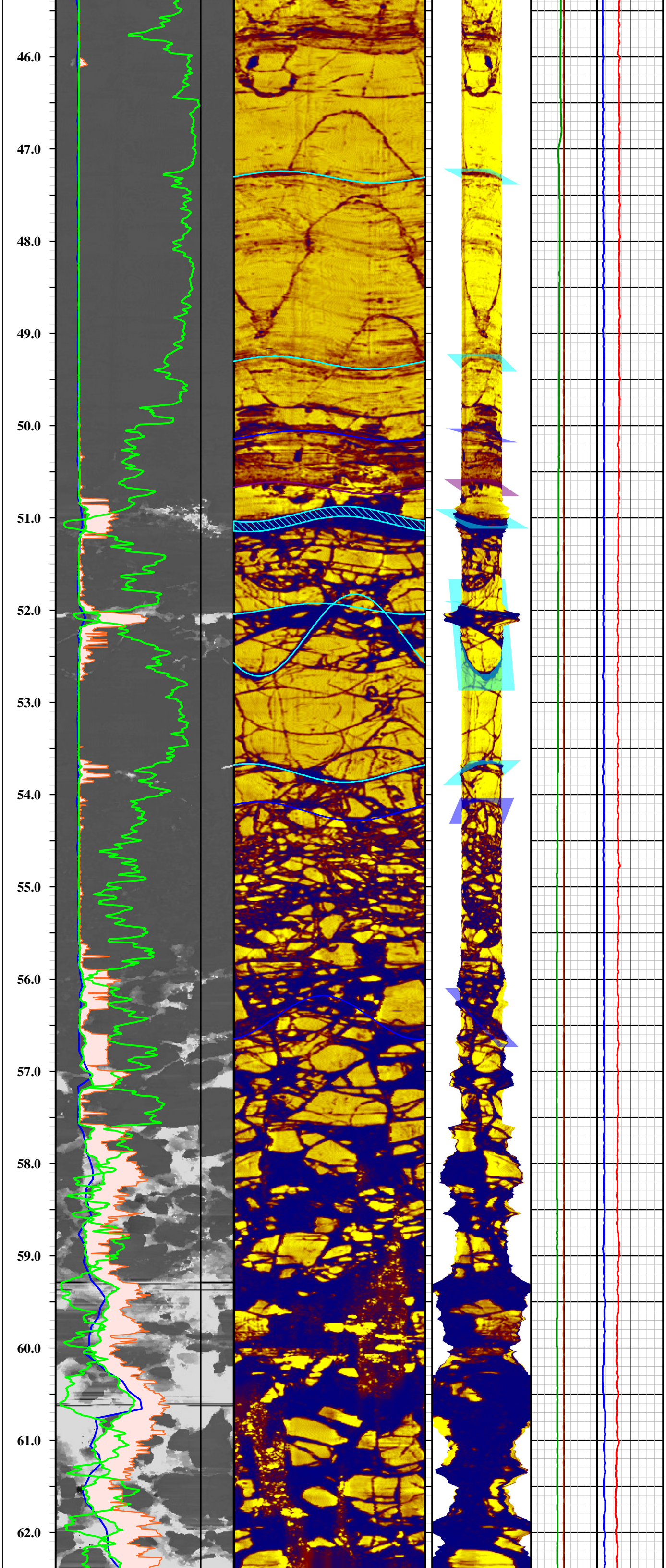
TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

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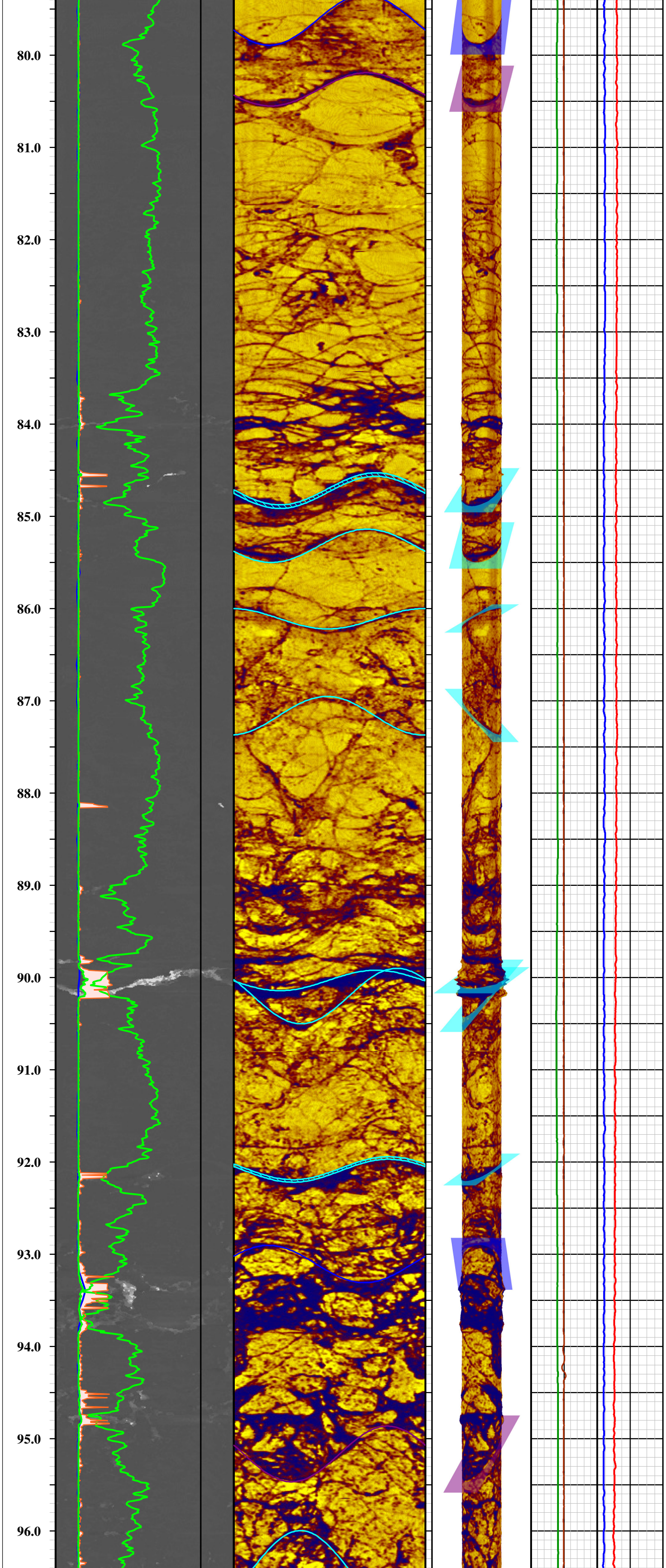
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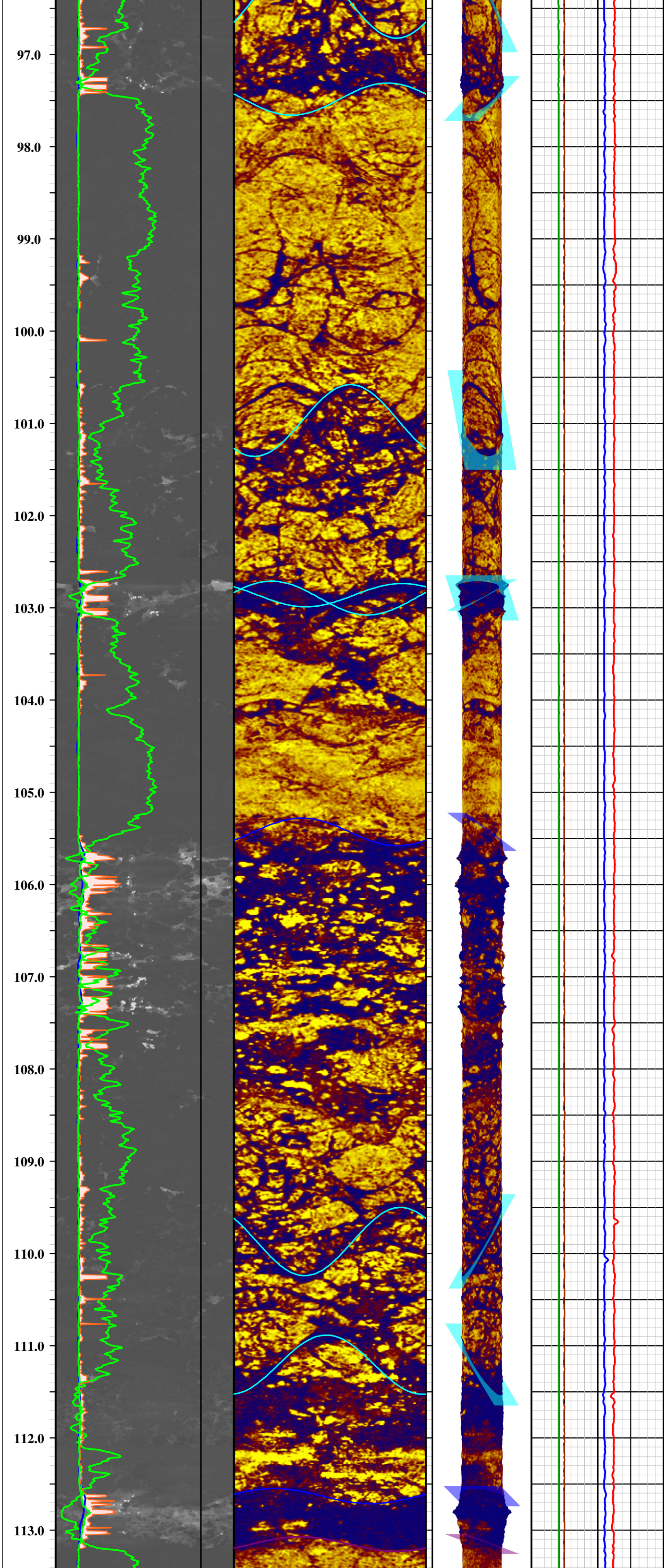
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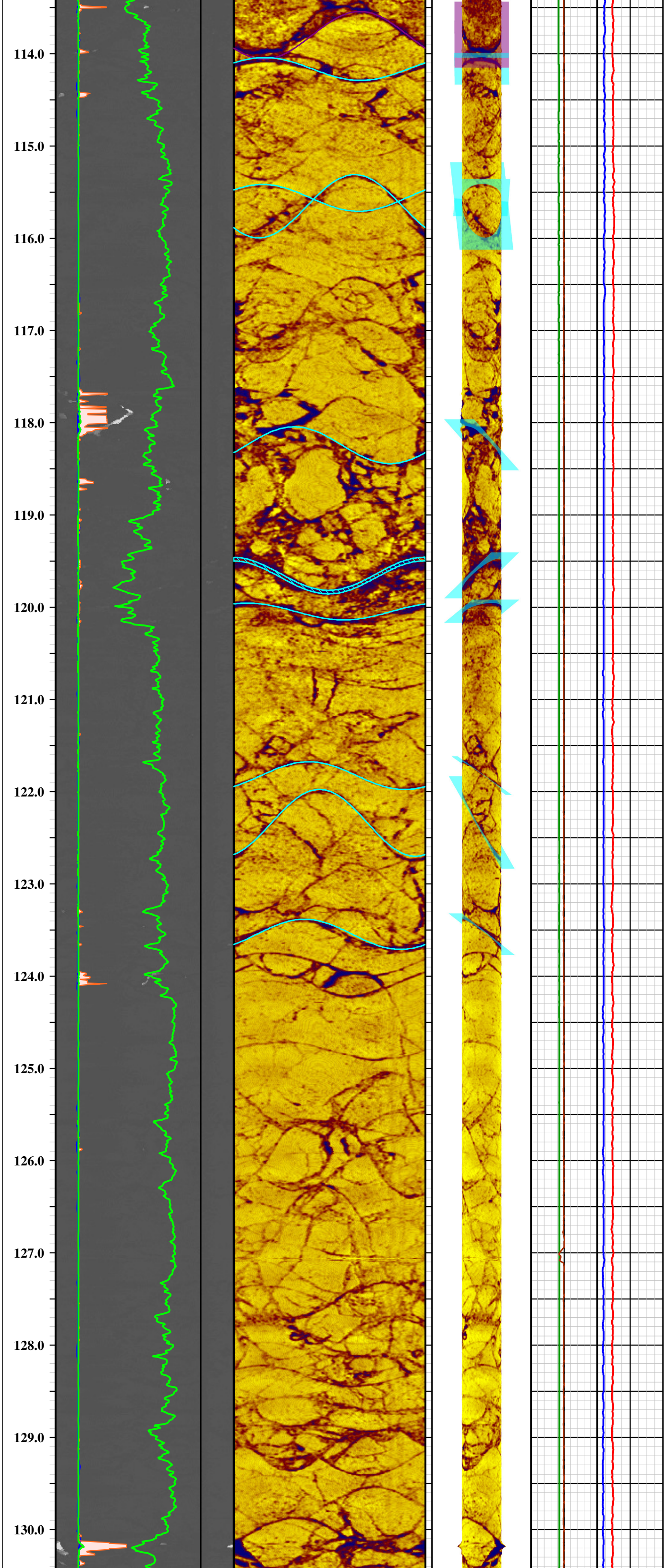
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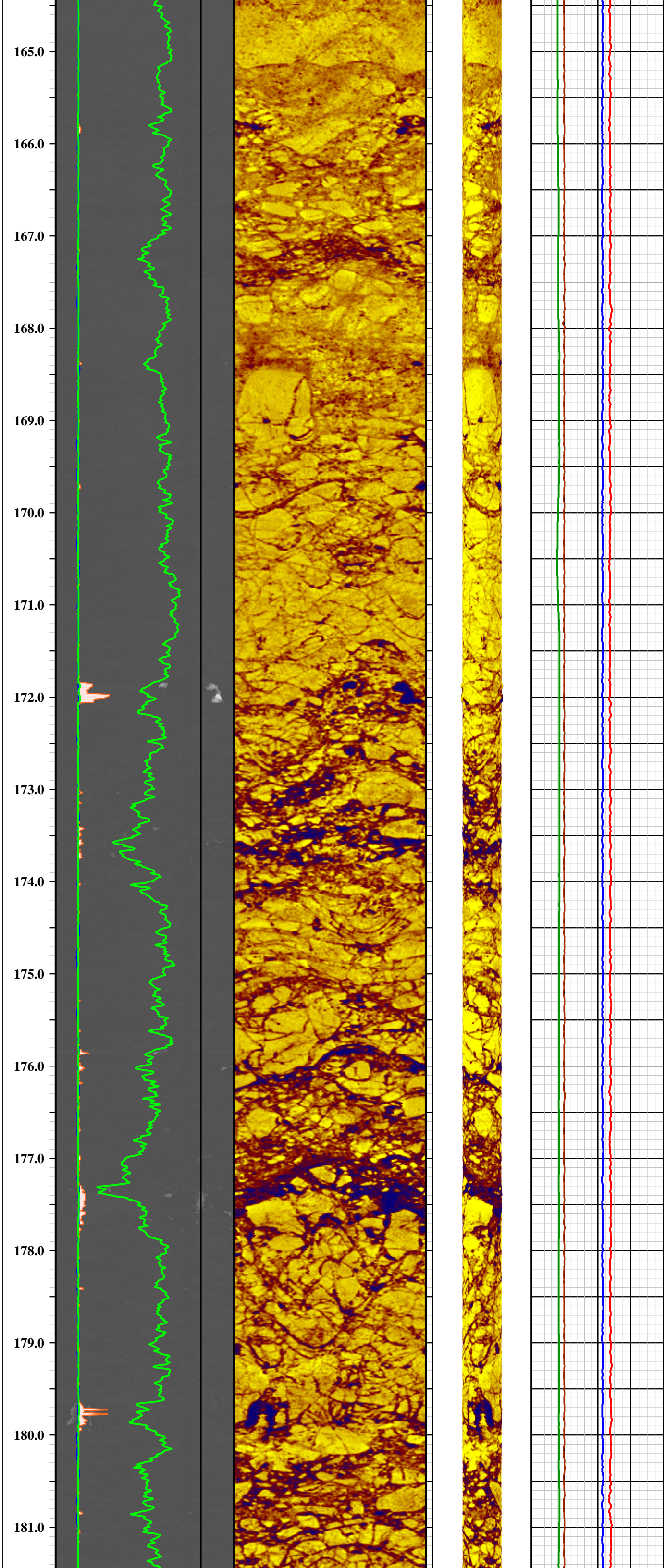
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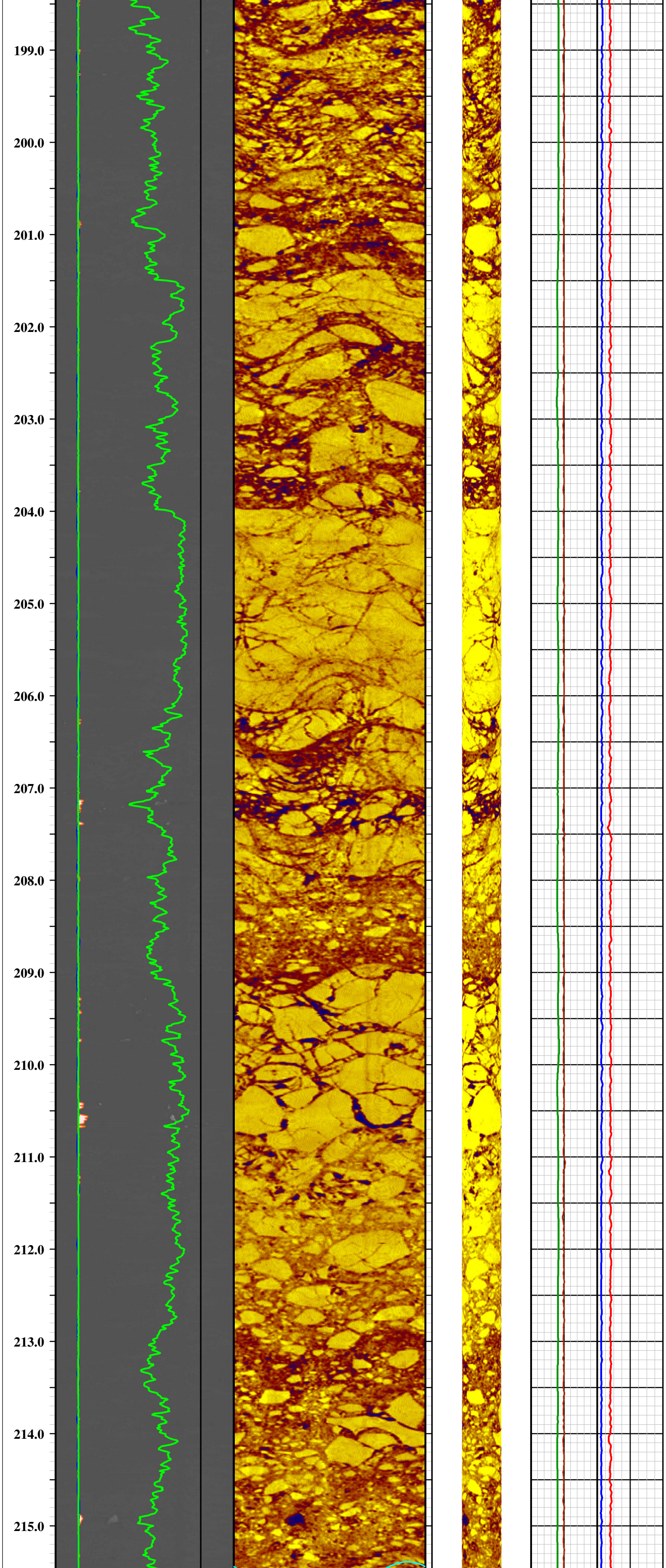
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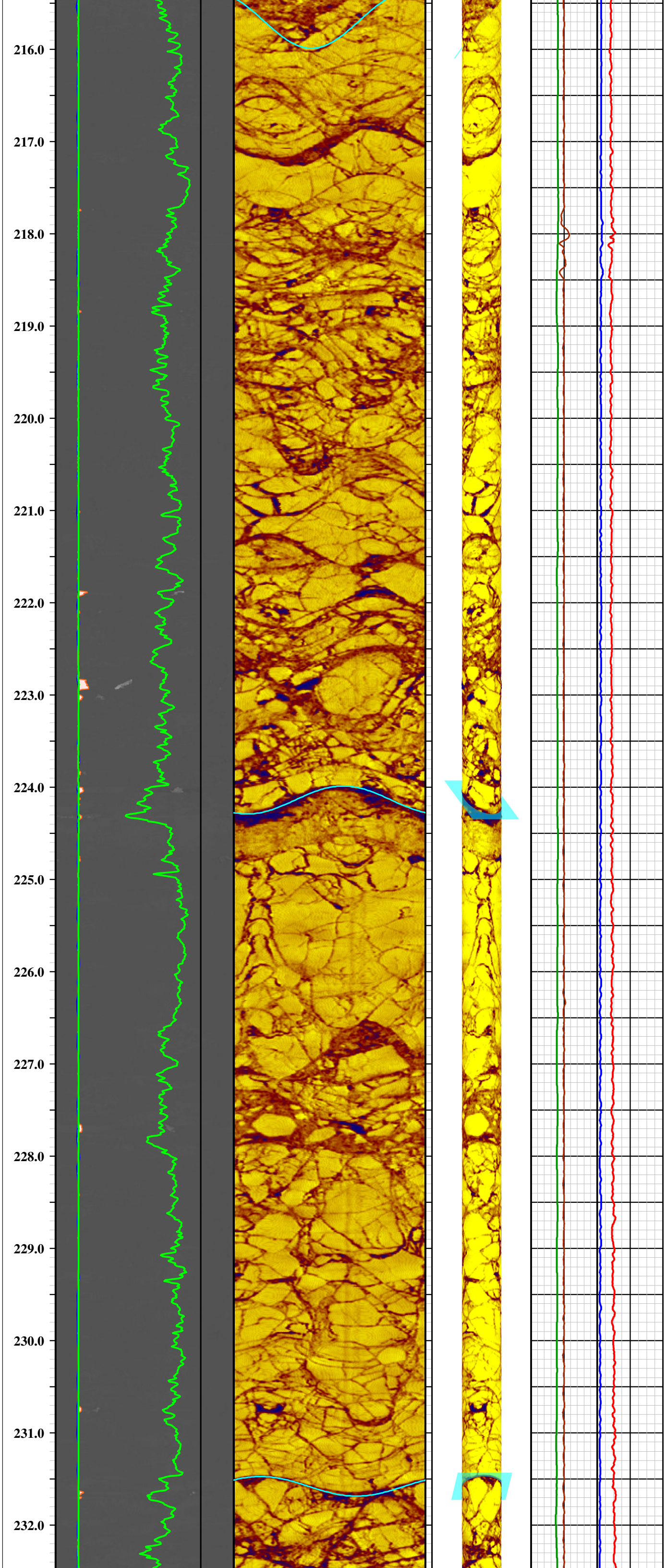
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ARI
3-Arm Caliper
Oriented Mag North
Centralized TT

Structure
Oriented Mag North
Amplitude-NM - High Pass
Oriented Mag North
Amplitude-NM

57°
3-D View

0.8 G 1.2
Gravity
40 uT 60
Mag Field

0 360
Azim - Edited
0 Deg 5
Tilt

1in:1ft

Depth

DH16-19 (GT-04) ABI40 2G Summary 31.86 to 248.07ft

ABI Legend

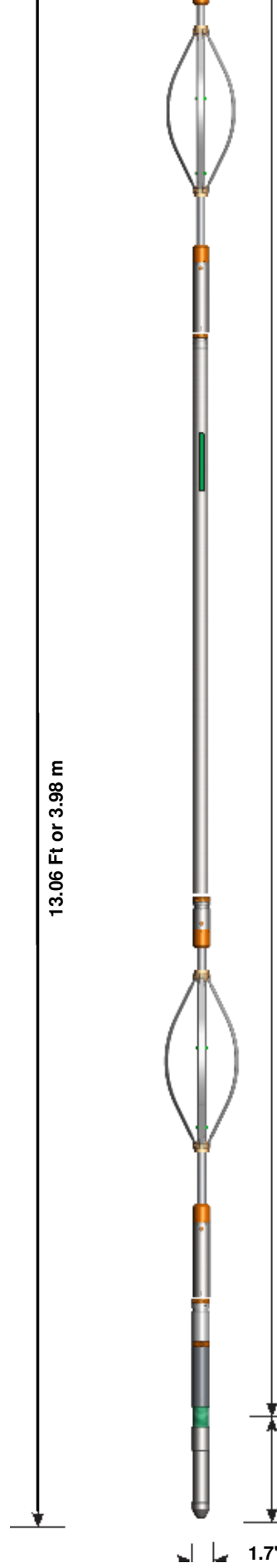
Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601





MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized



3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUITON COPPER CO
Well	GT-04 / DH16-19
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING
WELL ID	GT-03 / DH16-20
FIELD	NEAR WEST
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

LOCATION

SEC TWP RGE

OTHER SERVICES
OPTICAL TELEVIEWER
GAMMA
TEMP / FLUID RES
E-LOGS
SONIC
DUAL INDUCTION

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	12-16-16	TYPE FLUID IN HOLE	WATER
RUN No	5	MUD WEIGHT	N/A
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	250 FT	LEVEL	~ 70 FT
DEPTH-LOGGER	250 FT	MAX. REC. TEMP.	24.75 DEG. C
BTM LOGGED INTERVAL	250 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	70 FT	SAMPLE INTERVAL	0.010 FT
DRILLER / RIG#	BOART	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	E. TURNER	TOOL STRING/SN	ALT QL ABI40 2G SN 143003
WITNESSED BY	CARA- GOLDER	LOG TIME:ON SITE/OFF SITE	8:00 A.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	30 FT	HWT	STEEL	SURFACE	30 FT
2	HQ	30 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	12-16-16	**Date**	12-16-16	**Date**	12-16-16	**Date**	12-16-16
Run No.	1	**Run No.**	2	**Run No.**	3	**Run No.**	4
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC	**Tool Model**	ALT QL DIL
Tool SN	4953	**Tool SN**	5514	**Tool SN**	4572	**Tool SN**	6261
From	SURFACE	**From**	SURFACE	**From**	70 FT	**From**	SURFACE
To	250 FT	**To**	250 FT	**To**	250 FT	**To**	80 FT
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER
Truck No	310	**Truck No**	310	**Truck No**	310	**Truck No**	310
Operation Check	12-15-16	**Operation Check**	12-15-16	**Operation Check**	12-15-16	**Operation Check**	12-15-16
Calibration Check	12-15-16	**Calibration Check**	12-15-16	**Calibration Check**	N/A	**Calibration Check**	12-4-16
Time Logged	8:30 AM	**Time Logged**	9:05 AM	**Time Logged**	11:15 AM	**Time Logged**	9:55 AM

Date	12-16-16	**Date**	12-16-16
Run No.	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**	ALT QL OBI40 2G
Tool SN	143003	**Tool SN**	152511
From	70 FT	**From**	30 FT
To	250 FT	**To**	75 FT
Recorded By	E. TURNER	**Recorded By**	E. TURNER
Truck No	310	**Truck No**	310
Operation Check	12-15-16	**Operation Check**	12-15-16
Calibration Check	N/A	**Calibration Check**	N/A
Time Logged	10:25 AM	**Time Logged**	11:15 AM

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2 & 8"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

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Acoustic Image Features Legend

TV StrucTop
TV Struc discrete
TV Struc Bot

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DH16-20 (GT-03) ABI40 2G Summary 69.57 to 249.63ft

Depth
1in:1ft

Centralized TT
Oriented Mag North
0° 90° 180° 270° 0°

3-Arm Caliper
0 Inches 10

Max Acoustic Caliper
0 in 10

Ave Acoustic Caliper
0 in 10

Enlargements

Amplitude-NM
Oriented Mag North
0° 90° 180° 270° 0°

Amplitude-Static
Oriented Mag North
0° 90° 180° 270° 0°

ARI
0 8000

Breakout/Tensile
0° 90° 180° 270° 0°

Structure
0° 90° 180° 270° 0°

Image-NM
Oriented Mag North
0° 90° 180° 270° 0°

3-D View
0°

Mag Field
40 uT 60

Gravity
0.8 G 1.2

Tilt
0 Deg 16

Azimuth
0 Deg 360

72.0
73.0
74.0
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76.0
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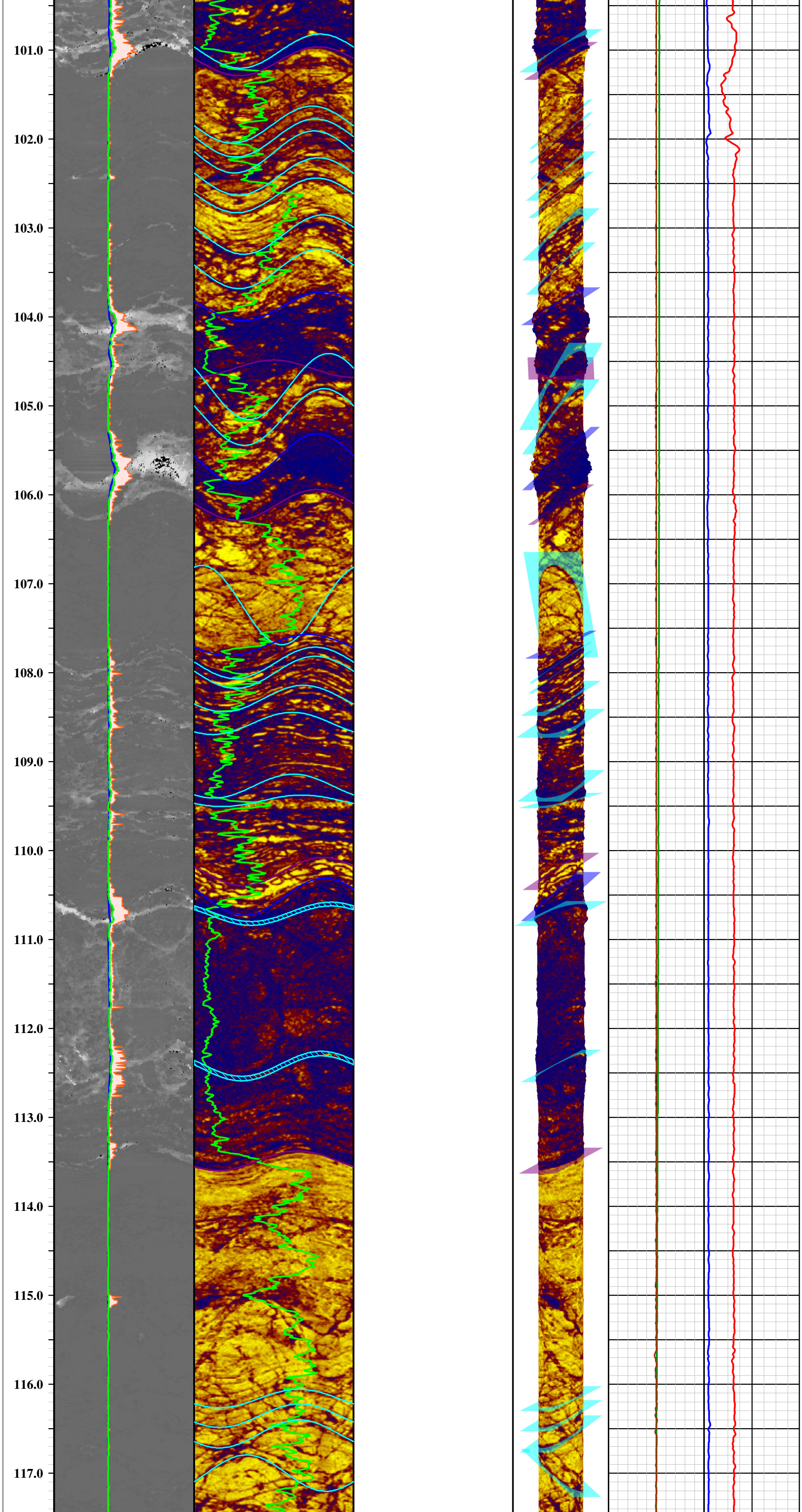
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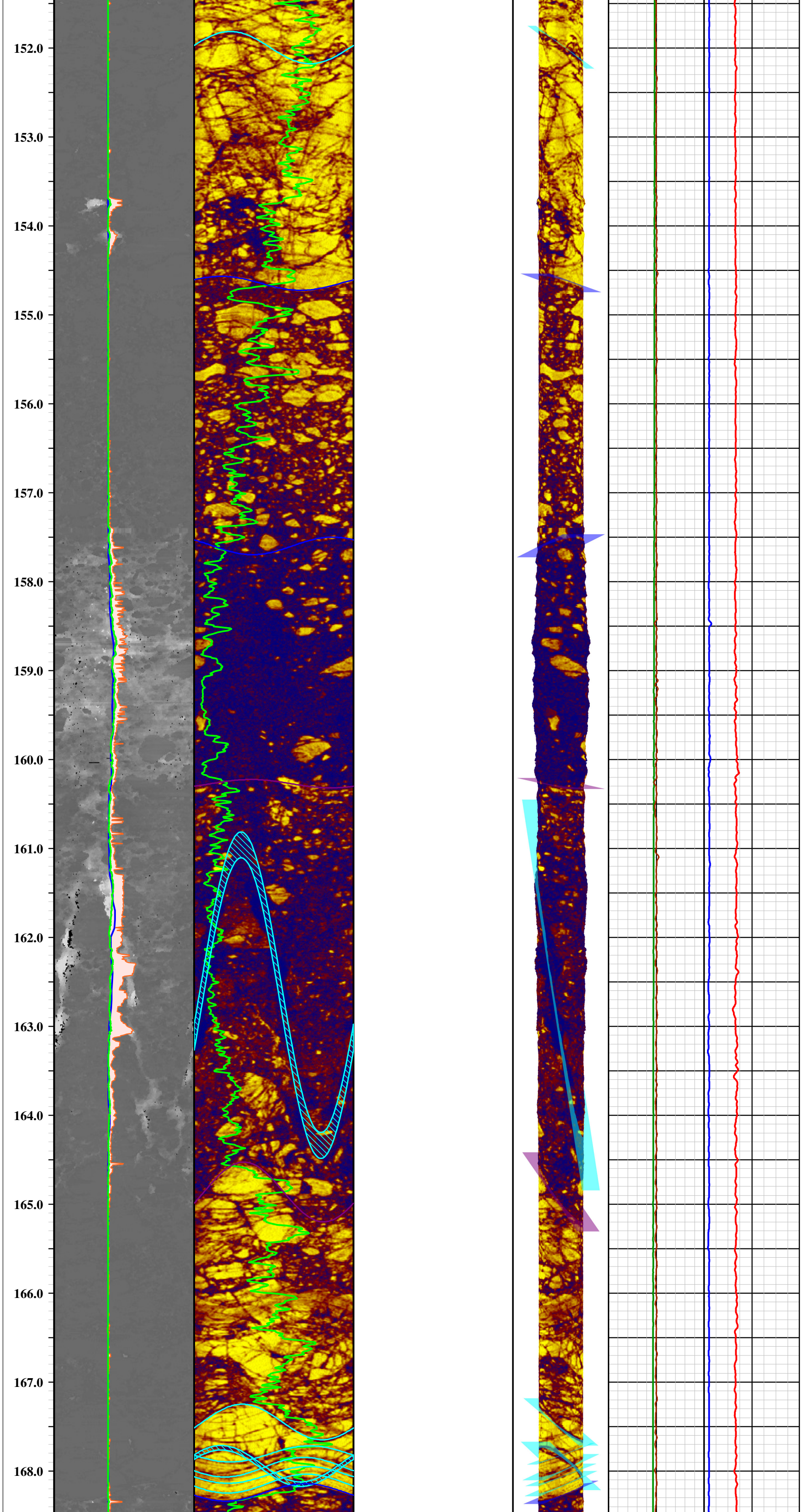
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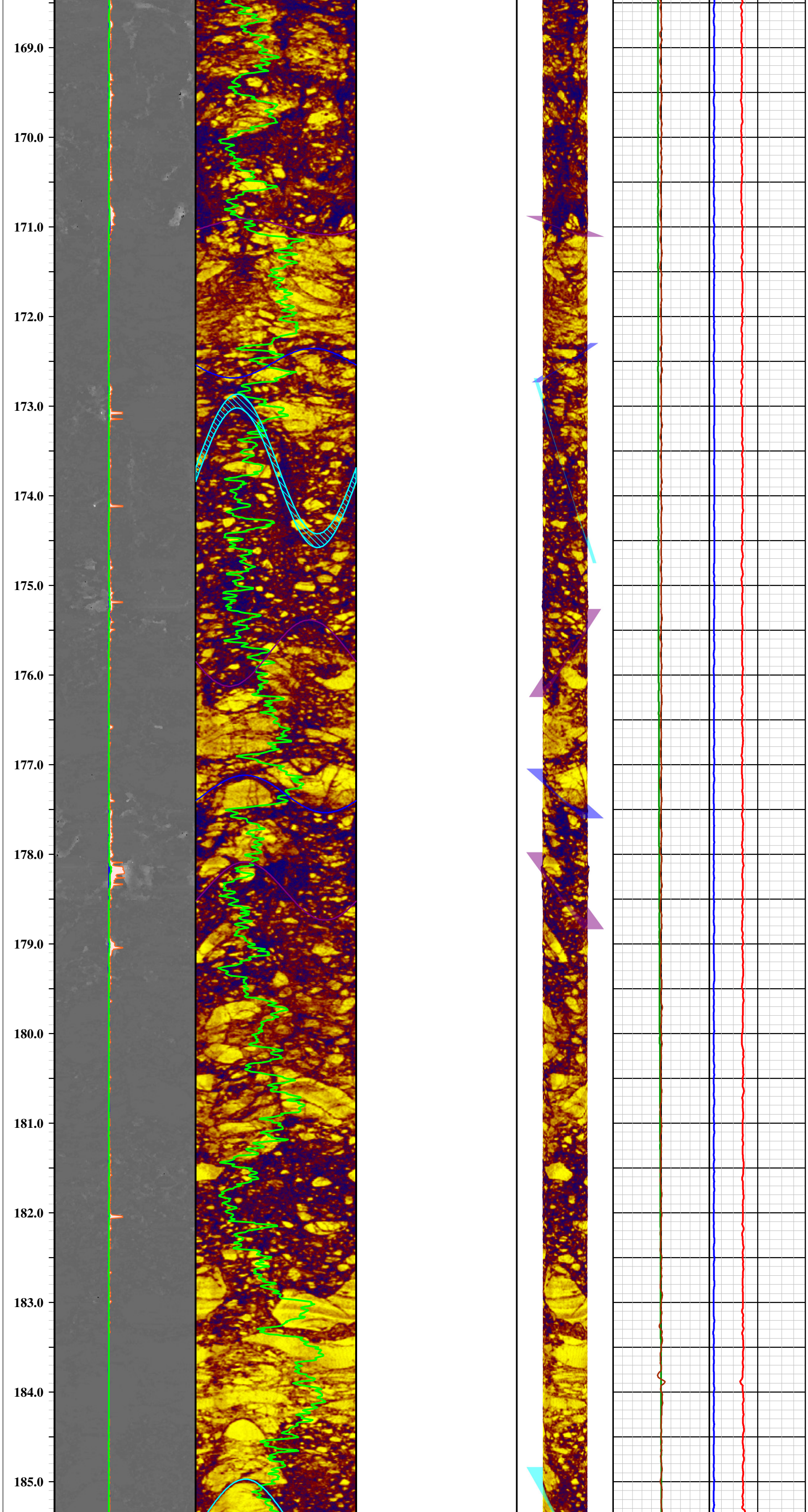
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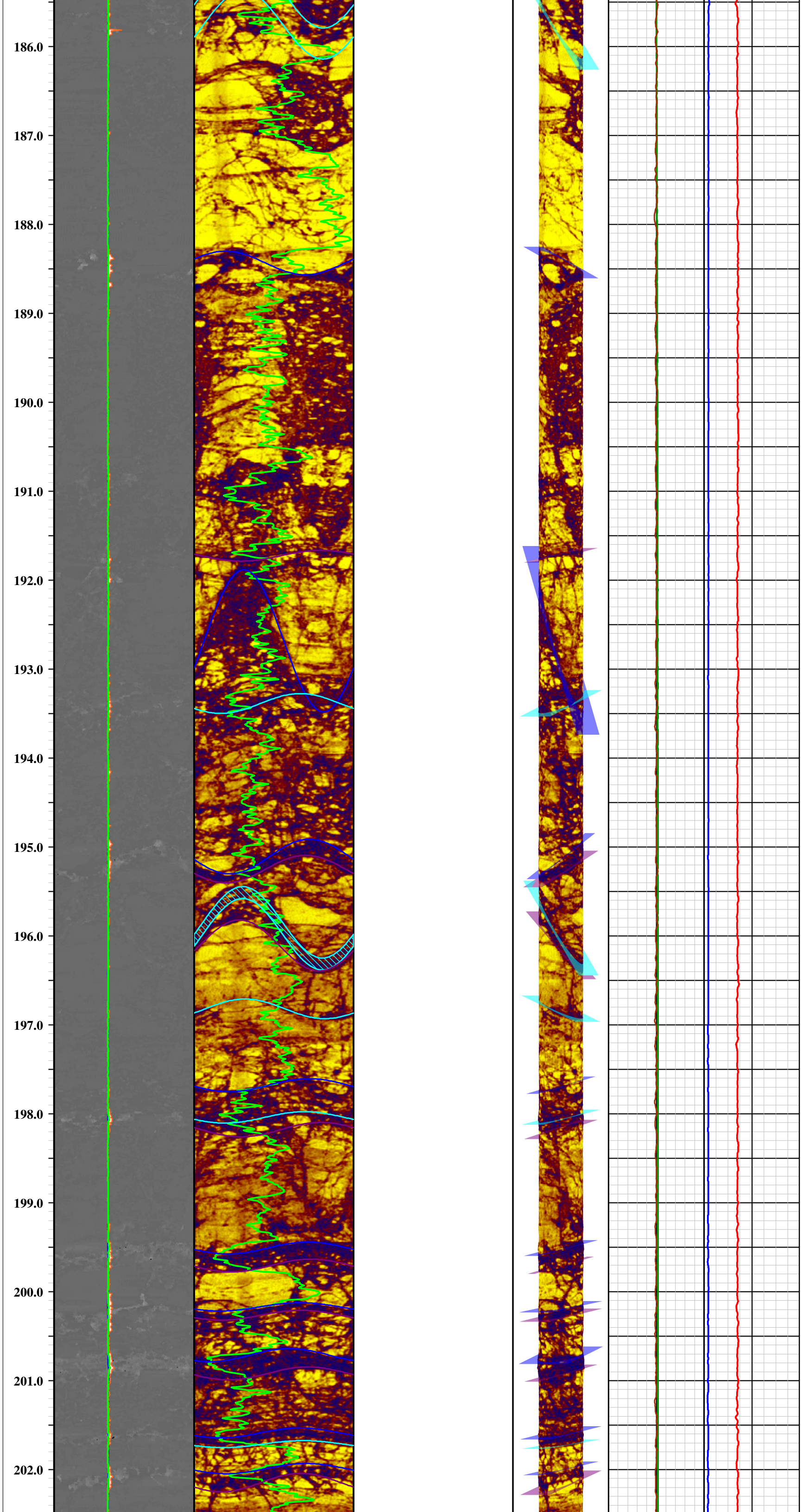
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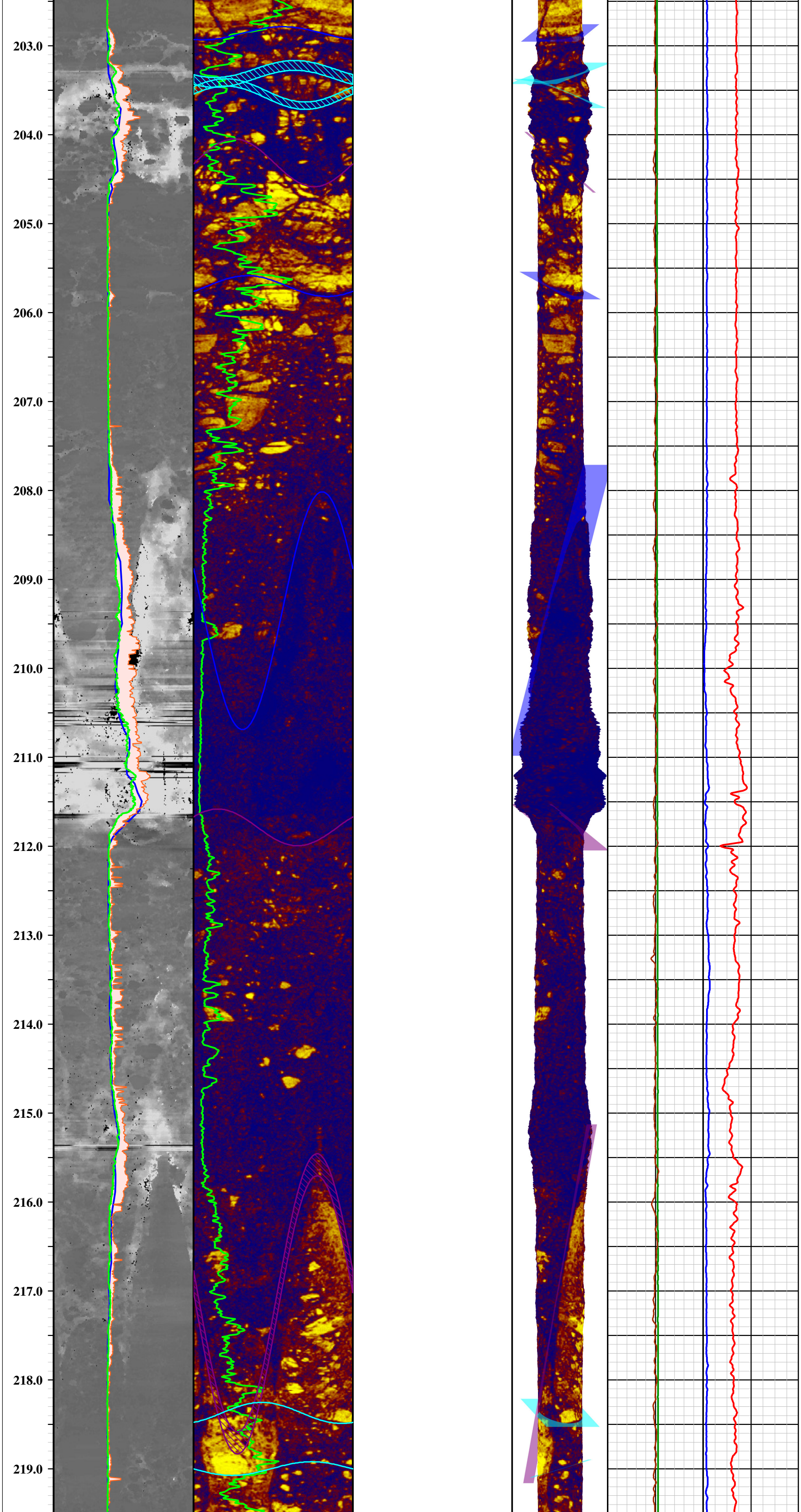
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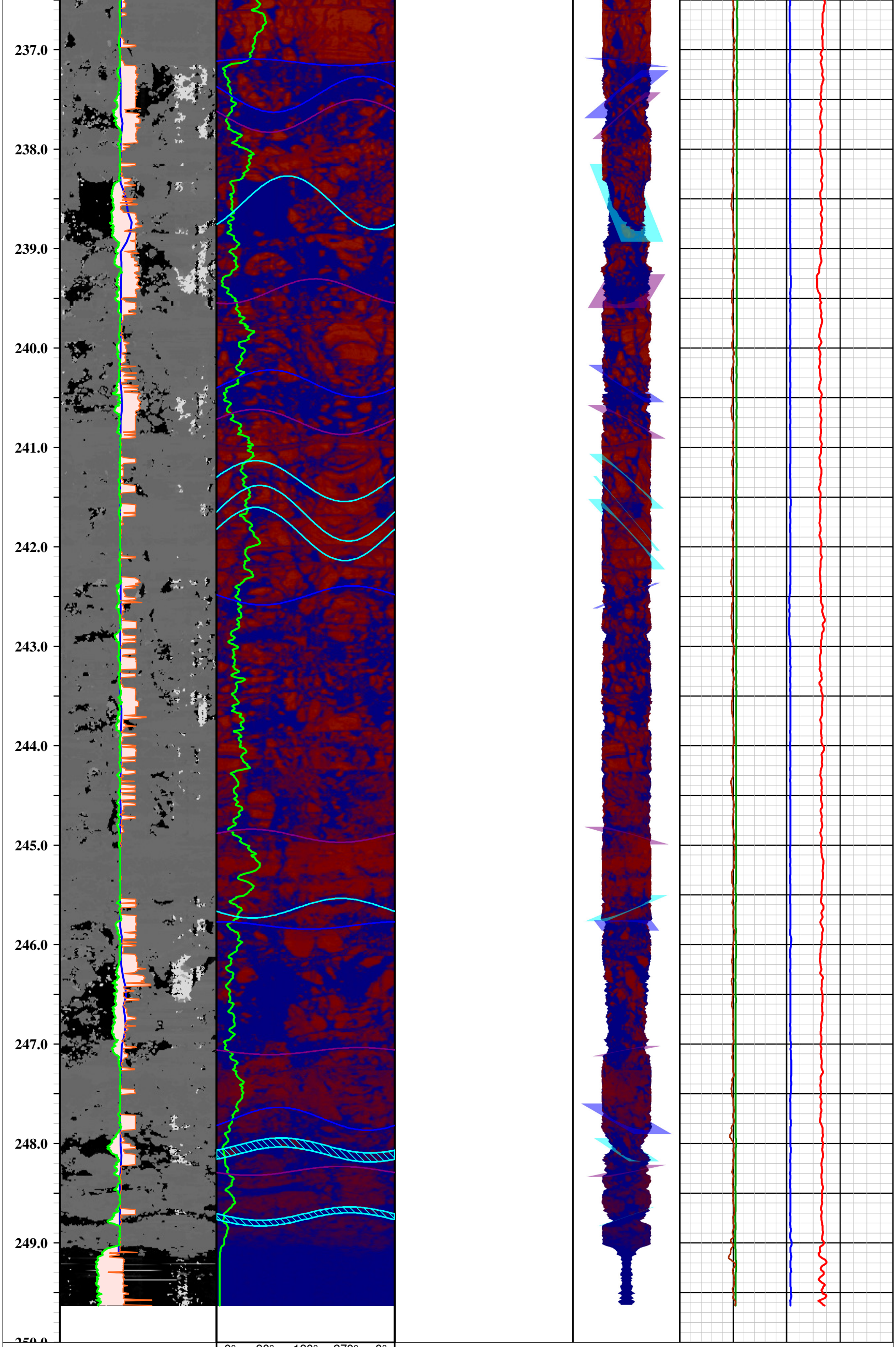
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0° 90° 180° 270° 0°
Structure
0° 90° 180° 270° 0°
Breakout/Tensile
0 8000
ARI
0° 90° 180° 270° 0°
Oriented Mag North
Amplitude-Static
Enlargements
0 in 10
Ave Acoustic Caliper
0 in 10
Max Acoustic Caliper
0 Inches 10
3-Arm Caliper
0° 90° 180° 270° 0°
Oriented Mag North
Centralized TT
0° 90° 180° 270° 0°
Oriented Mag North
Amplitude-NM
0° 90° 180° 270° 0°
Oriented Mag North
Image-NM
0°
3-D View
0.8 G 1.2
Gravity
40 uT 60
Mag Field
0 Deg 360
Azimuth
0 Deg 16
Tilt
1in:1ft
Depth
DH16-20 (GT-03) ABI40 2G Summary 69.57 to 249.63ft

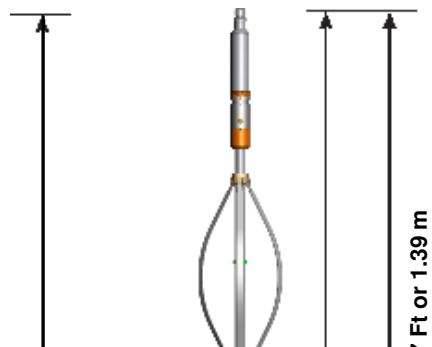
ABI Legend

Mnemonics	Description

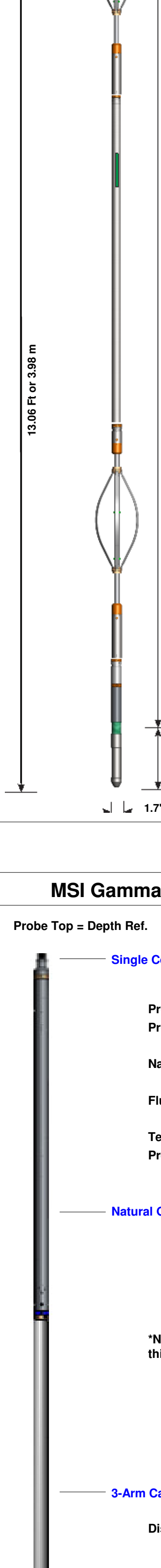
ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers



Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

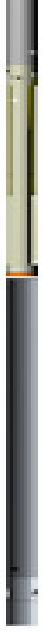
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)



Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-03 / DH16-20
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-05 / DH16-21		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA
TYPE OF LOGS: GAMMA - CALIPER			OTHER SERVICES
MORE: TEMP / FLUID RES.			E-LOGS
LOCATION			SONIC
			TEMP / FLUID RES
SEC	TWP	RGE	
PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	12-21-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	4		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	249.0 FT		LEVEL		-32 FT
DEPTH-LOGGER	248.0 FT		MAX. REC. TEMP.		27.2 DEG. C
BTM LOGGED INTERVAL	247.0 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	50.0 FT		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL		TOOL STRING/SN		ALT QL ABI40 2G SN 143002
WITNESSED BY	GOLDER		LOG TIME:ON SITE/OFF SITE		10:30 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	30 FT.	HWT	STEEL	SURFACE	55 FT.
2	HQ	55 FT.	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	12-21-16	**Date**	12-21-16	**Date**	12-21-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI 2CAA-F	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	ALT 4 RX SONIC
Tool SN	2299	**Tool SN**	5019	**Tool SN**	5185
From	SURFACE	**From**	SURFACE	**From**	45.0 FT
To	248.0 FT	**To**	247.0 FT	**To**	247.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	H-001	**Truck No**	H-001	**Truck No**	H-001
Operation Check	12-21-16	**Operation Check**	12-21-16	**Operation Check**	12-21-16
Calibration Check	12-21-16	**Calibration Check**	12-21-16	**Calibration Check**	N/A
Time Logged	1:45 PM	**Time Logged**	2:15 PM	**Time Logged**	2:45 PM

Date	12-21-16	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143002	**Tool SN**		**Tool SN**	
From	50.0 FT	**From**		**From**	
To	247.0 FT	**To**		**To**	
Recorded By	E. BEAM	**Recorded By**		**Recorded By**	
Truck No	H-001	**Truck No**		**Truck No**	
Operation Check	12-21-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	3:15 PM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 4" & 6"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

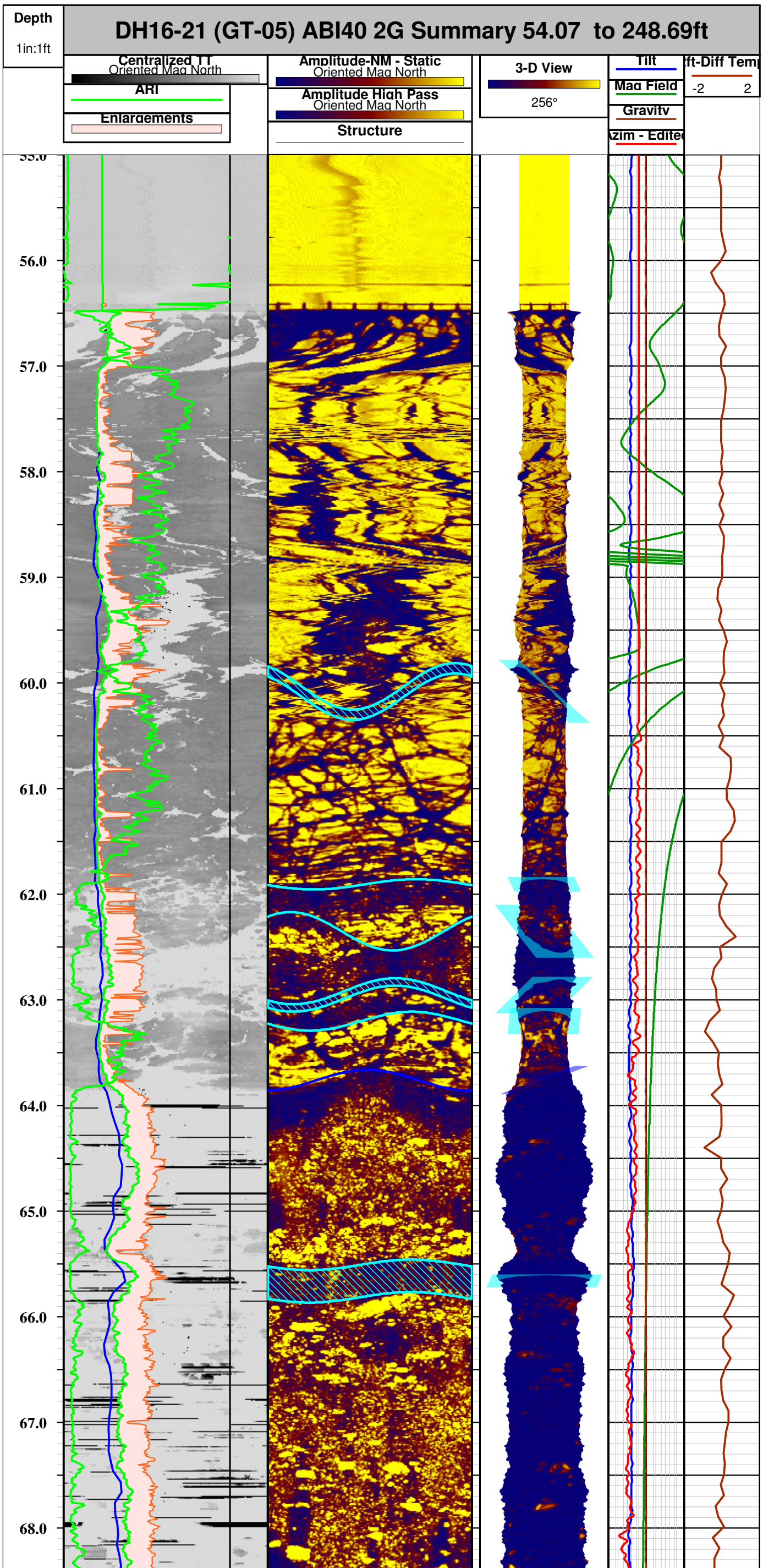
Acoustic Image Features Legend

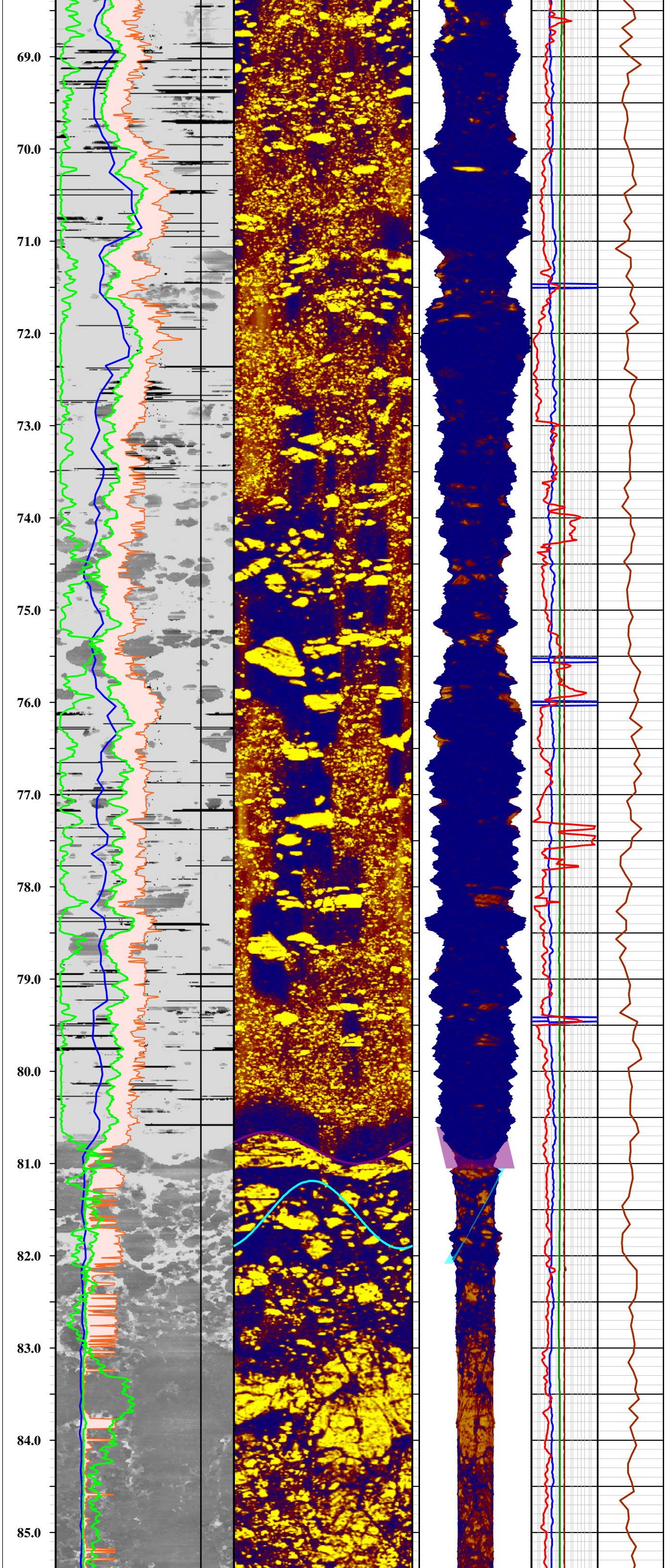
TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

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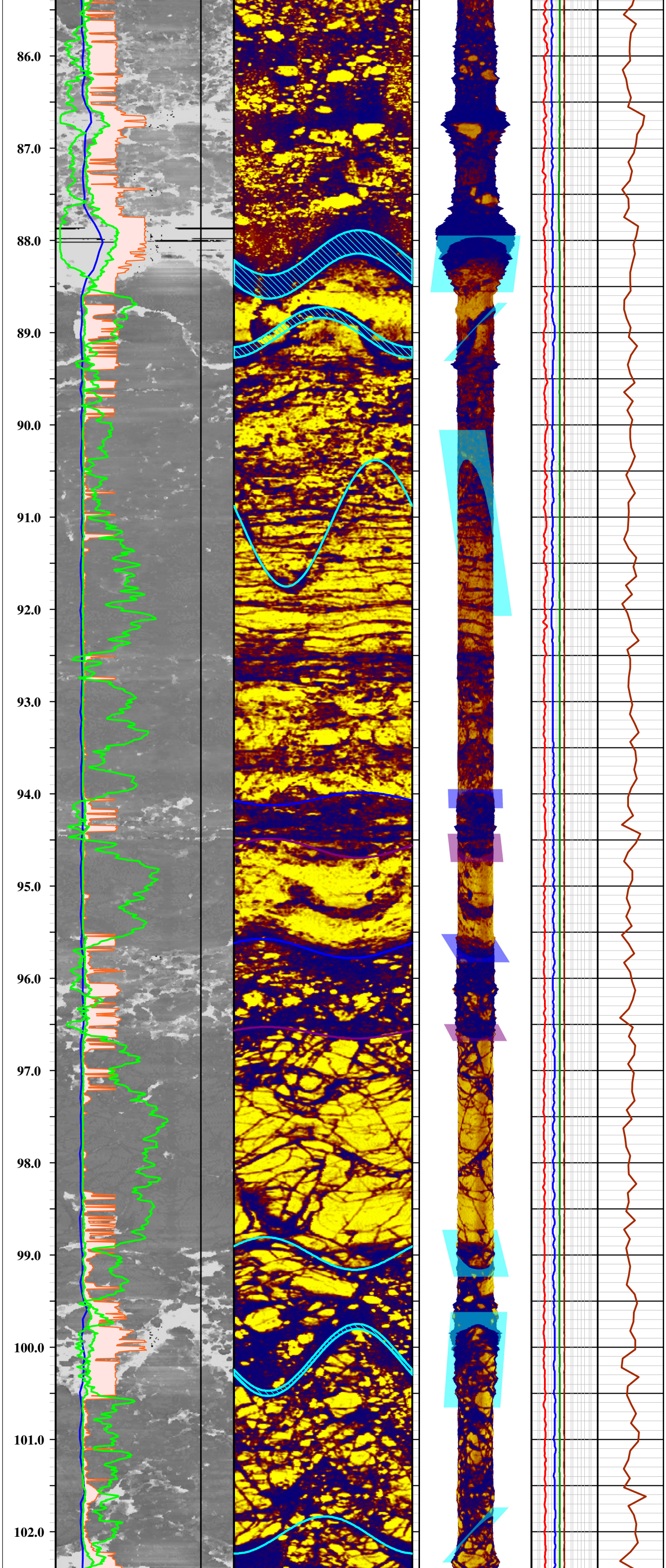
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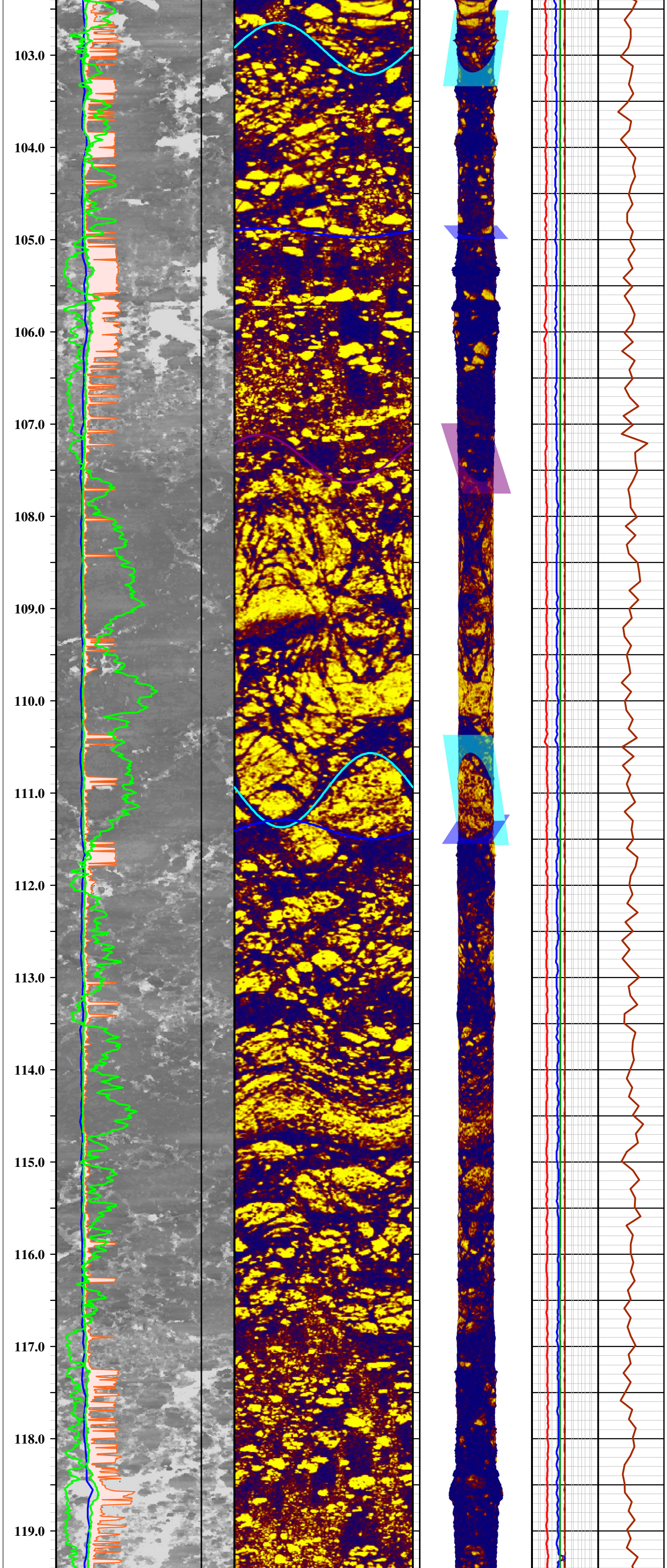
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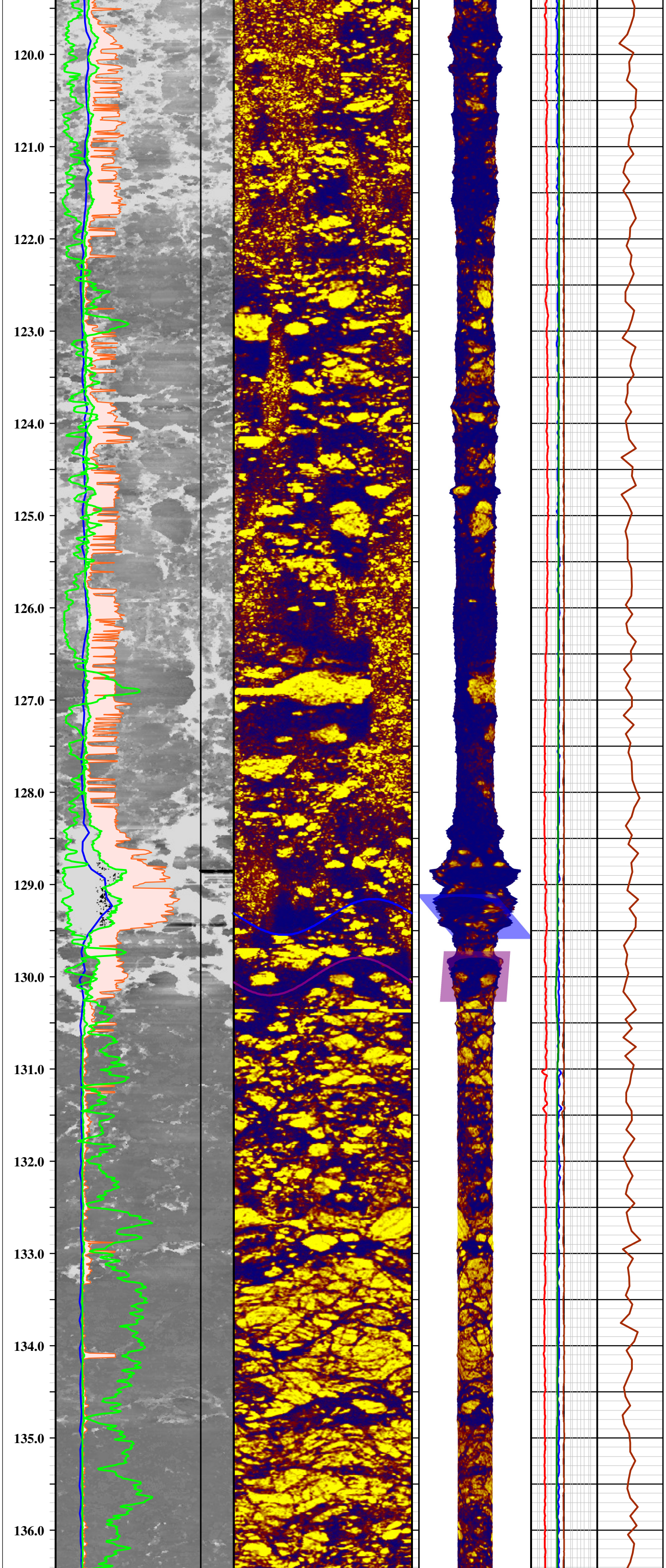
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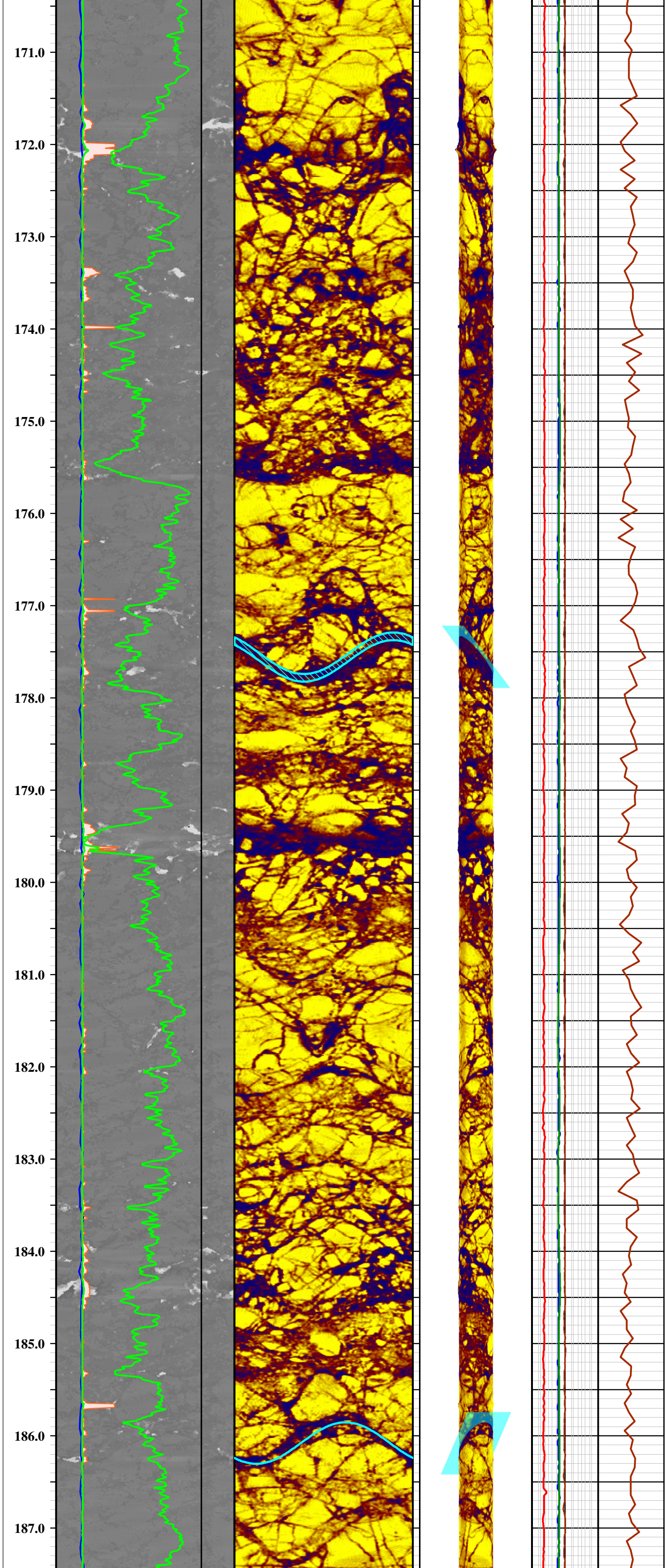
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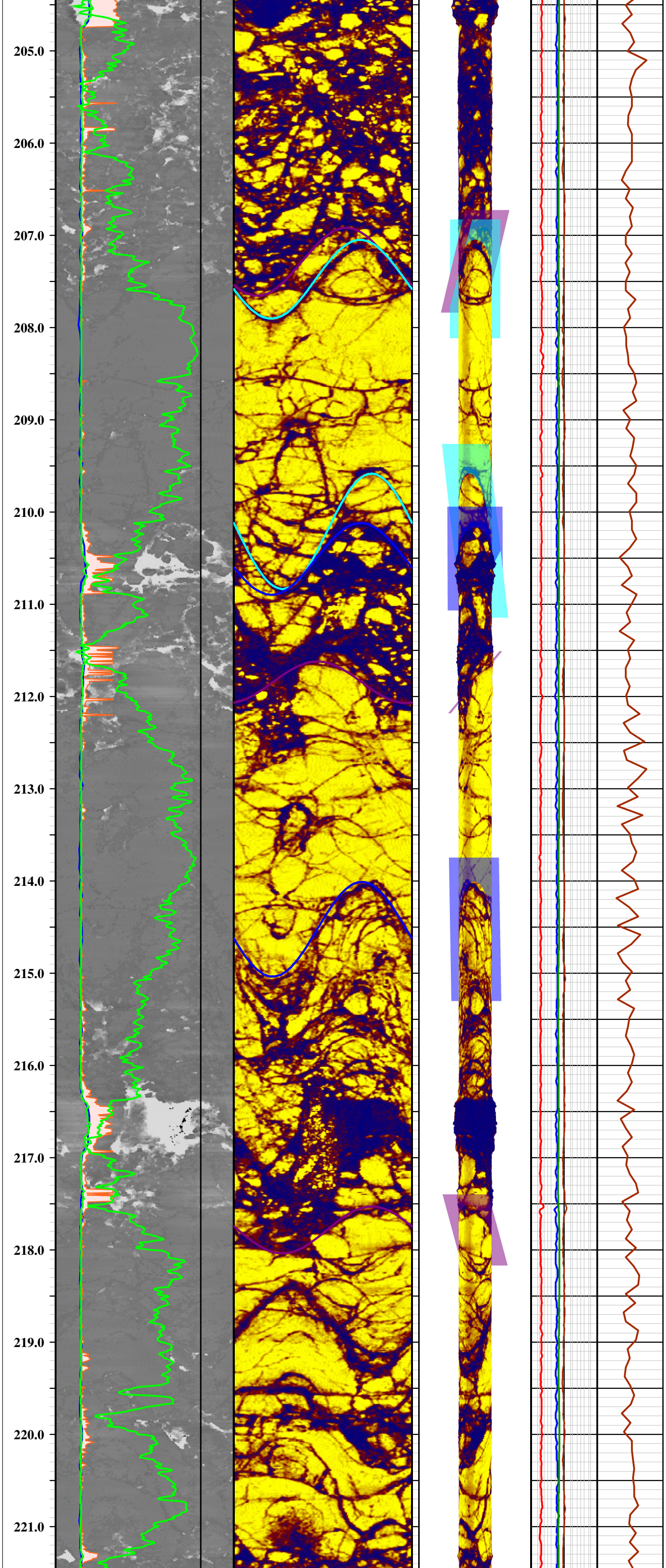
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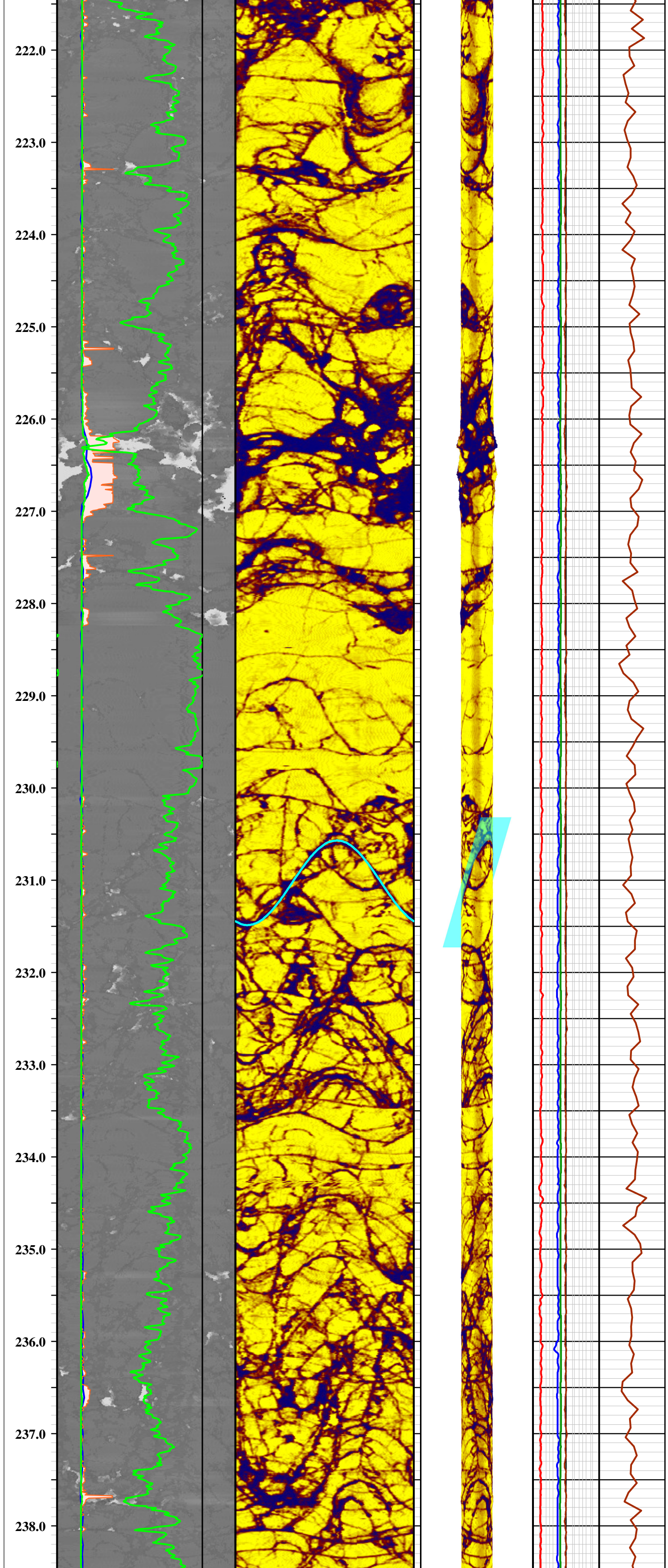
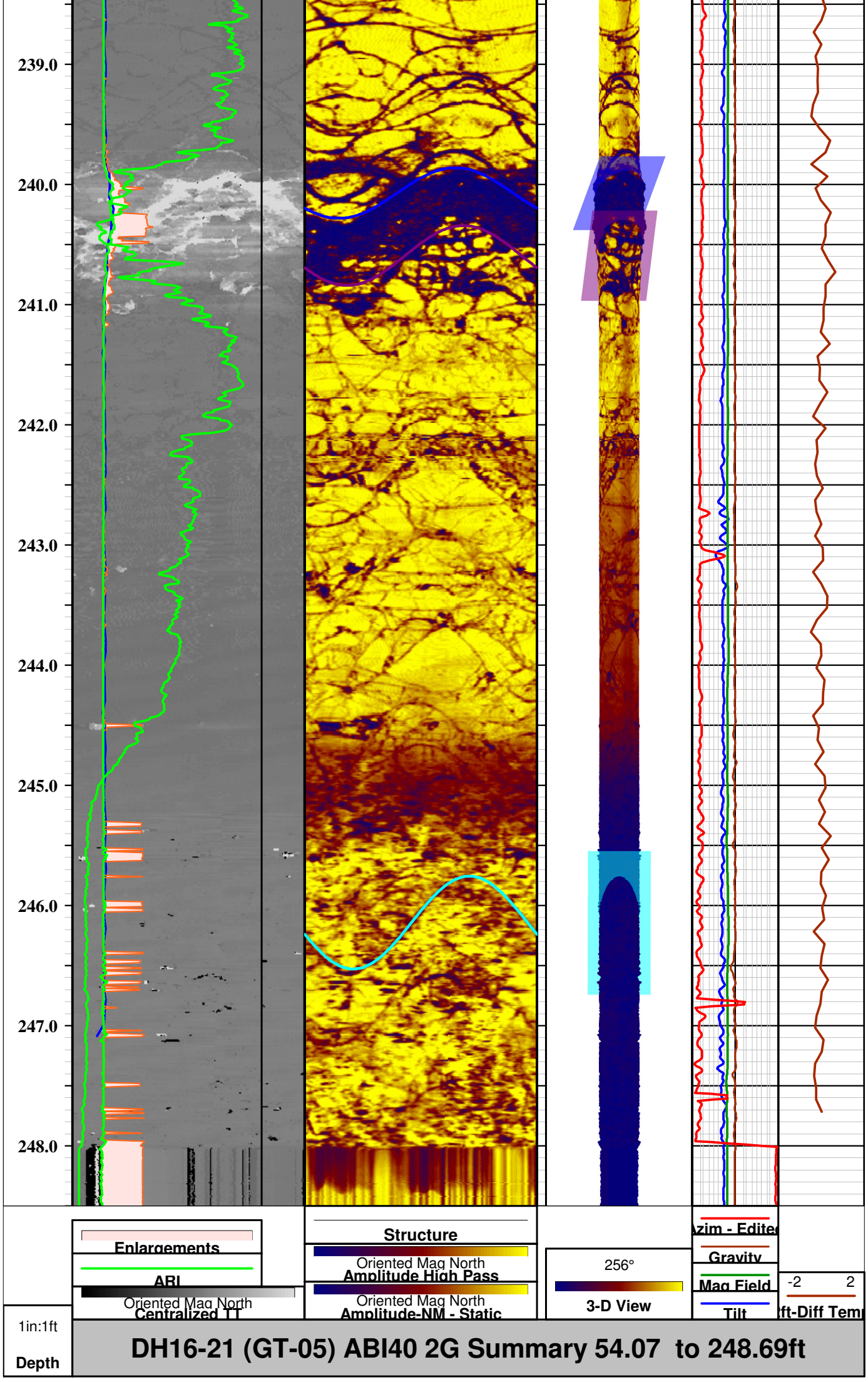
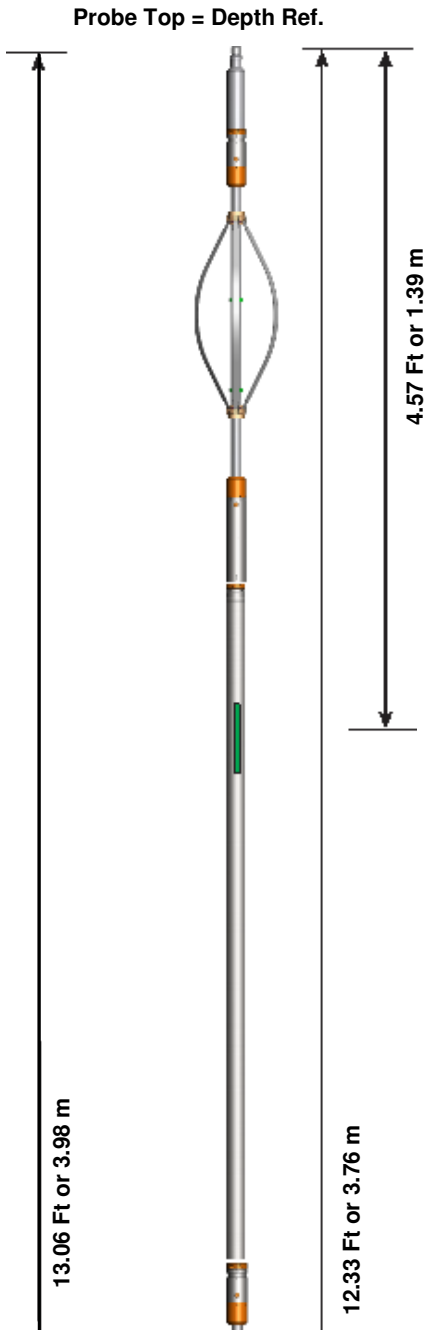




ABI Legend	
Mnemonics	**Description**

ABI-43 Acoustic Borehole Imager



Tool SN: 111801 & 091601

APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

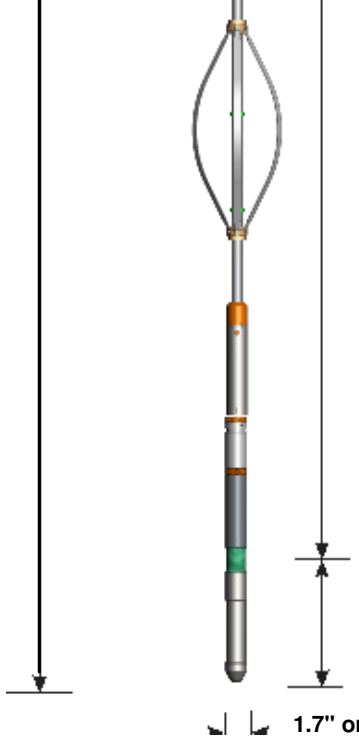
Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)



In-Line Centralizers - 3-6 band Titanium Bow Springs

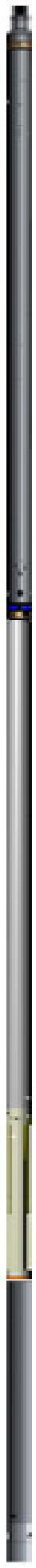
ABI Imaging Window

0.73 Ft or 0.22 m

1.7" or 43 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-05 / DH16-21
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final	**ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER COMPANY		
WELL ID	GT-40 / DH16-22		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER					OTHER SERVICES
MORE: CALIPER					E-LOGS
LOCATION					CALIPER
					TEMPERATURE
					FLUID RESISTIVITY
	SEC	TWP	RGE		
PERMANENT DATUM			ELEVATION	K.B.	
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

DATE	01-05-17		TYPE FLUID IN HOLE	FRESH WATER	
RUN No	1		MUD WEIGHT	N/A	
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY	N/A	
DEPTH-DRILLER	240 FT		LEVEL	30 FT	
DEPTH-LOGGER	167.5 FT		MAX. REC. TEMP.	26.32 DEG C	
BTM LOGGED INTERVAL	167.5 FT		IMAGE ORIENTED TO:	MAG NORTH	
TOP LOGGED INTERVAL	30 FT		SAMPLE INTERVAL	0.096 FT	
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK	TRUCK #H-001	
RECORDED BY / Logging Eng.	K. MITCHELL / D. ECKMAN		TOOL STRING/SN	ALT QL ABI40 2G SN 143002	
WITNESSED BY	BLY- GOLDER		LOG TIME:ON SITE/OFF SITE	11:30 AM	2:30 PM

RUN	BOREHOLE RECORD		CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	HQ	SURFACE	30 FT	HWT	STEEL	SURFACE	30 FT
2	30 FT	TOTAL DEPTH					
3							

COMMENTS:

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Tool Summary:

Date	01-05-17	**Date**	01-05-17	**Date**	01-05-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI 2CAA	**Tool Model**	MSI 40GRP E-LOG	**Tool Model**	ALT 4 RX SONIC
Tool SN	2299	**Tool SN**	5019	**Tool SN**	5185
From	SURFACE	**From**	SURFACE	**From**	30 FT
To	237 FT	**To**	210 FT	**To**	210 FT
Recorded By	K. MITCHELL	**Recorded By**	K. MITCHELL	**Recorded By**	K. MITCHELL
Truck No	H-001	**Truck No**	H-001	**Truck No**	H-001
Operation Check	01-04-17	**Operation Check**	01-04-17	**Operation Check**	01-04-17
Calibration Check	01-04-17	**Calibration Check**	01-05-17	**Calibration Check**	N/A
Time Logged	12:01 PM	**Time Logged**	12:35 PM	**Time Logged**	1:15 PM

Date	01-05-17	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143002	**Tool SN**		**Tool SN**	
From	30 FT	**From**		**From**	
To	167 FT	**To**		**To**	
Recorded By	K. MITCHELL	**Recorded By**		**Recorded By**	
Truck No	H-001	**Truck No**		**Truck No**	
Operation Check	01-04-17	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	2:00 PM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 4" & 6"

E-Log Calibration Range: 0 - 10,000 OHM-M **Calibration Points:** 1 & 10,000 OHM-M

Disclaimer:

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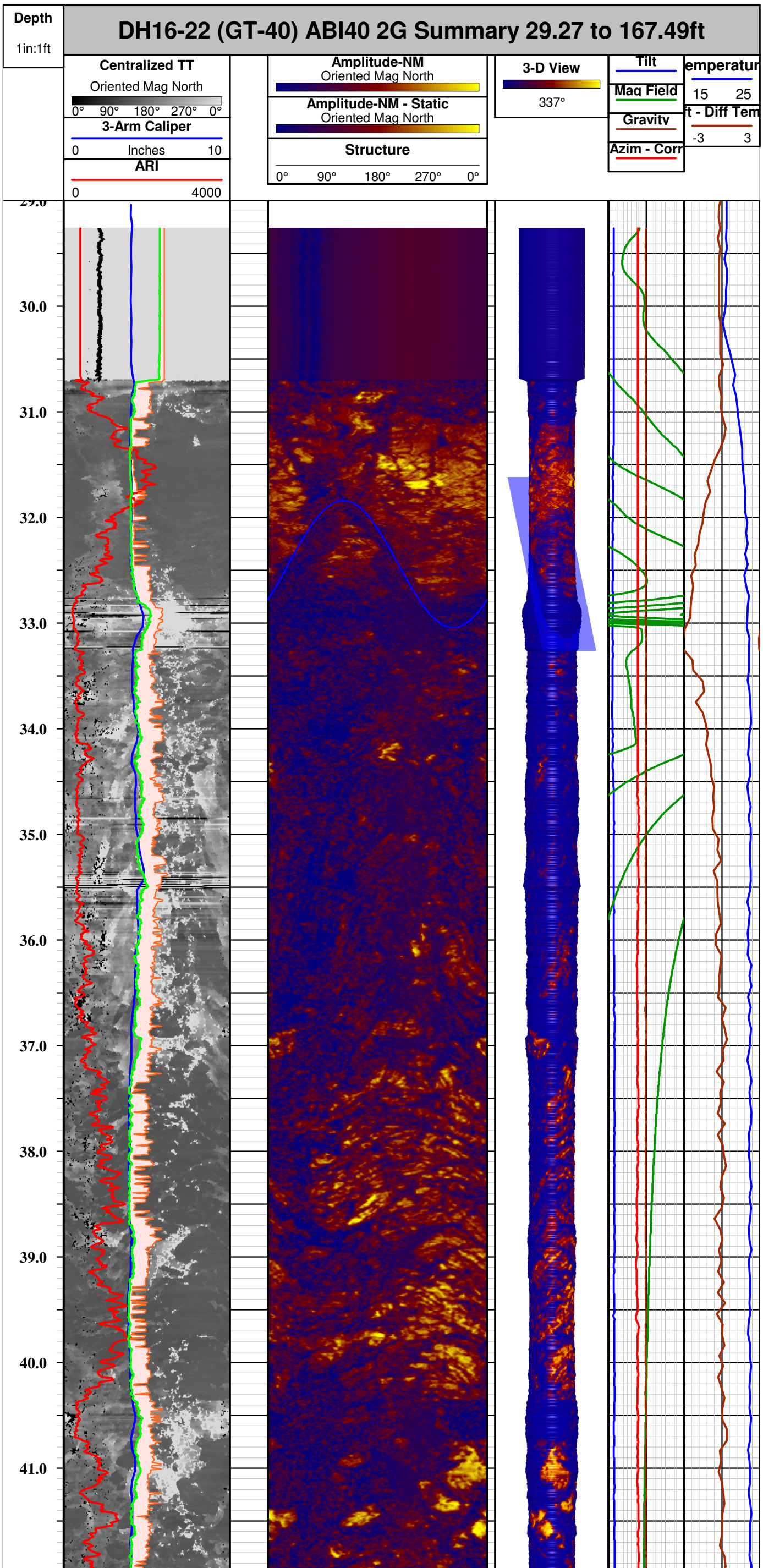
Acoustic Image Features Legend

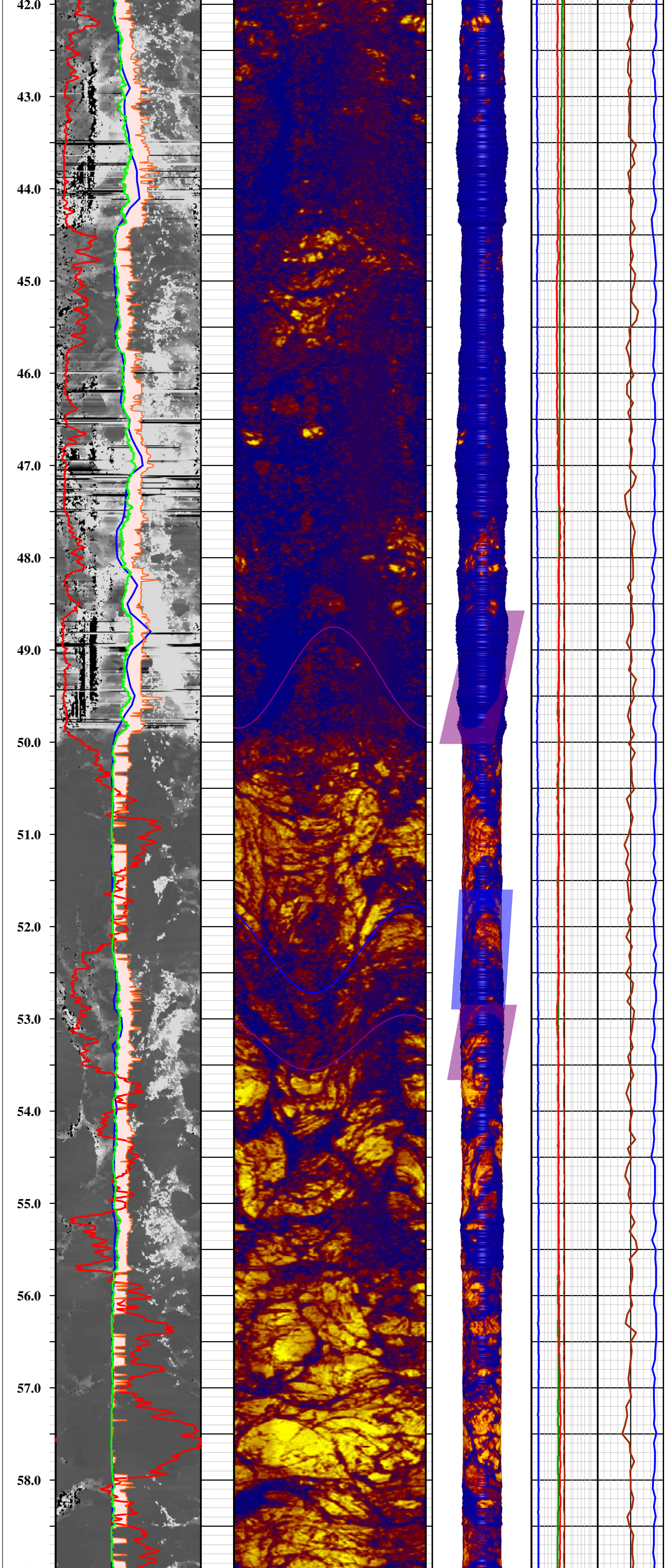
TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

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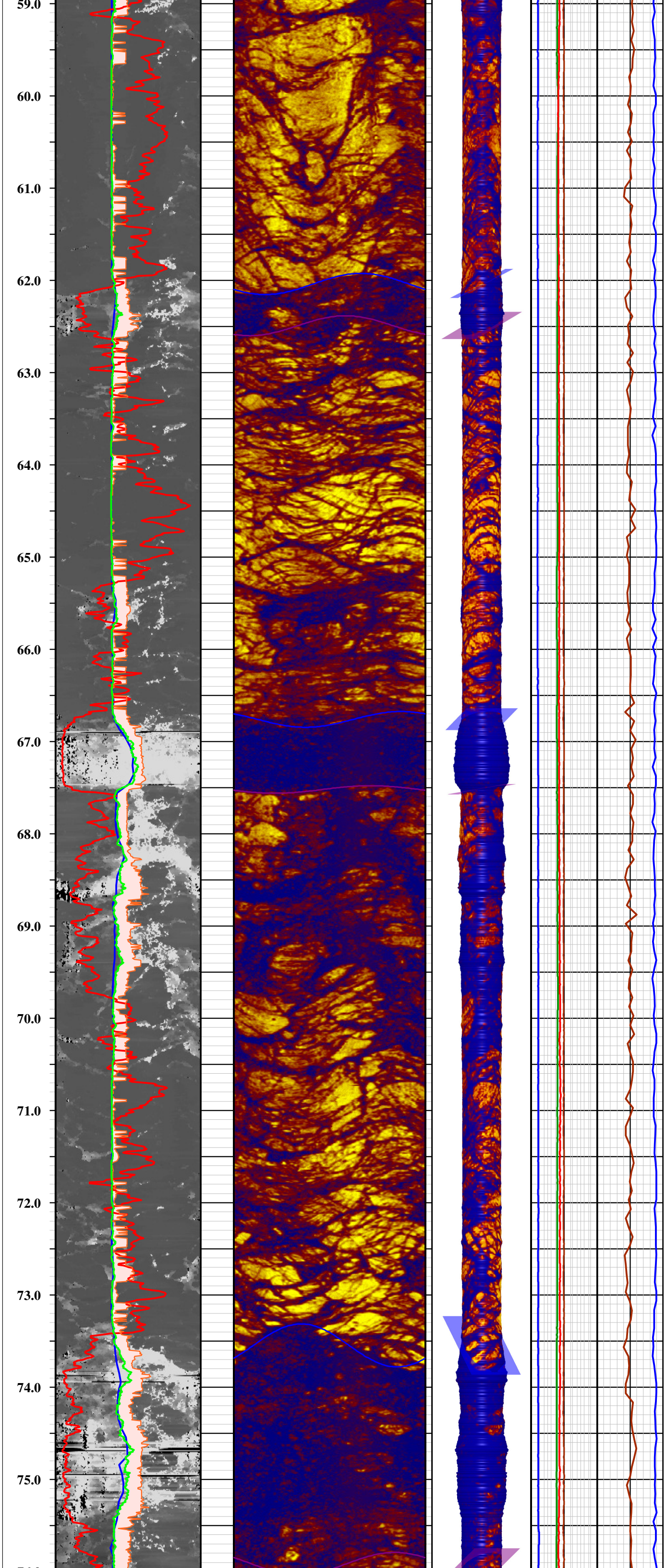
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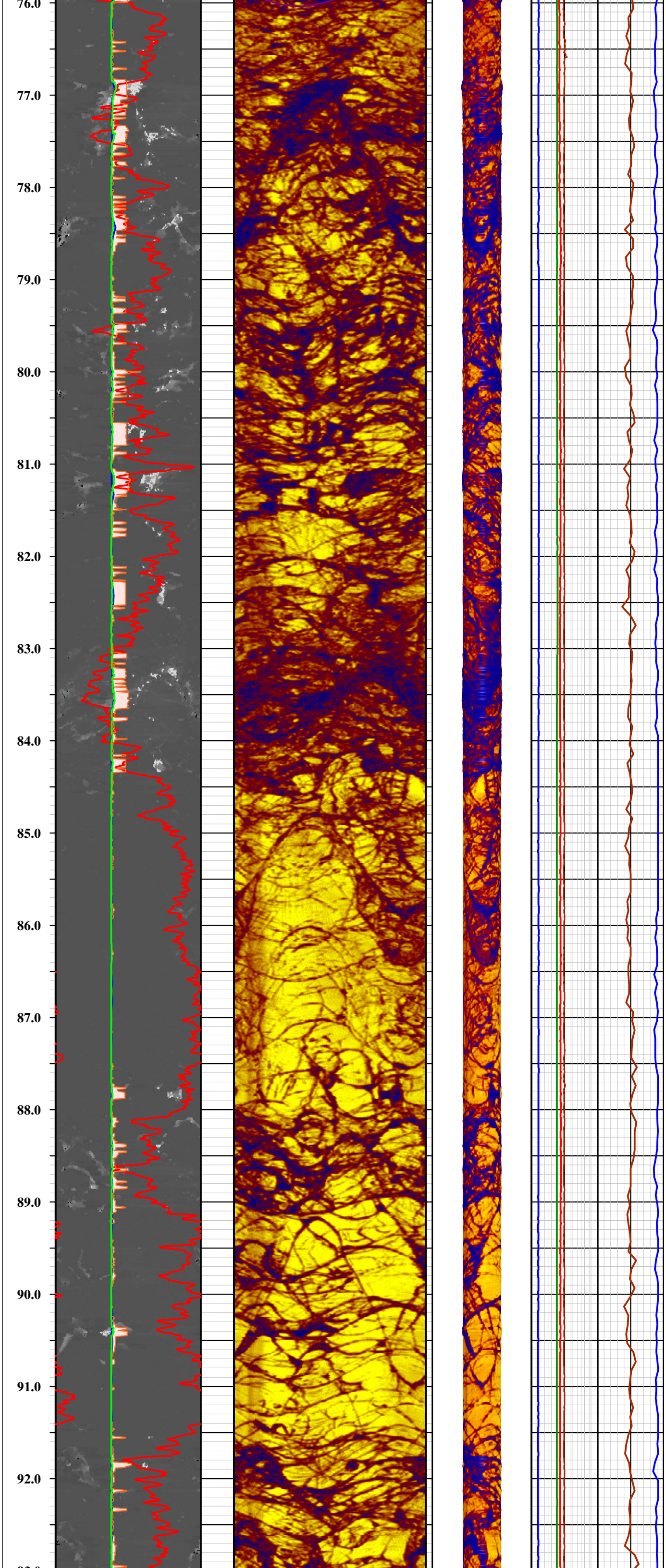
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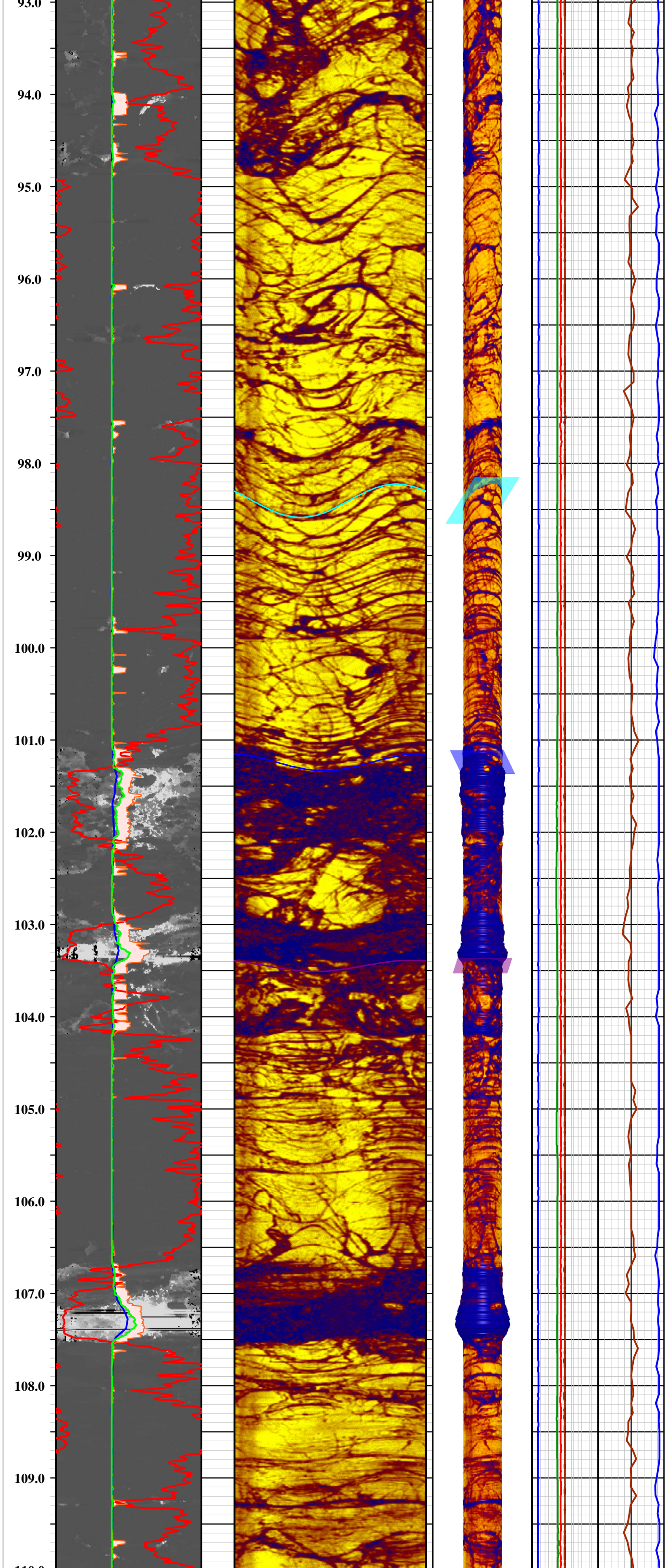
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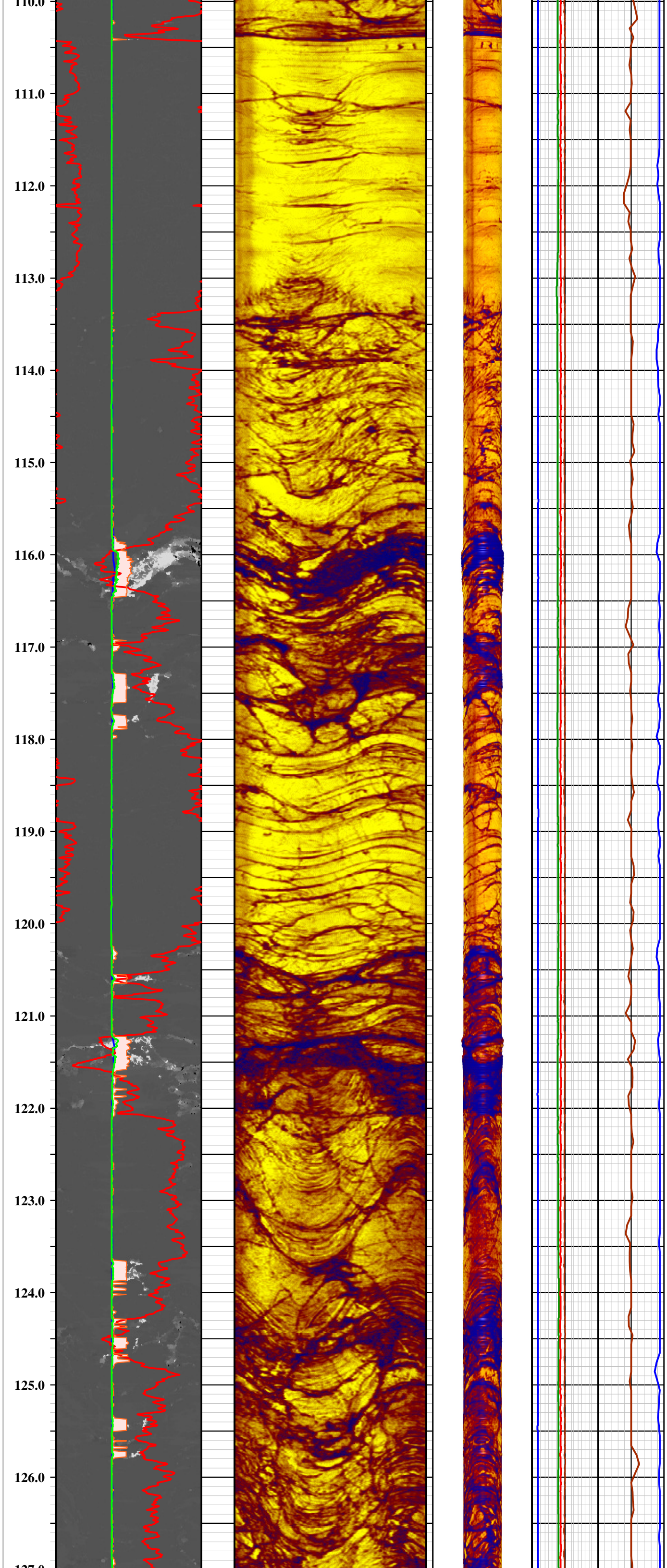
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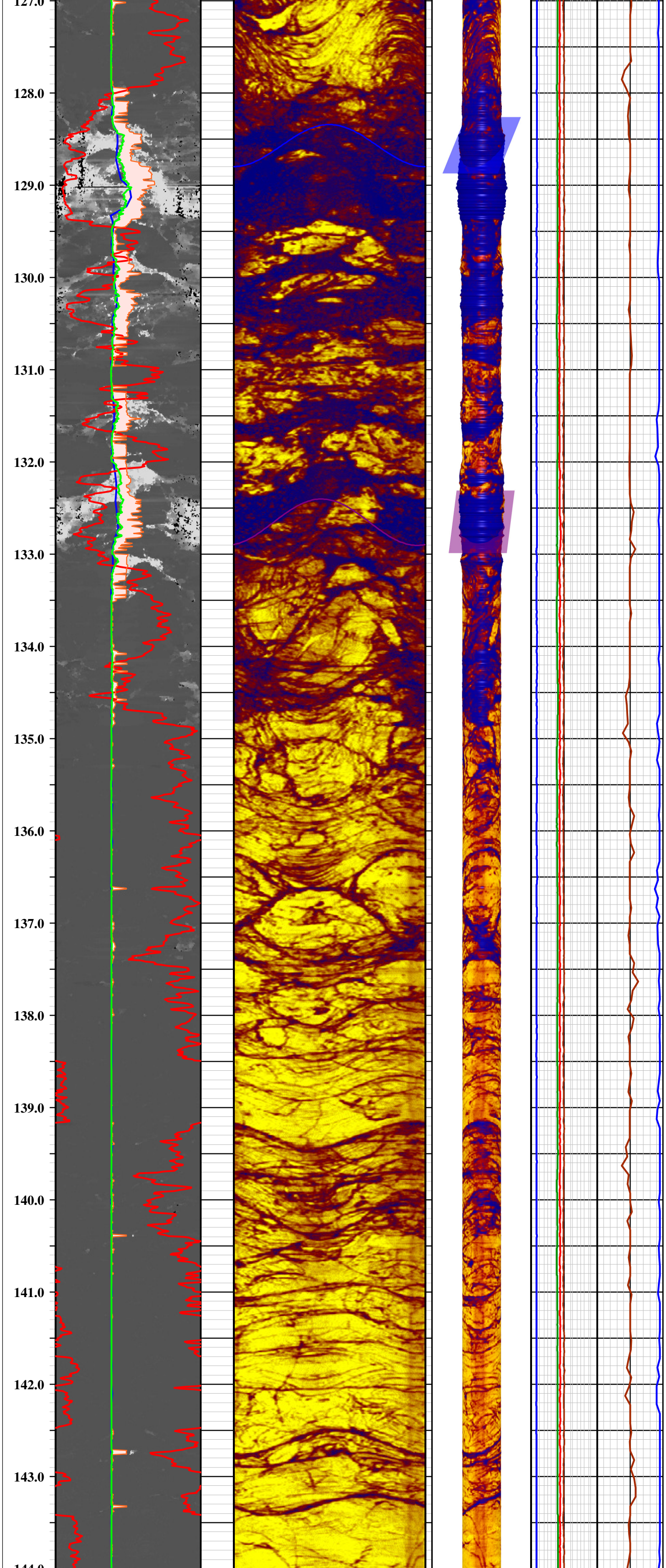
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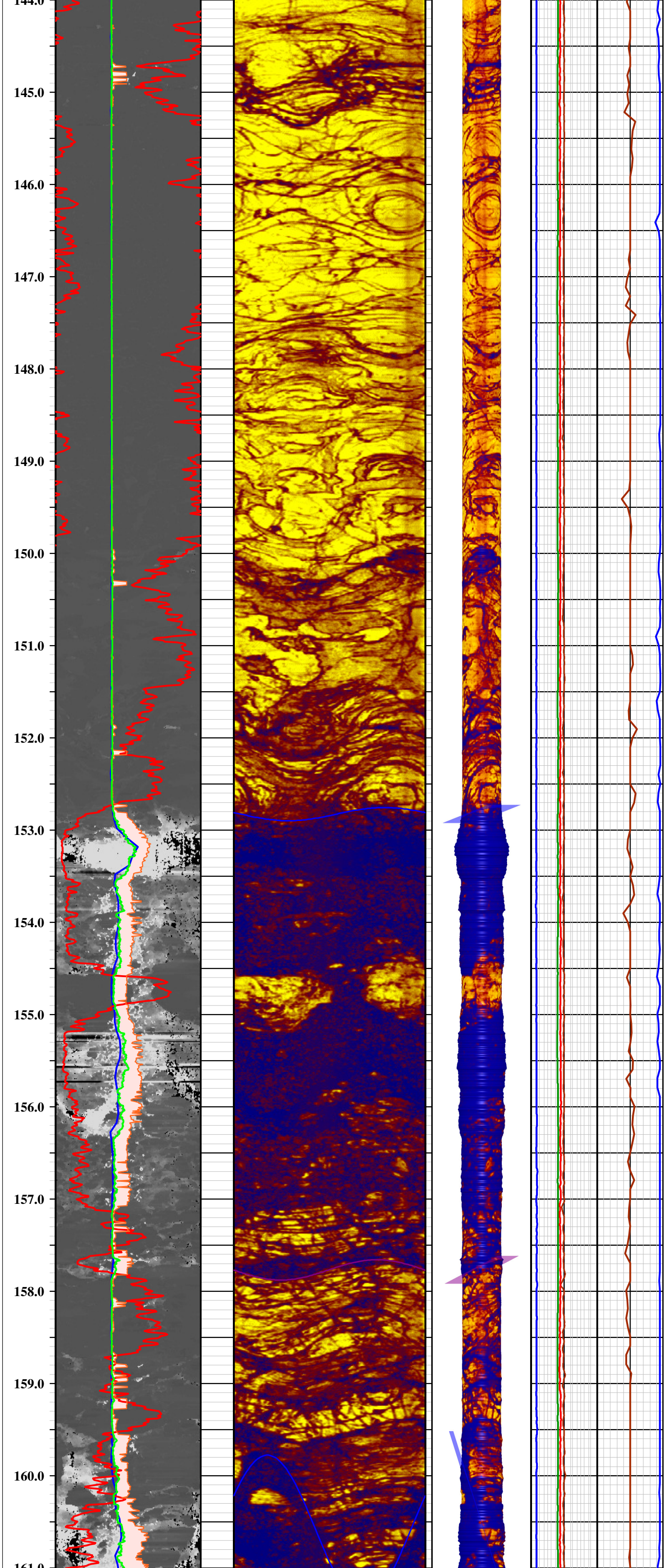
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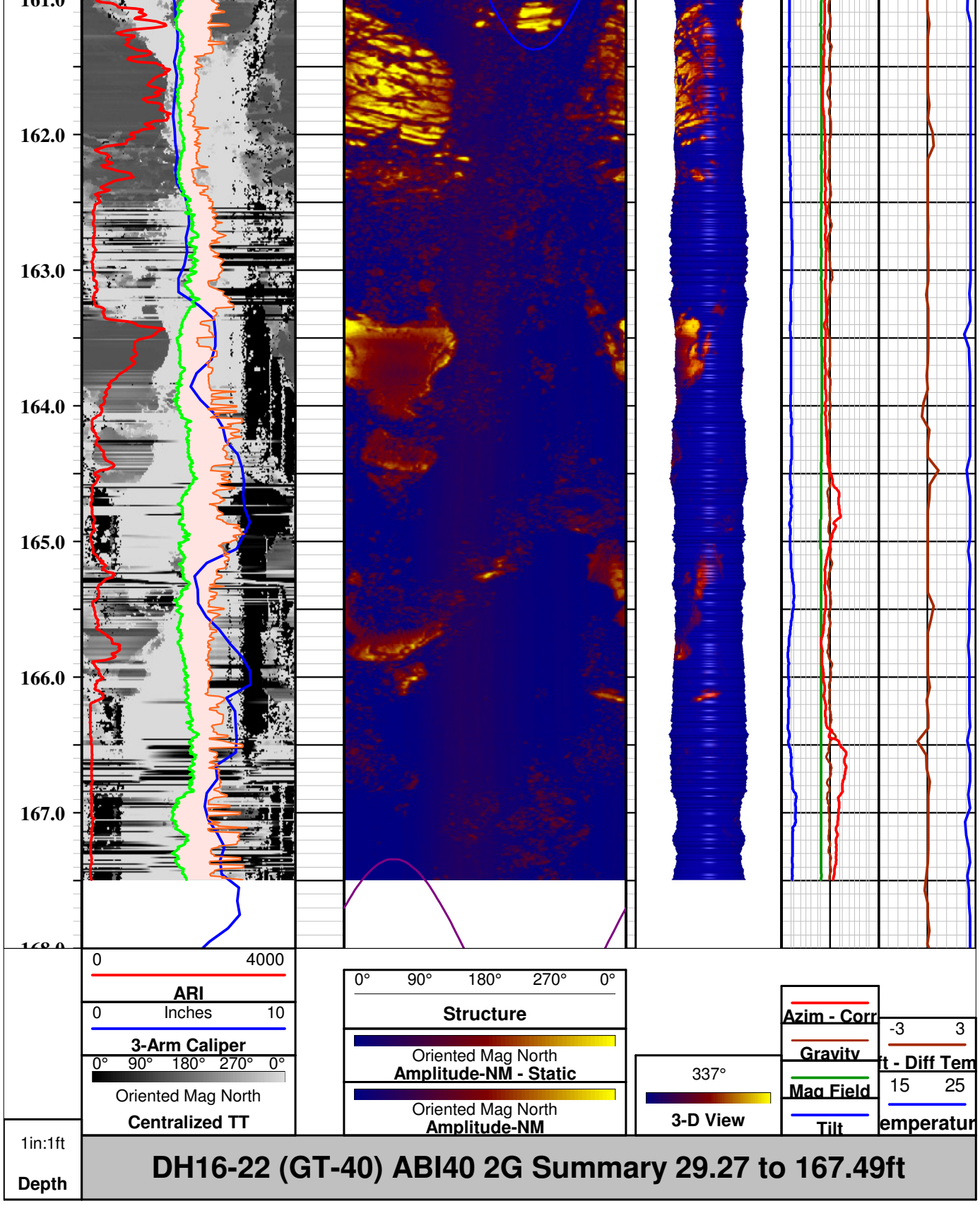


ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



13.06 Ft or 3.98 m

4.57 Ft or 1.39 m

12.33 Ft or 3.76 m

APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

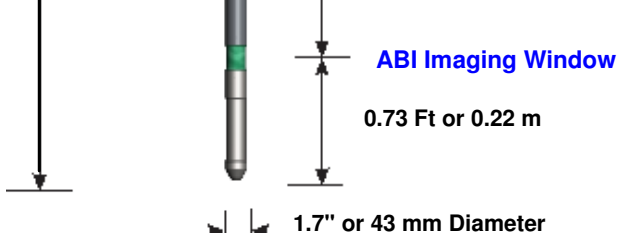
Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

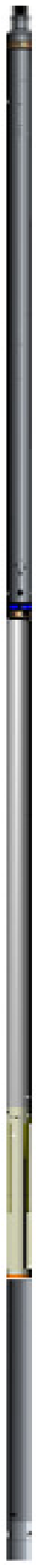
Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs



MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	Resolution Copper Company
Well	GT-40 / DH16-22
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-06B / DH17-23		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: 3-ARM CALIPER

OTHER SERVICES
OPTICAL TELEVIEWER
GAMMA
TEMPERATURE
FLUID RESISTIVITY
E-LOGS
SONIC

PERMANENT DATUM			ELEVATION		K.B.
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM		D.F.
DRILLING MEAS. FROM	GROUND LEVEL				G.L.
DATE	1-8-17	SEC	TWP	RGE	
RUN No	1 & 4	TYPE FLUID IN HOLE	MUD WEIGHT		FORMATION WATER
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY			N/A
DEPTH-DRILLER	250 FT.	LEVEL			N/A
DEPTH-LOGGER	250 FT.	MAX. REC. TEMP.			42 FT.
BTM LOGGED INTERVAL	250 FT.	IMAGE ORIENTED TO:			25.19 DEG. C
TOP LOGGED INTERVAL	40 FT.	SAMPLE INTERVAL			MAGNETIC NORTH
DRILLER / RIG#	BOART	LOGGING TRUCK			0.01 FT.
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN			TRUCK #310
WITNESSED BY	GOLDER	LOG TIME:ON SITE/OFF SITE			ALT QL ABI40 2G SN 143003
					12:00 P.M.

RUN	BOREHOLE RECORD		CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	15 FT.	HWT	STEEL	SURFACE	15 FT.
2	HQ	15 FT.	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	1-8-17	**Date**	1-8-17	**Date**	1-8-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	QL E-LOG IP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	4784	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	250 FT.	**To**	250 FT.	**To**	250 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	1-6-17	**Operation Check**	1-6-17	**Operation Check**	1-6-17
Calibration Check	1-6-17	**Calibration Check**	1-6-17	**Calibration Check**	N/A
Time Logged	12:20 P.M.	**Time Logged**	12:40 P.M.	**Time Logged**	1:00 P.M.

Date	1-8-17	**Date**	1-8-17	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**	ALT QL OBI40 2G	**Tool Model**	
Tool SN	143003	**Tool SN**	152511	**Tool SN**	
From	40 FT.	**From**	SURFACE	**From**	
To	250 FT.	**To**	45 FT.	**To**	
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	
Truck No	310	**Truck No**	310	**Truck No**	
Operation Check	1-6-17	**Operation Check**	1-6-17	**Operation Check**	
Calibration Check	12-4-16	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	1:30 P.M.	**Time Logged**	2:15 P.M.	**Time Logged**	

Additional Comments:

Caliper Arms Used: 3 IN. **Calibration Points:** 2 IN. & 8 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

GT-06B ABI40 & OBI40 2G Summary

Depth 1in:1ft

Radius Image — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 8000

ABI Features — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Image_15.0'-42.0' — Non Oriented, Rot'd by 107.4' Deg — 0° 90° 180° 270° 0°

OBI Features — DIPA — 0° 90° 180° 270° 0°

Tilt-ABI — 0 Deg 8

Azi-ABI — 0 360

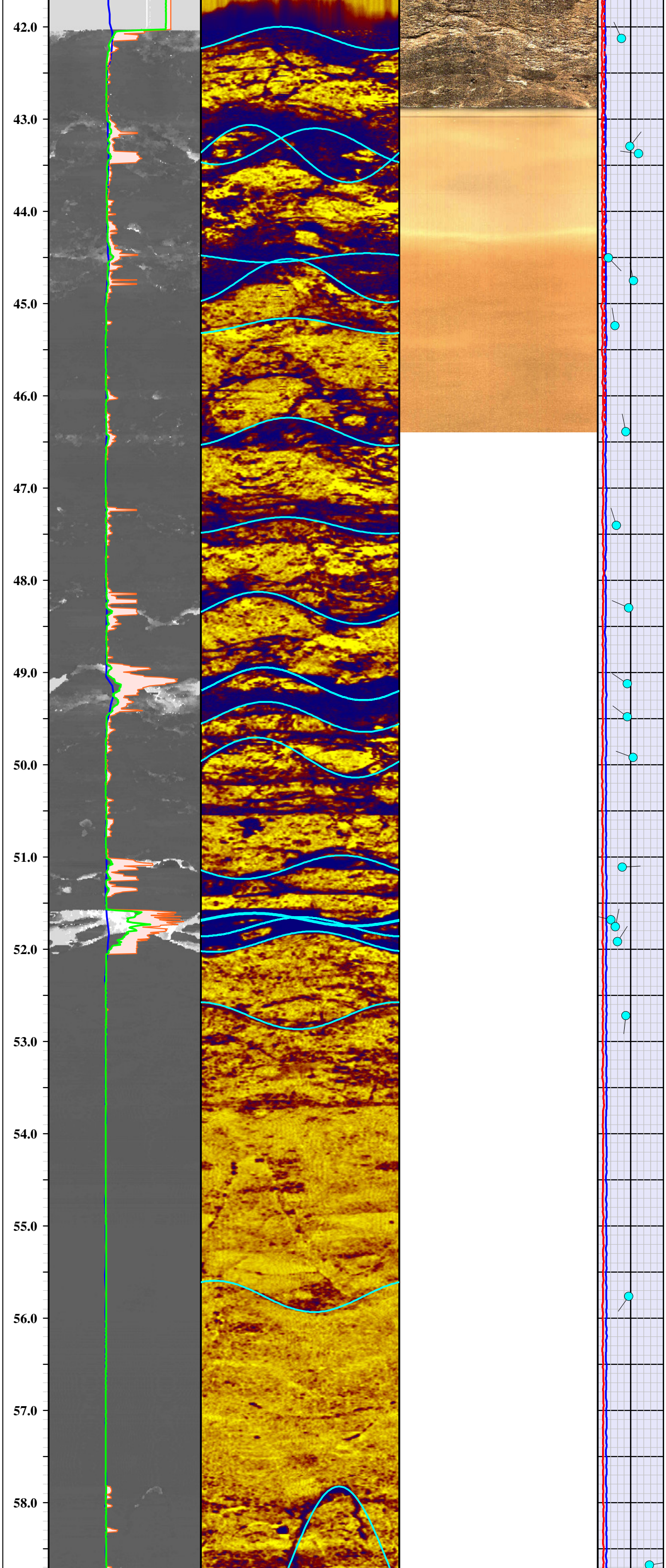
Tilt-OBI — 0 Deg 8

Azi-OBI — 0 360

Tad - ABI — DIPT — 0 100

Tad - OBI — DIPT — 0 100

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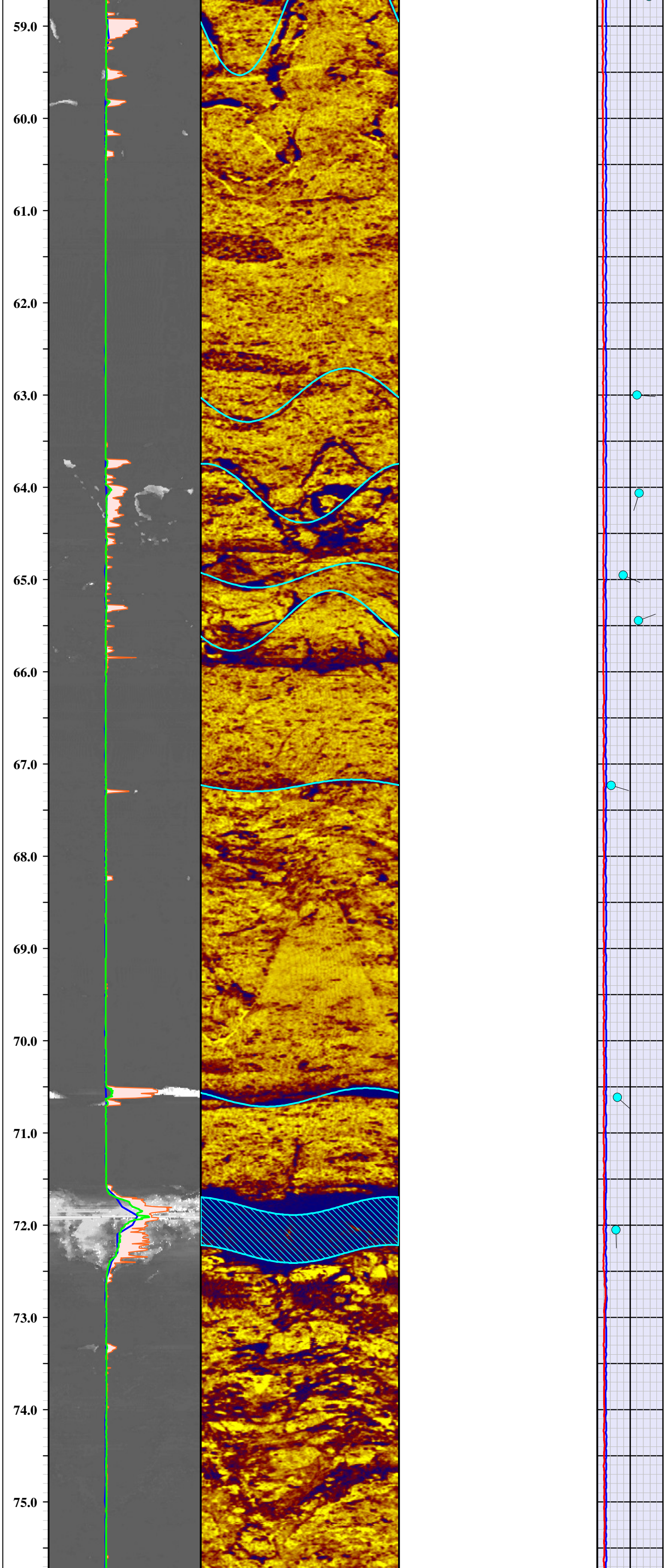
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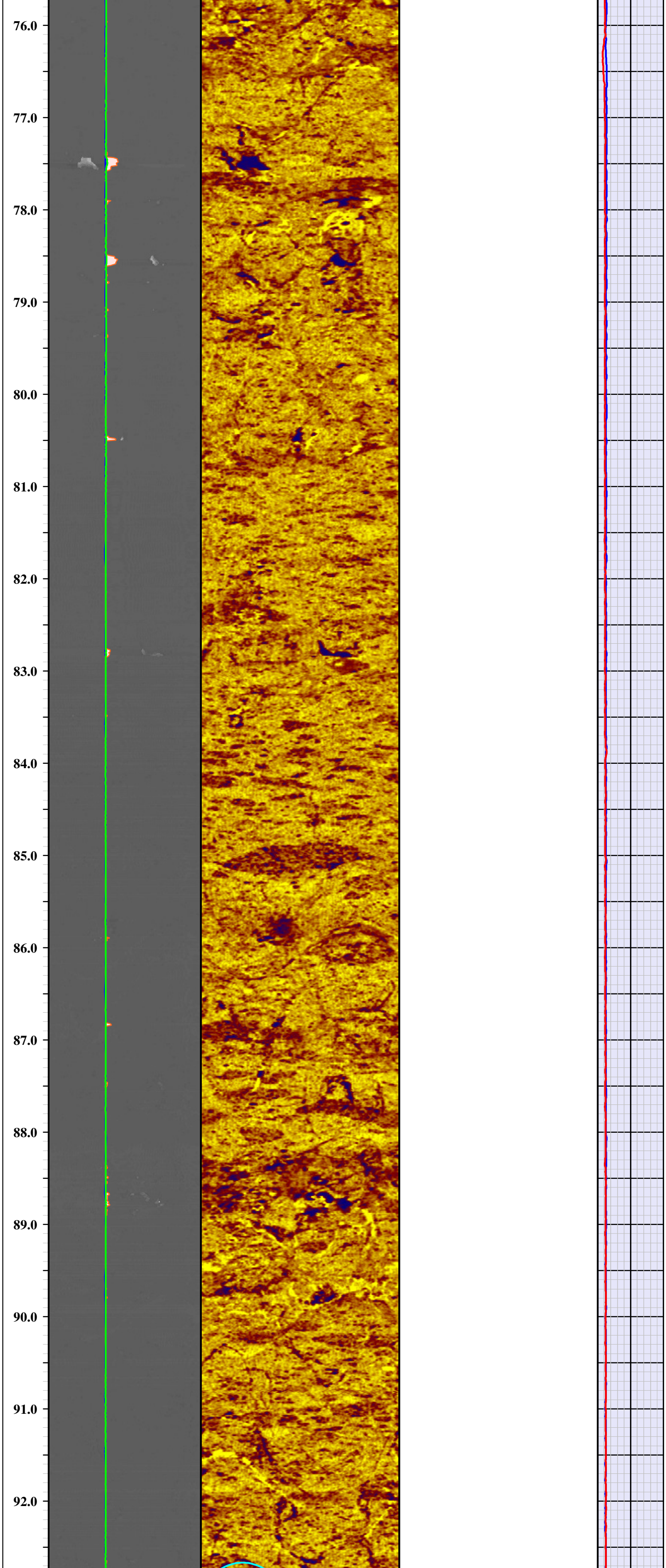
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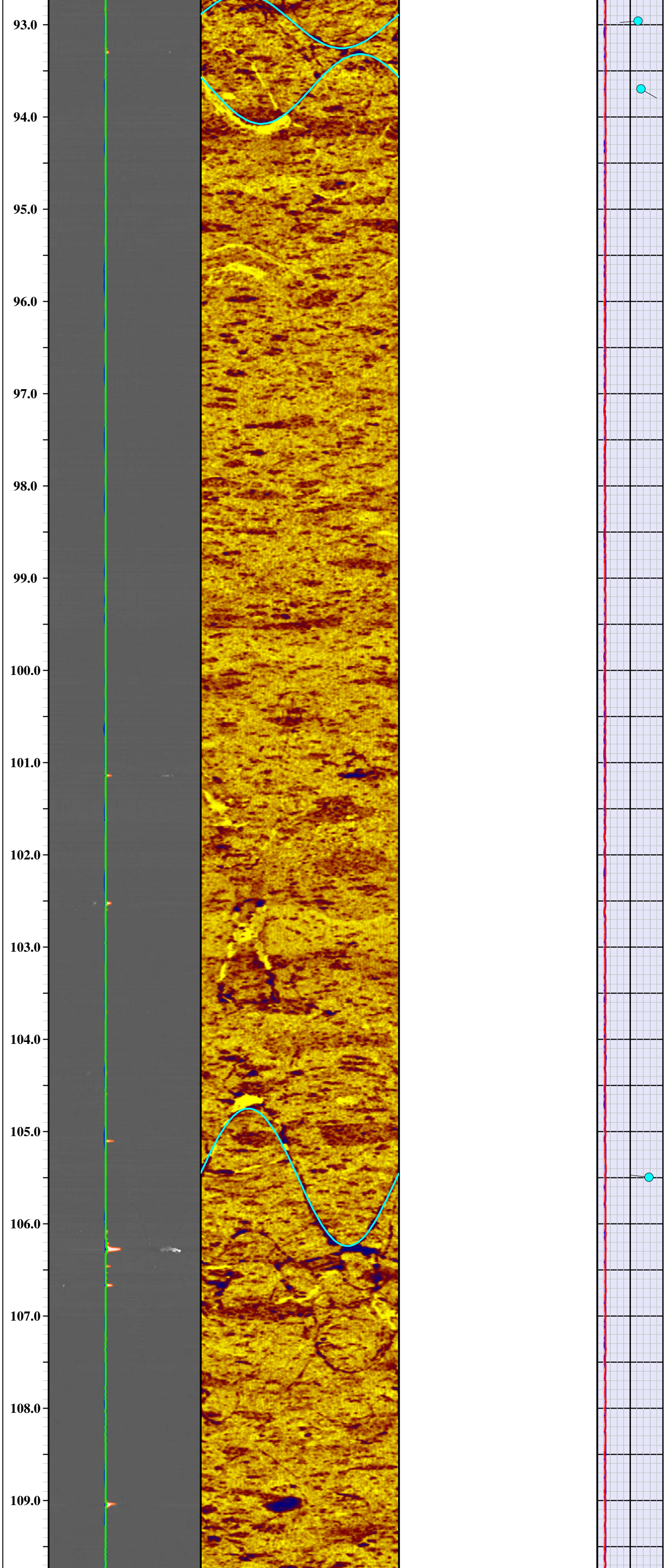
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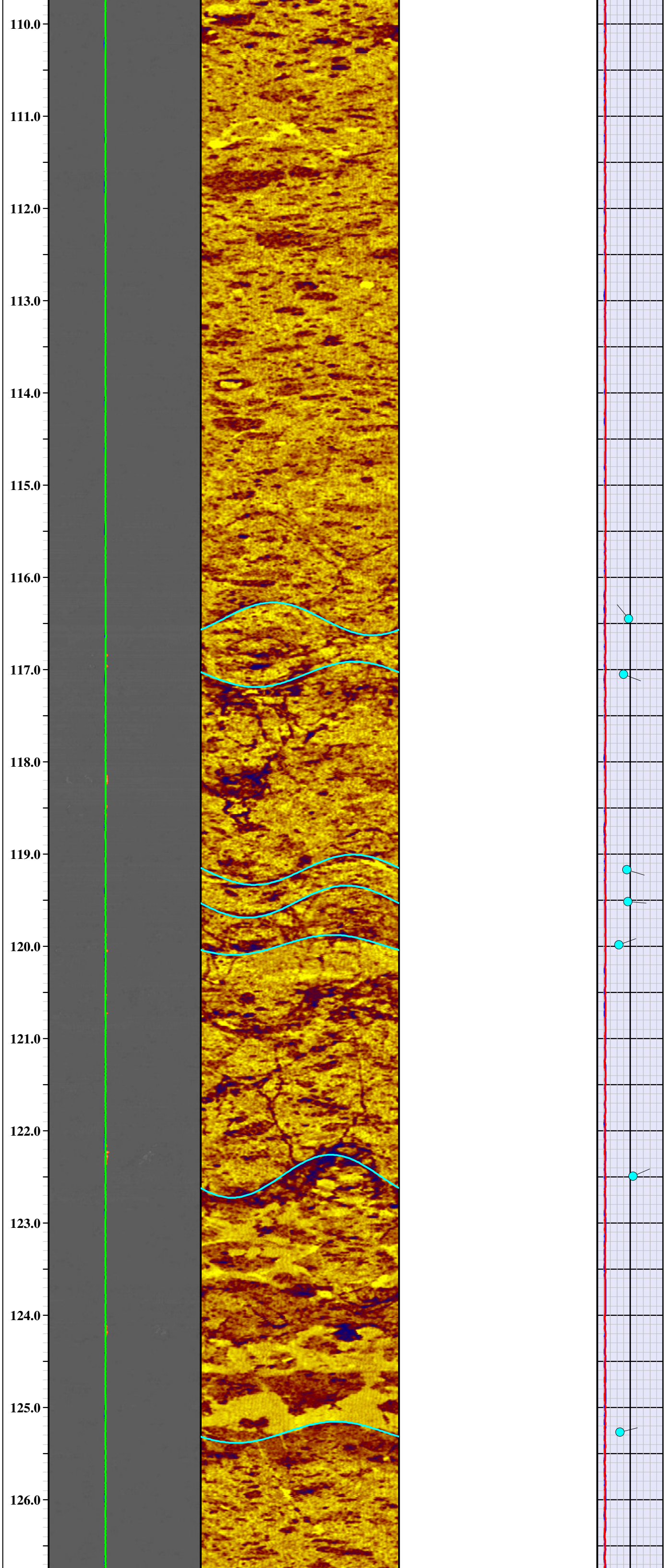
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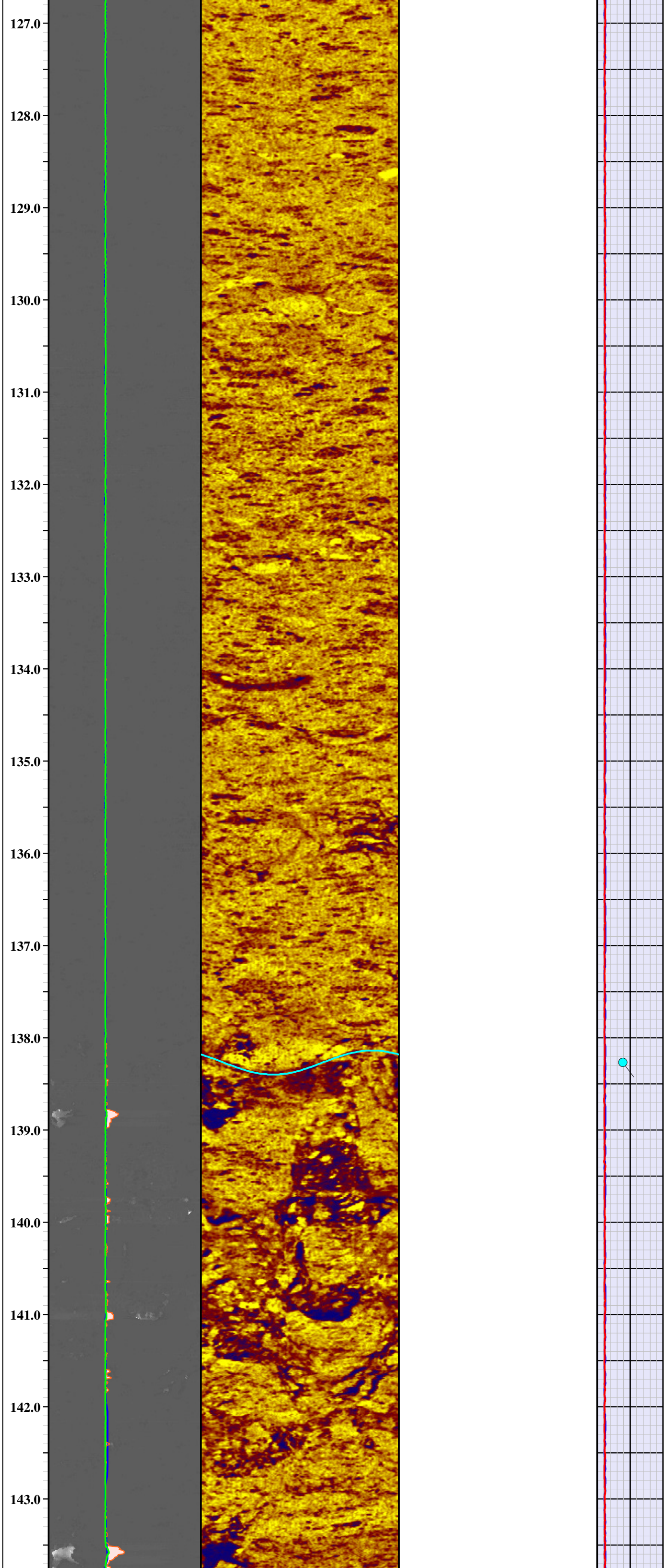
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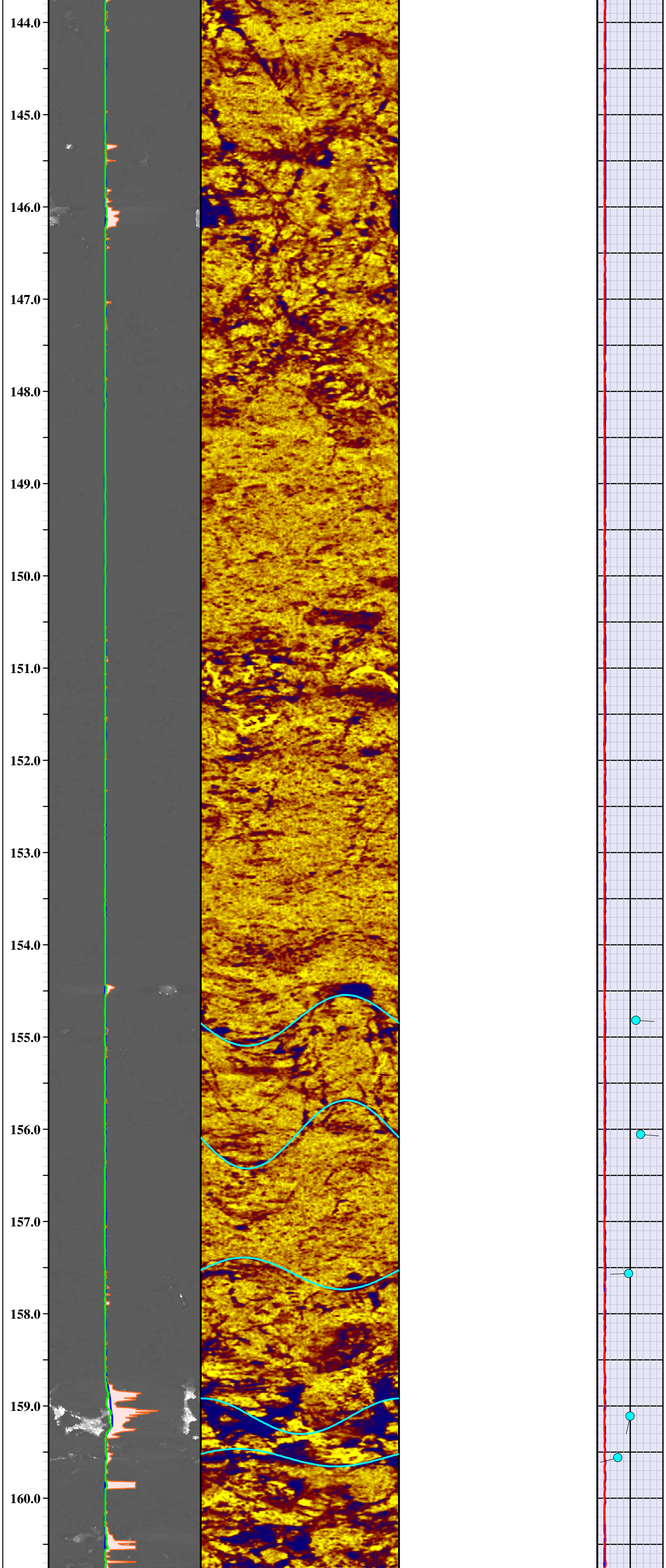
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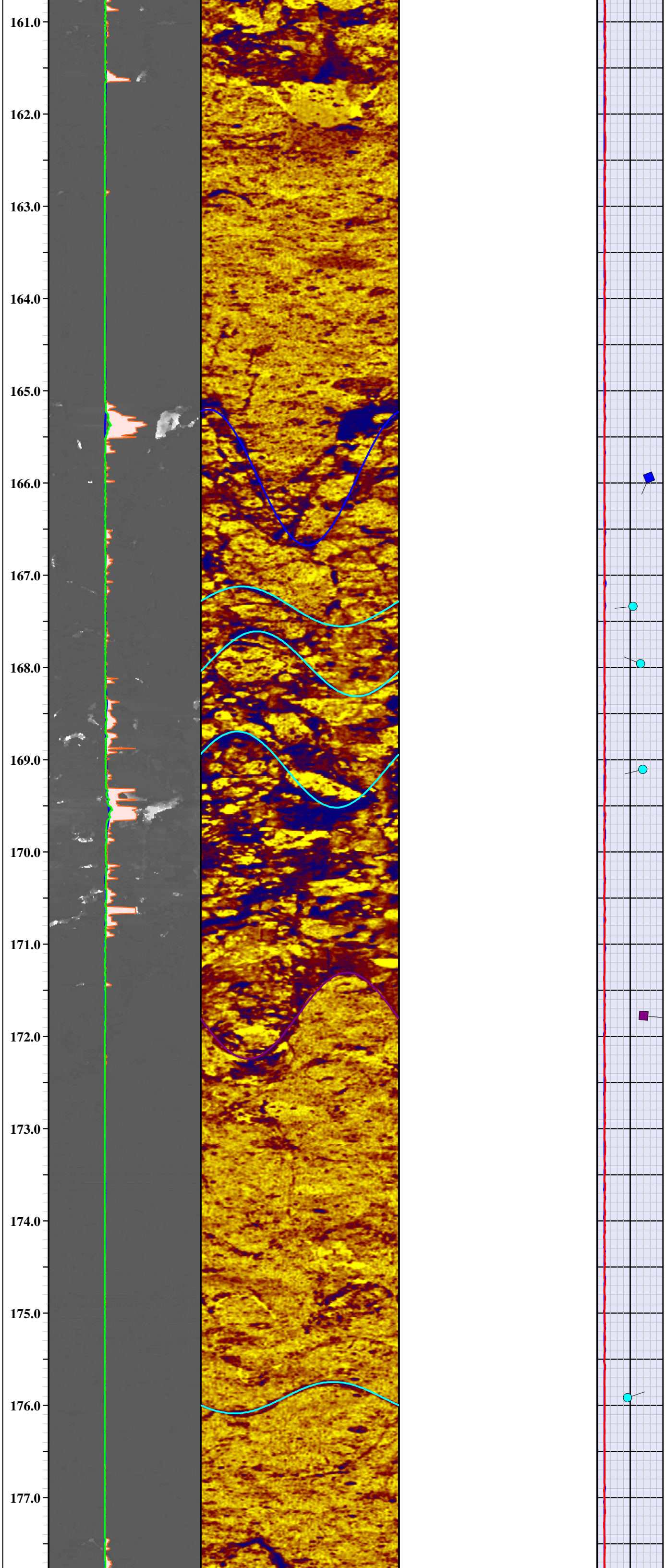
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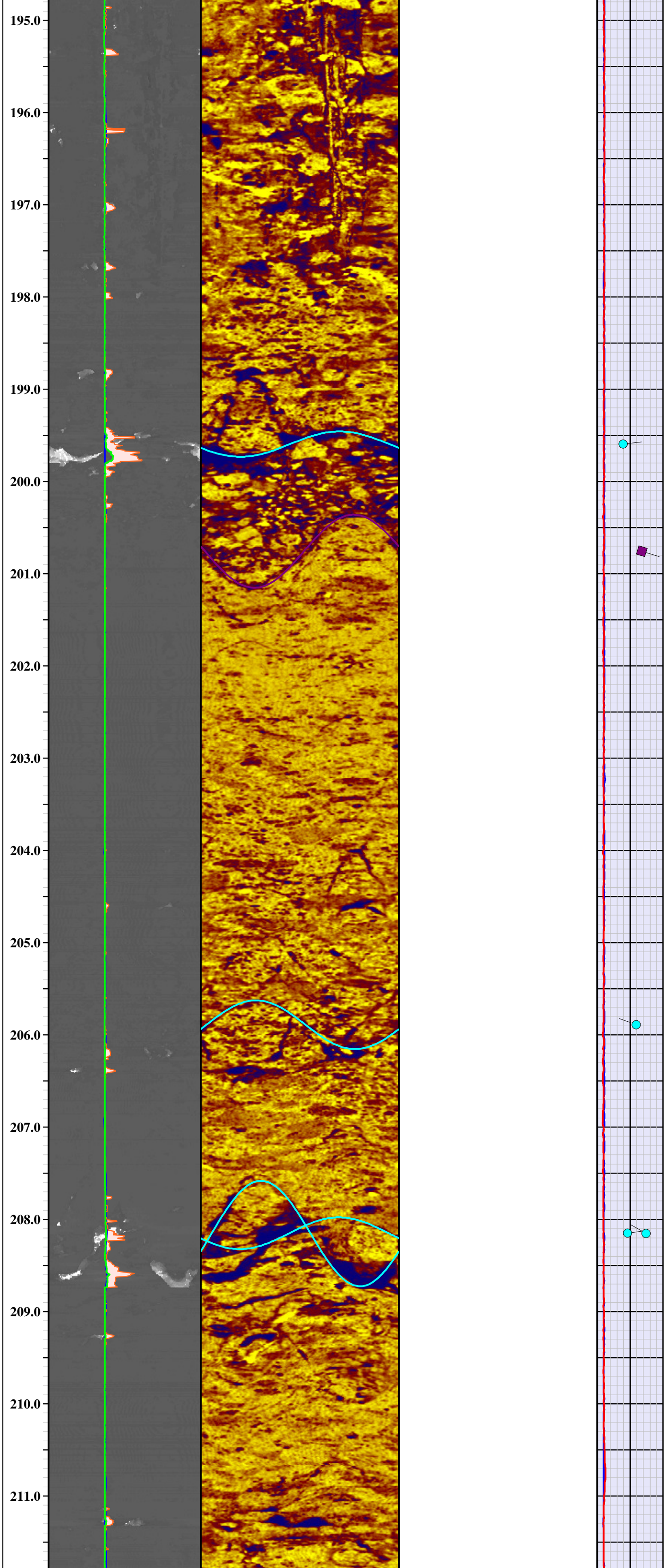
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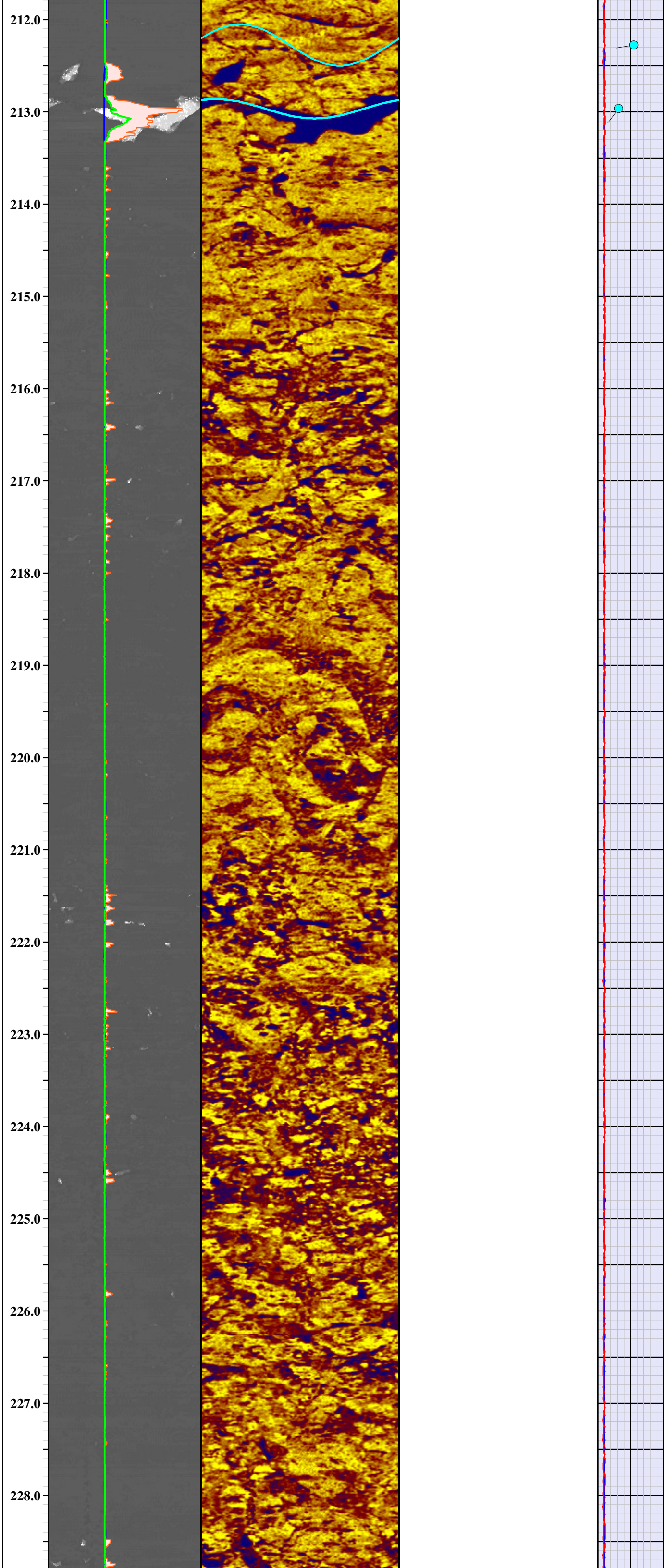
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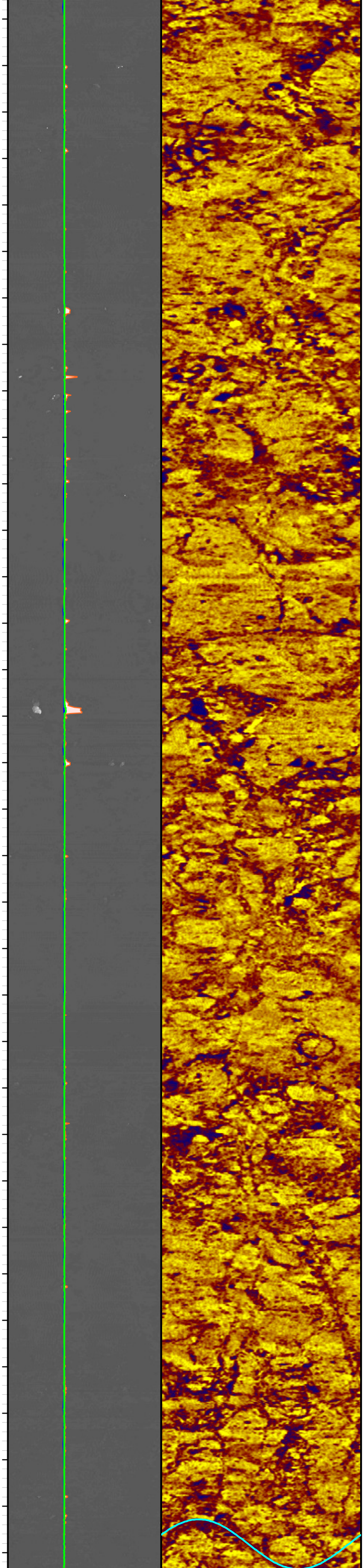
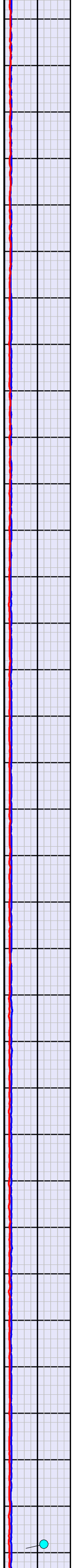
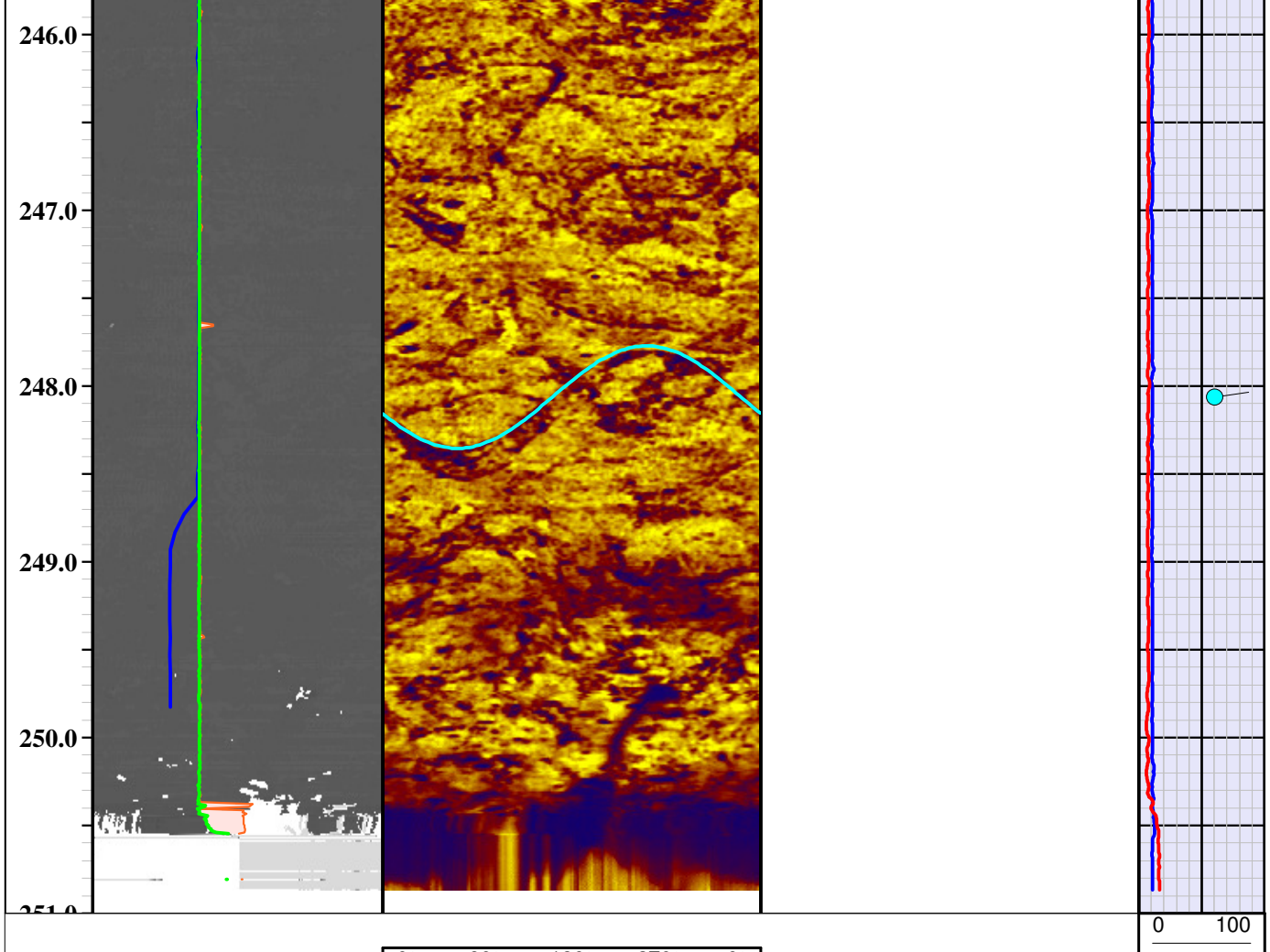






QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

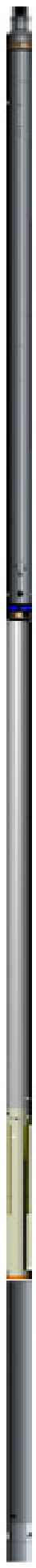


ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-06B / DH17-23
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-37		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

OTHER SERVICES: E-LOG, SONIC, GAMMA, TEMPERATURE, FLUID RESISTIVITY

LOCATION	SEC		TWP	RGE	
PERMANENT DATUM				ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM		D.F.
DRILLING MEAS. FROM	GROUND LEVEL				G.L.
DATE	1-15-17			TYPE FLUID IN HOLE	FORMATION WATER
RUN No	1 & 4			MUD WEIGHT	N/A
TYPE LOG	ACOUSTIC TELEVIEWER			VISCOSITY	N/A
DEPTH-DRILLER	249 FT			LEVEL	~ 38 FT
DEPTH-LOGGER	249 FT			MAX. REC. TEMP.	25.16 Deg C
BTM LOGGED INTERVAL	249 FT			IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	SURFACE			SAMPLE INTERVAL	0.01 FT
DRILLER / RIG#	BOART			LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	M. QUINONES / D. ECKMAN			TOOL STRING/SN	ALT QL ABI40 2G SN 143003
WITNESSED BY	GOLDER			LOG TIME:ON SITE/OFF SITE	7:45 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	35 FT	HWT	STEEL	SURFACE	35 FT
2	HQ	35 FT	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	1-15-17	**Date**	1-15-17	**Date**	1-15-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5513	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	250 FT	**To**	250 FT	**To**	250 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	1-15-17	**Operation Check**	1-15-17	**Operation Check**	1-15-17
Calibration Check	1-15-17	**Calibration Check**	1-15-17	**Calibration Check**	N/A
Time Logged	8:30 AM	**Time Logged**	8:55 AM	**Time Logged**	9:05 AM

Date	1-15-17	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143003	**Tool SN**		**Tool SN**	
From	35 FT	**From**		**From**	
To	250 FT	**To**		**To**	
Recorded By	M. QUINONES	**Recorded By**		**Recorded By**	
Truck No	310	**Truck No**		**Truck No**	
Operation Check	1-15-17	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	9:15 AM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 6"

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

GT-37 ABI40 2G Summary

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

Cent TT_37.8'-67.0' — Non Oriented, Rot'd by 18.3' Deg — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude_37.8'-67.0' — Non Oriented, Rot'd by 18.3' Deg — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 9000

ABI Features — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Tadpole — DIPT — 0 100

Tilt — 0 Deg 8

Azi-Edited — 0 360

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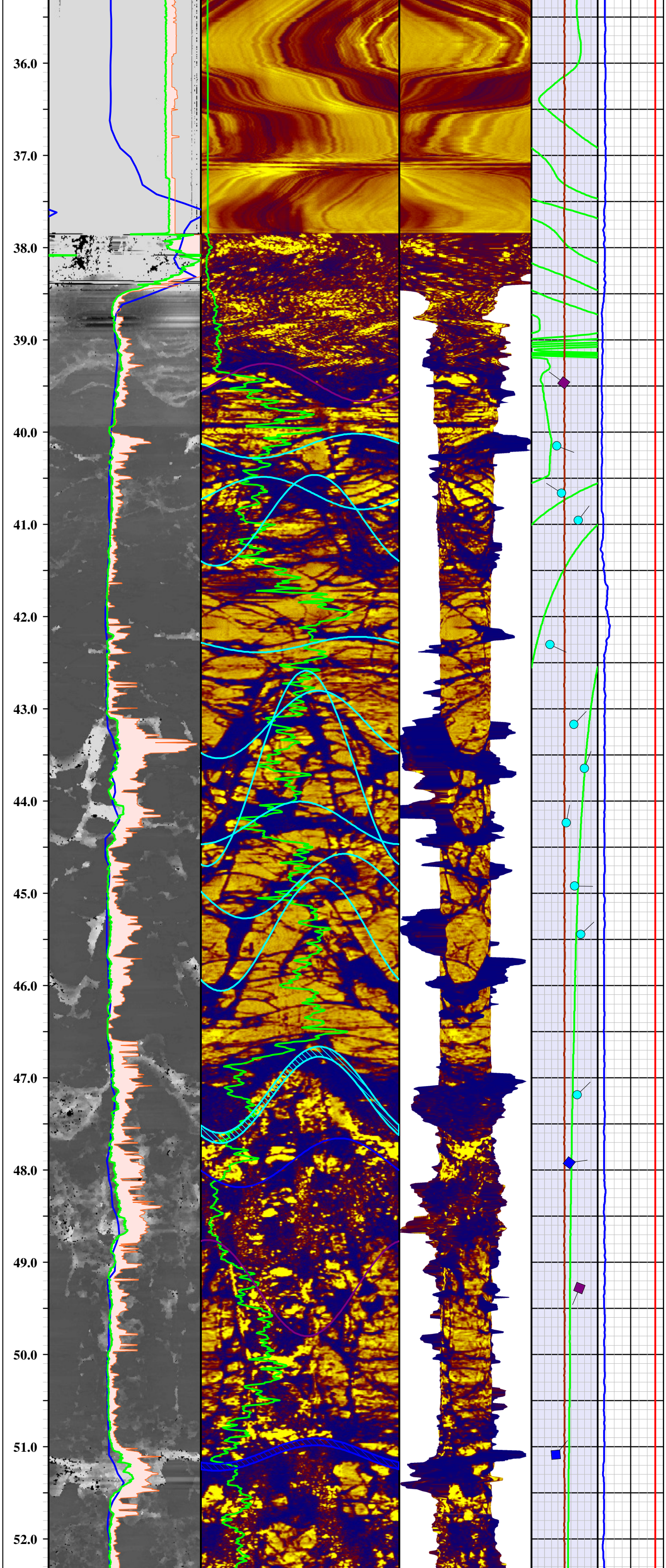
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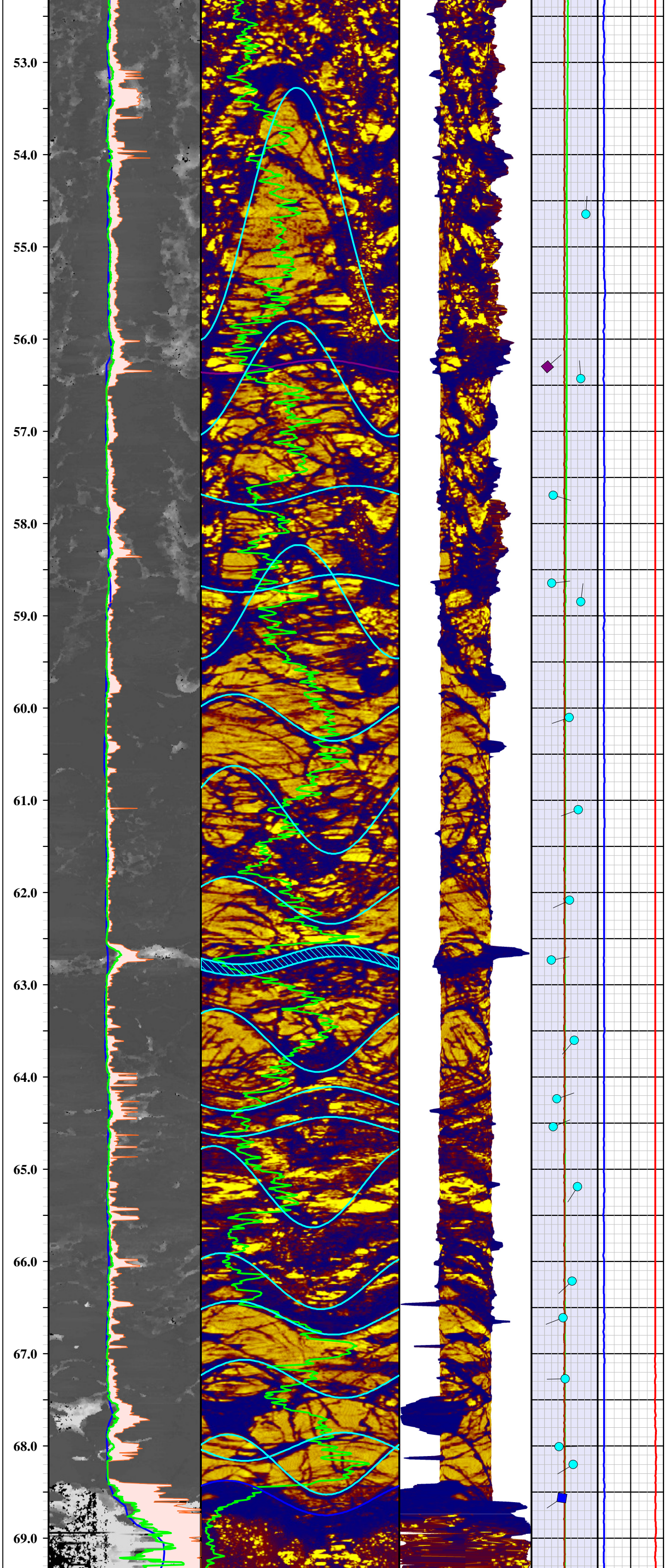
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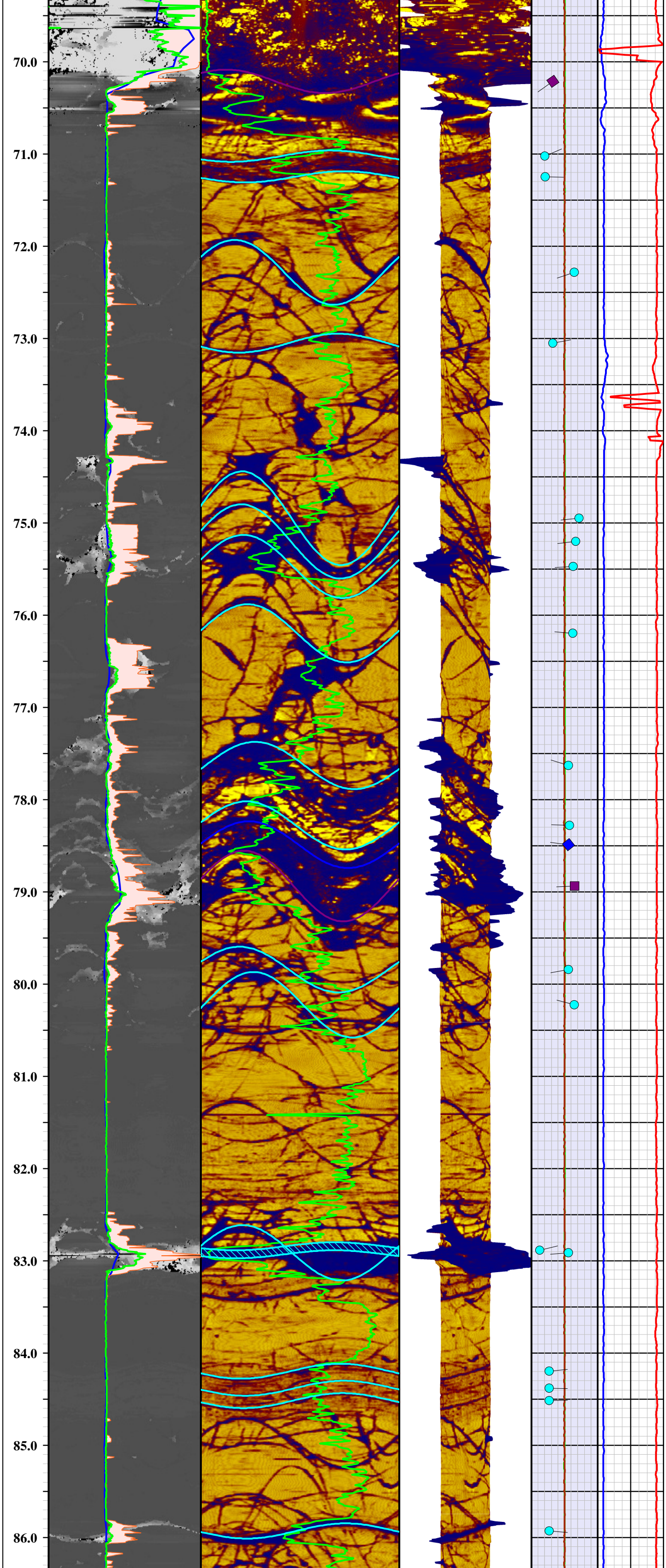
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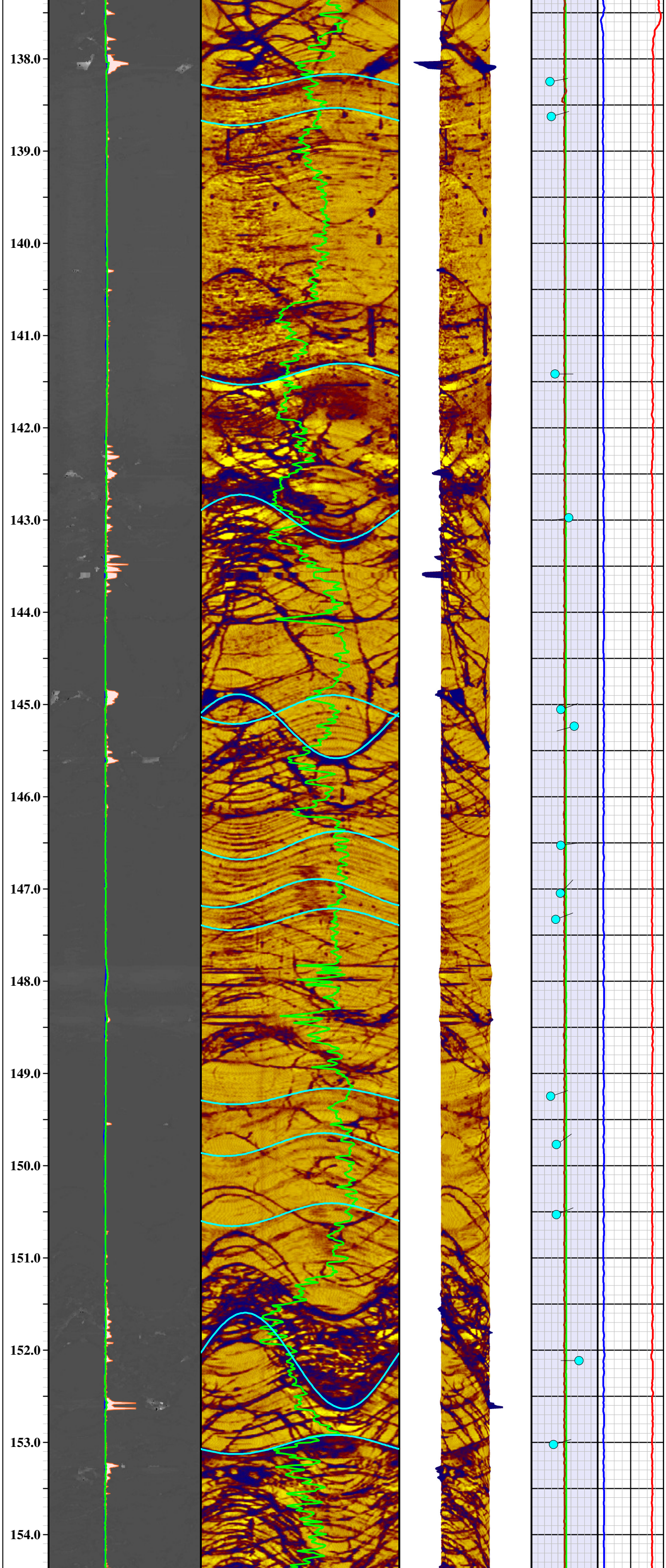
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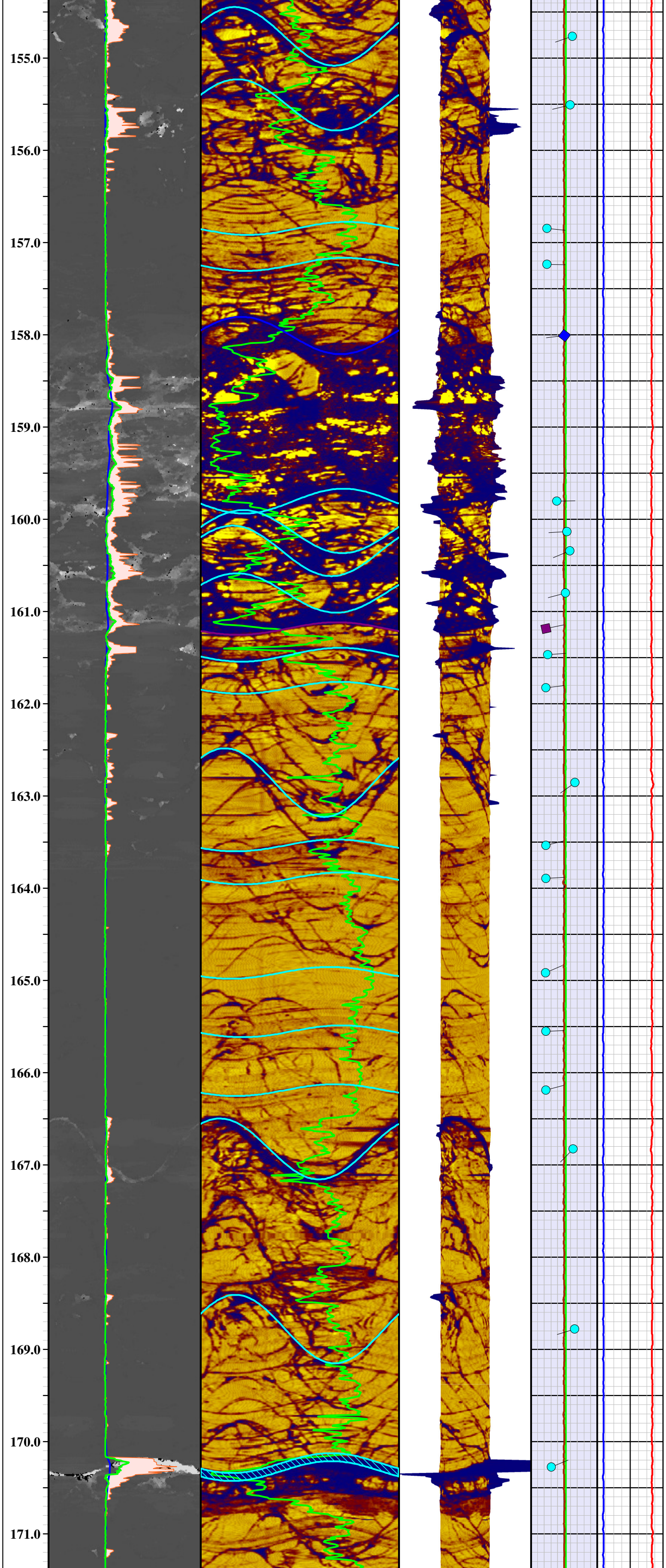
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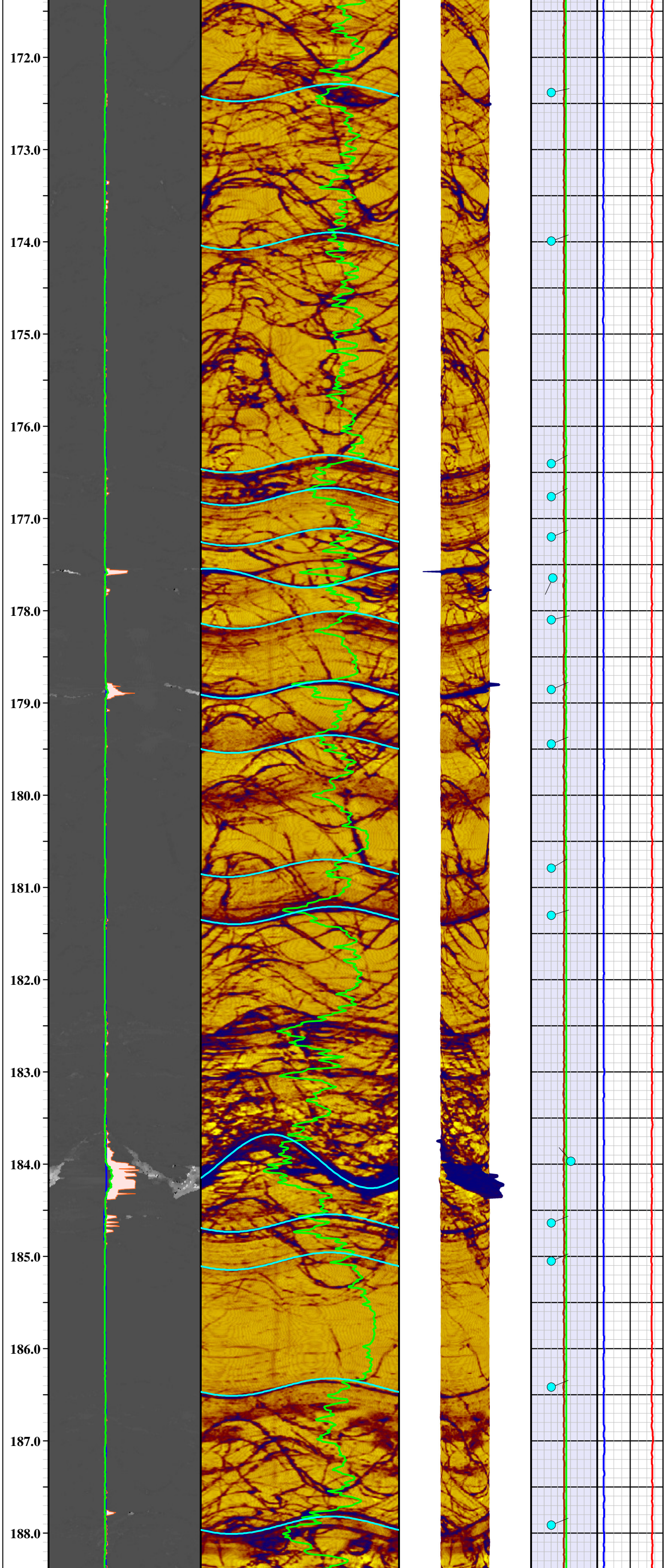
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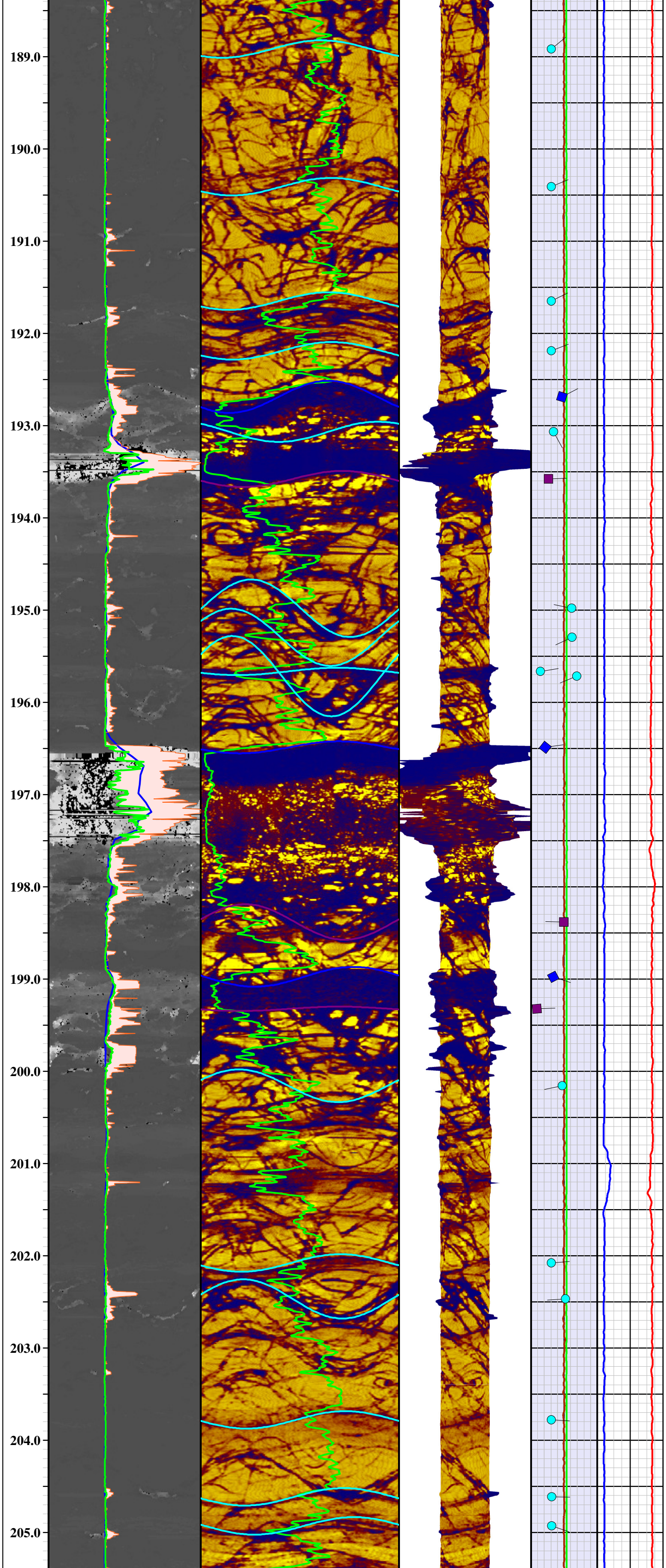
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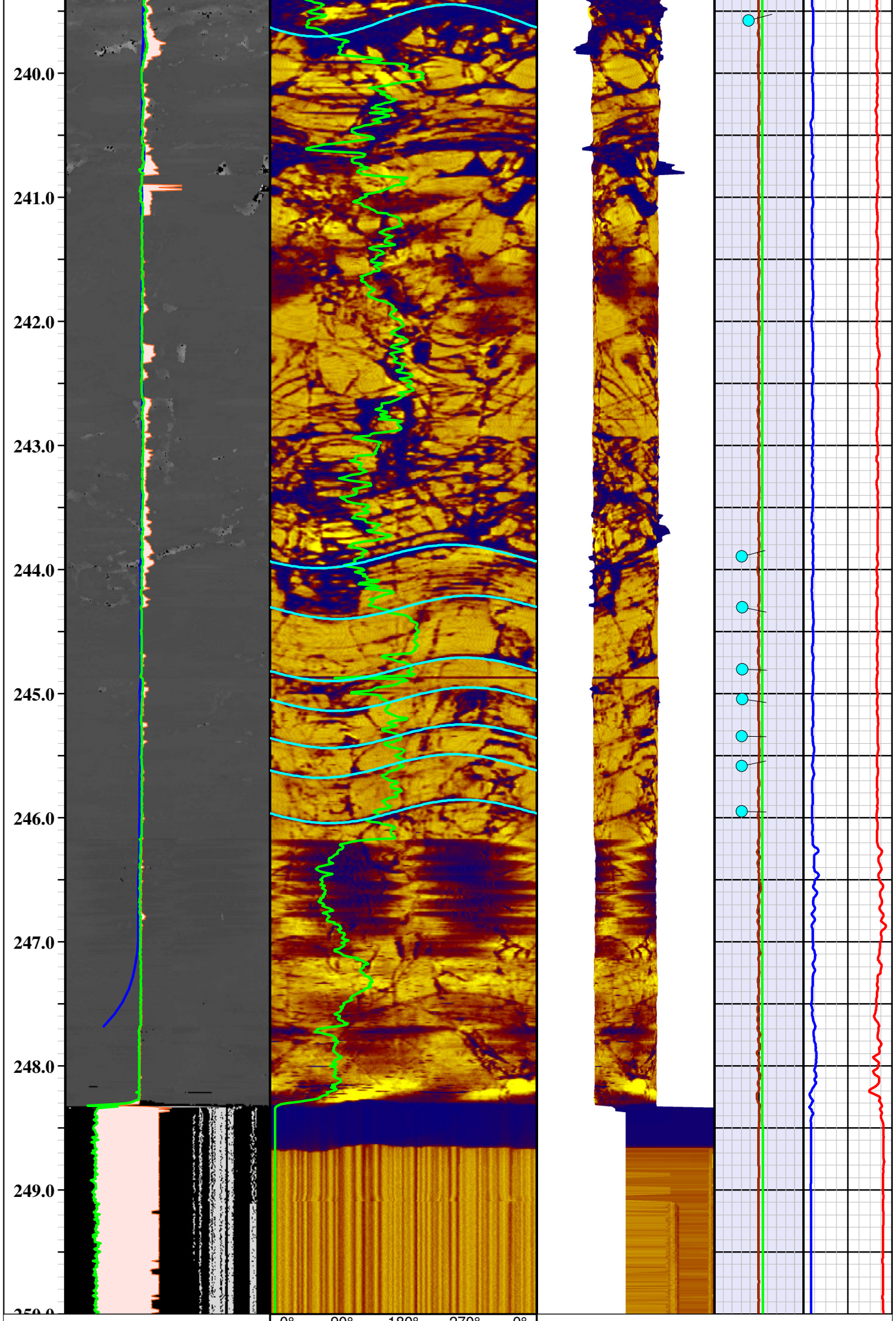

0° 90° 180° 270° 0°

DIPA

ABI Features

	0 9000 **ARI**
Enlargements	0° 90° 180° 270° 0° Oriented Mag North **Amp-High Pass**
2 Inches 7 **Ave-Acoustic Caliper**	0° 90° 180° 270° 0° Oriented Mag North **Amplitude-Static**
2 Inches 7 **Max-Acoustic Caliper**	0° 90° 180° 270° 0° Non Oriented, Rot'd by 18.3' Deg **Amplitude_37.8'-67.0'**
2 Inches 7 **3-Arm Caliper**	0° 90° 180° 270° 0° Oriented Mag North **Amplitude-NM**
0° 90° 180° 270° 0° Non Oriented, Rot'd by 18.3' Deg **Cent TT_37.8'-67.0'**	0° **3-D View**
0° 90° 180° 270° 0° Oriented Mag North **Centralized TT**	0 100 DIPT **Tadpole**
	0.8 G 1.2 **Gravity** / 0 360 **Azi-Edited**
	40 uT 60 **Mag Field** / 0 Deg 8 **Tilt**

1in:1ft **Depth**

GT-37 ABI40 2G Summary

QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor

3-Axis Magnetometer

3-Axis Accellerometer



Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)



Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-37
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY RESOLUTION COPPER MINING

WELL ID GT-13 / DH17-26

FIELD NEAR WEST

COUNTY PINAL STATE ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

LOCATION SEC TWP RGE

OTHER SERVICES
OPTICAL TELEVIEWER
TEMPERATURE
FLUID RESISTIVITY
DUAL INDUCTION
E-LOGS
SONIC

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	1-13-17		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	1 & 5		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	250 FT		LEVEL		-84 FT
DEPTH-LOGGER	250 FT		MAX. REC. TEMP.		26.72 Deg C
BTM LOGGED INTERVAL	250 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	SURFACE		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	BOART		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	M. QUINONES / D. ECKMAN		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	GOLDER		LOG TIME:ON SITE/OFF SITE		11:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	10 FT	HWT	STEEL	SURFACE	10 FT
2	HQ	10 FT	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	1-13-17	**Date**	1-13-17	**Date**	1-13-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	QL DIL
Tool SN	4953	**Tool SN**	5513	**Tool SN**	6261
From	SURFACE	**From**	60 FT	**From**	SURFACE
To	250 FT	**To**	250 FT	**To**	250 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	1-13-17	**Operation Check**	1-13-17	**Operation Check**	1-13-17
Calibration Check	1-13-17	**Calibration Check**	1-13-17	**Calibration Check**	1-13-17
Time Logged	11:40 AM	**Time Logged**	12:05 AM	**Time Logged**	12:20 PM

Date	1-13-17	**Date**	1-13-17	**Date**	1-13-17
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT 4 RX SONIC	**Tool Model**	ALT QL ABI40 2G	**Tool Model**	ALT QL OBI40 2G
Tool SN	4572	**Tool SN**	143003	**Tool SN**	152511
From	82 FT	**From**	82 FT	**From**	10 FT
To	250 FT	**To**	250 FT	**To**	90 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	1-13-17	**Operation Check**	1-6-17	**Operation Check**	1-13-17
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	12:40 PM	**Time Logged**	1:00 PM	**Time Logged**	2:00 PM

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 6"

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

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GT-13 ABI40 & OBI40 2G Summary

Depth 1in:1ft

Radius Image — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 9000

ABI Features — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Image_9.9'-41.0' — Non Oriented, Rot'd by 192.0' Deg — 0° 90° 180° 270° 0°

OBI Features — DIPA — 0° 90° 180° 270° 0°

Tilt-ABI — 0 Deg 8

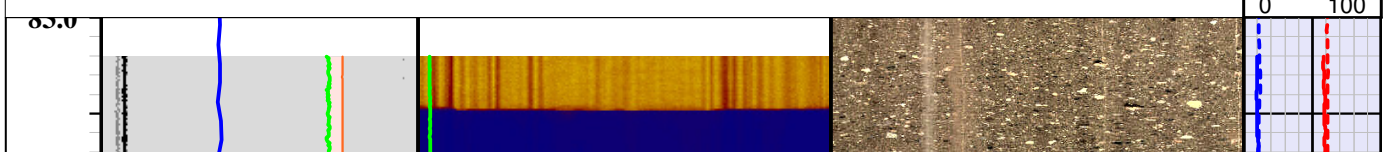
Azi-ABI — 0 360

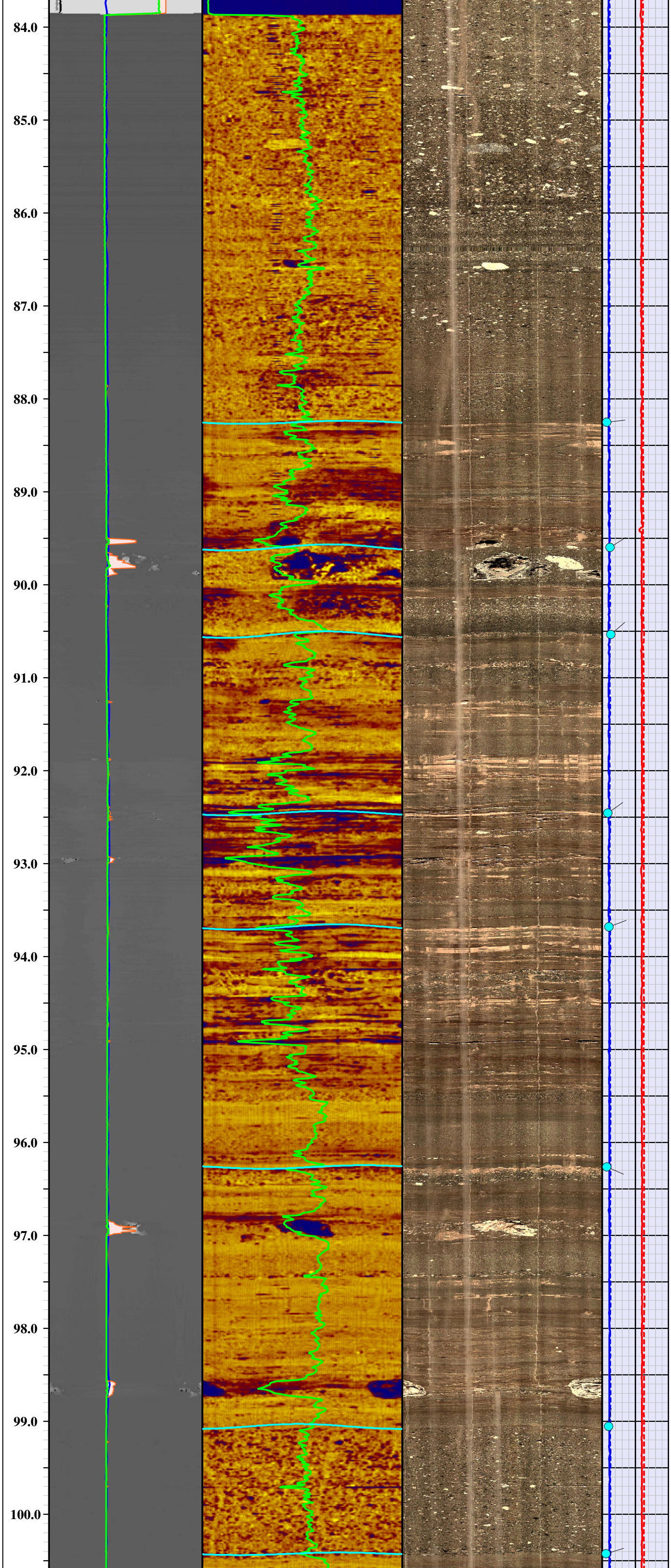
Tilt-OBI — 0 Deg 8

Azi-OBI — 0 360

Tad - ABI — DIPT — 0 100

Tad - OBI — DIPT — 0 100

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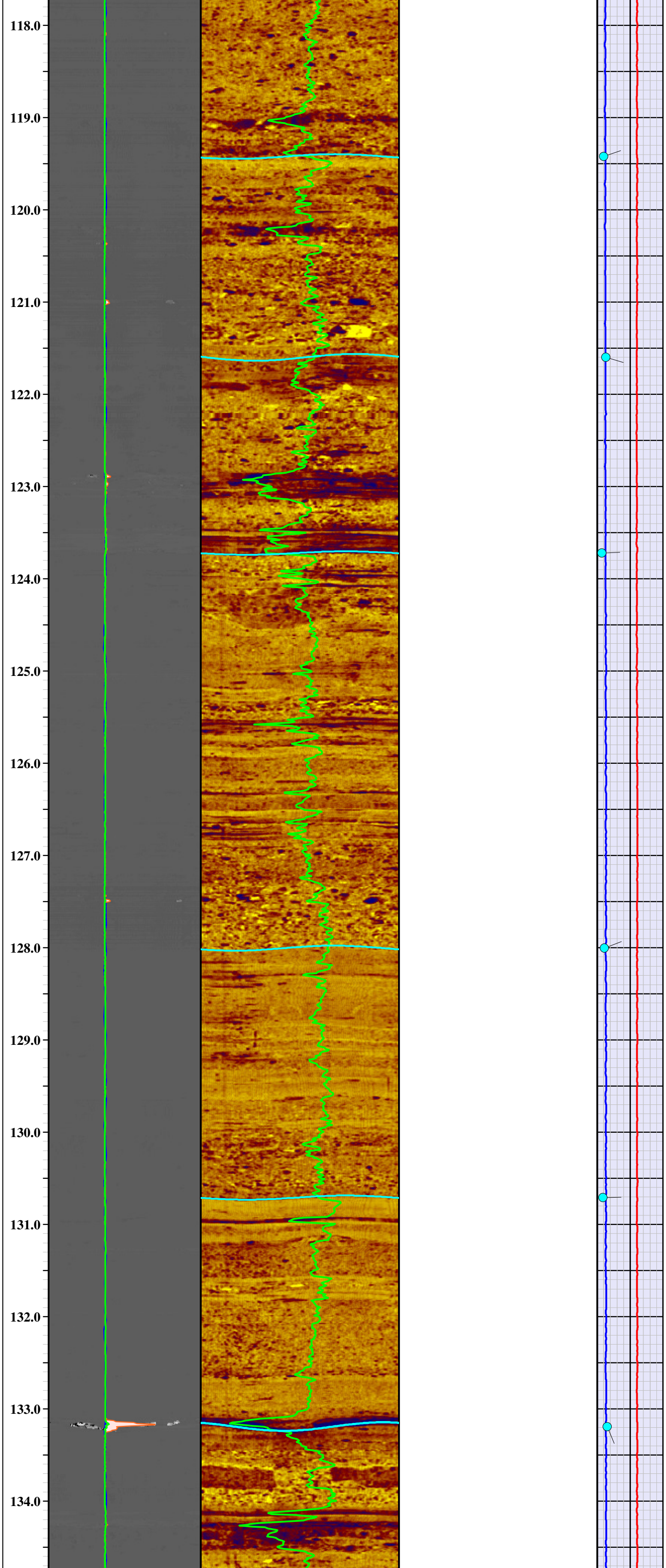
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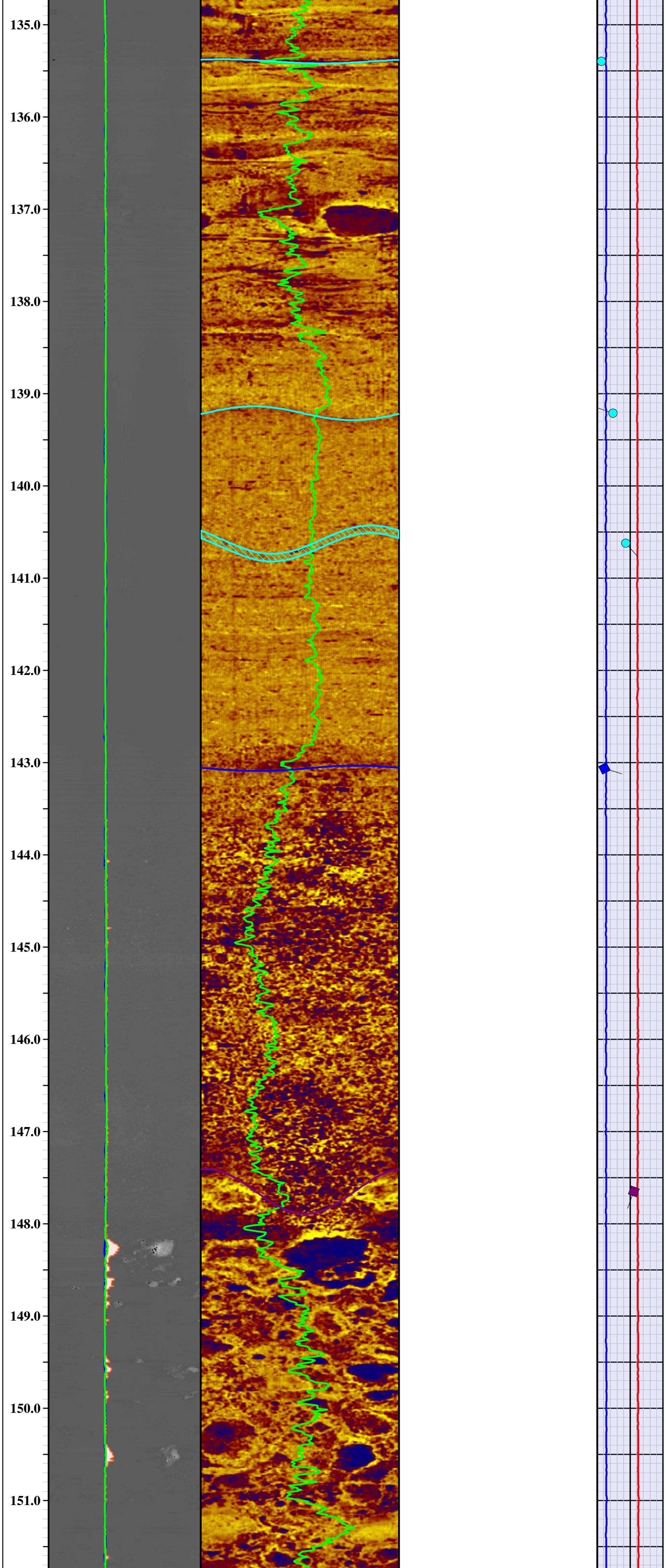
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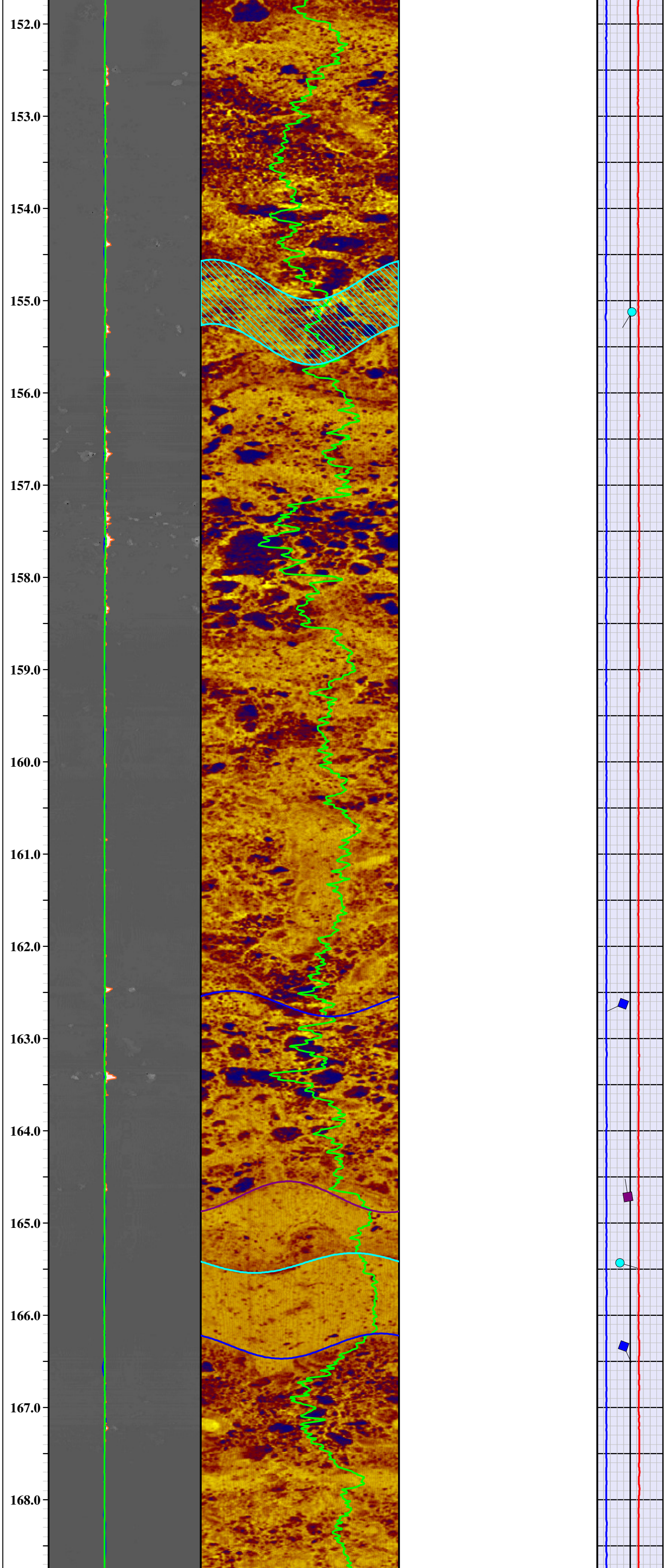
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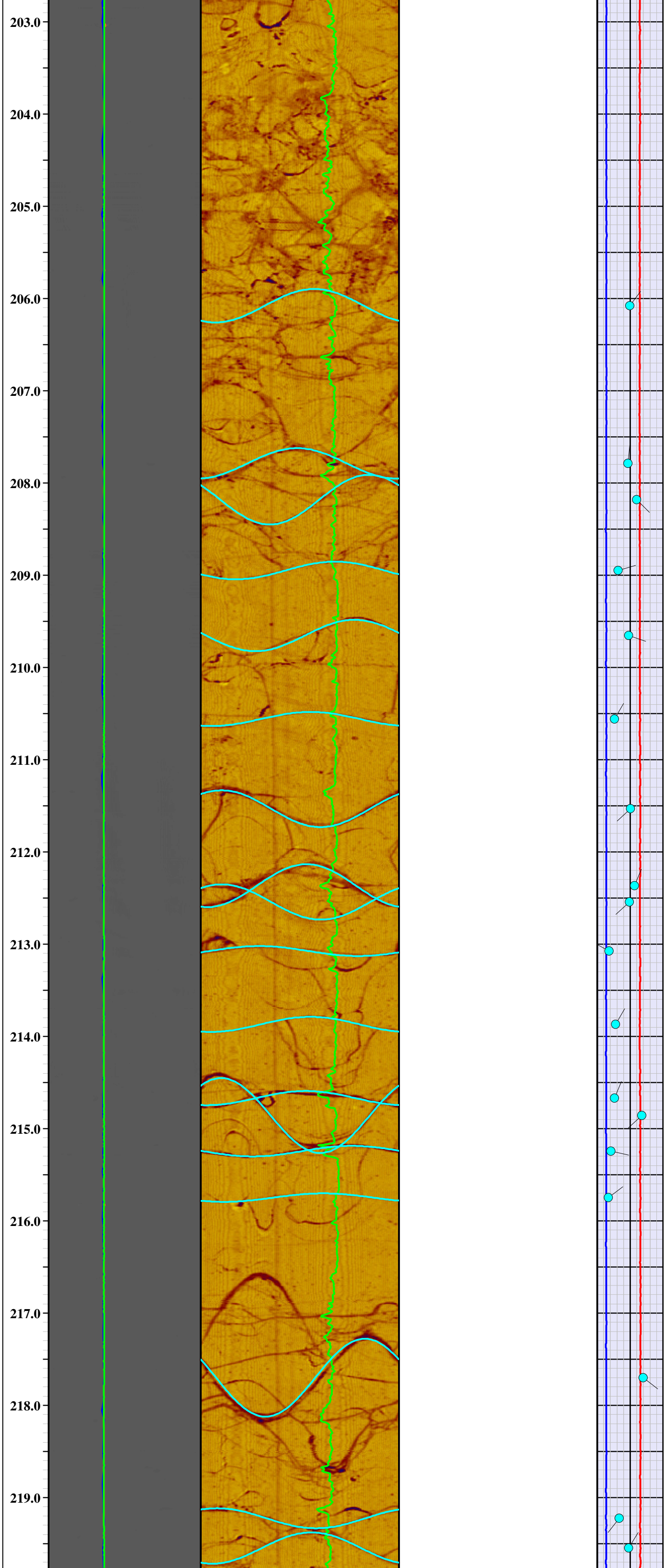
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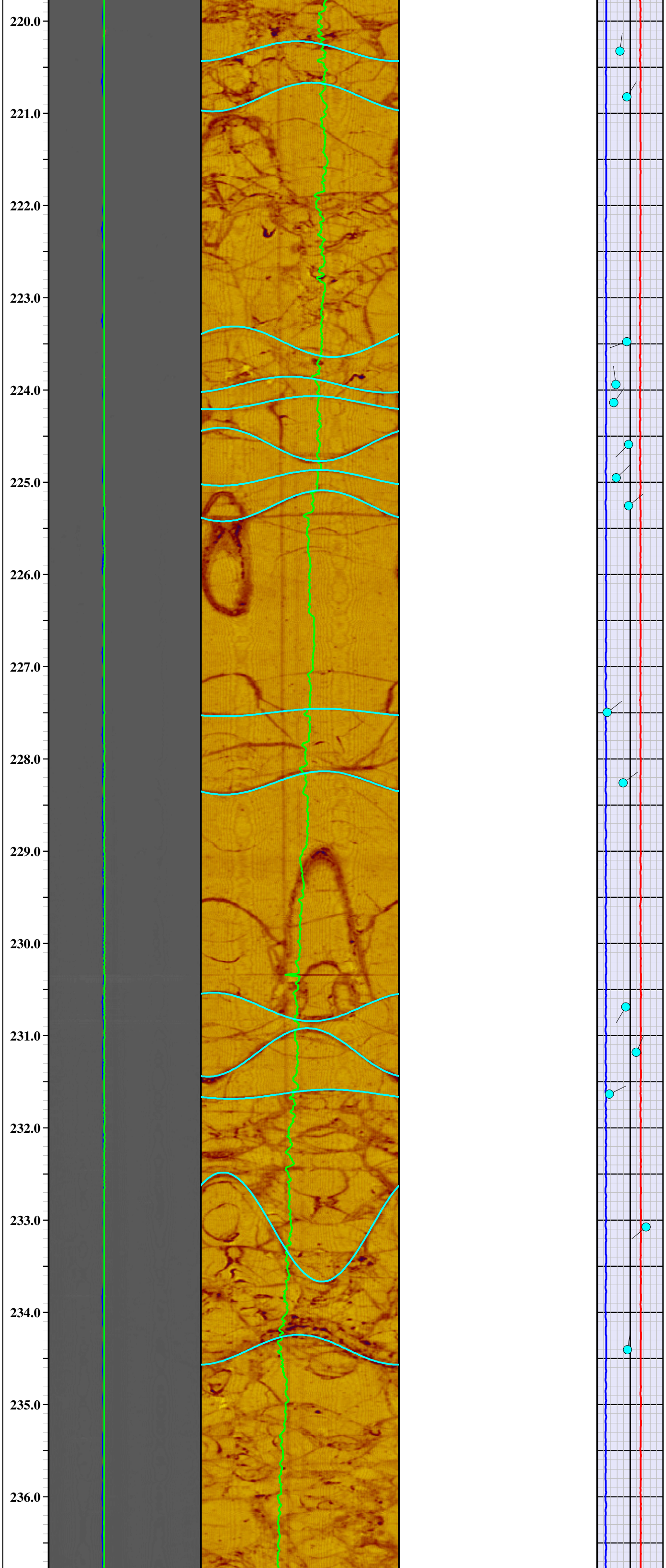
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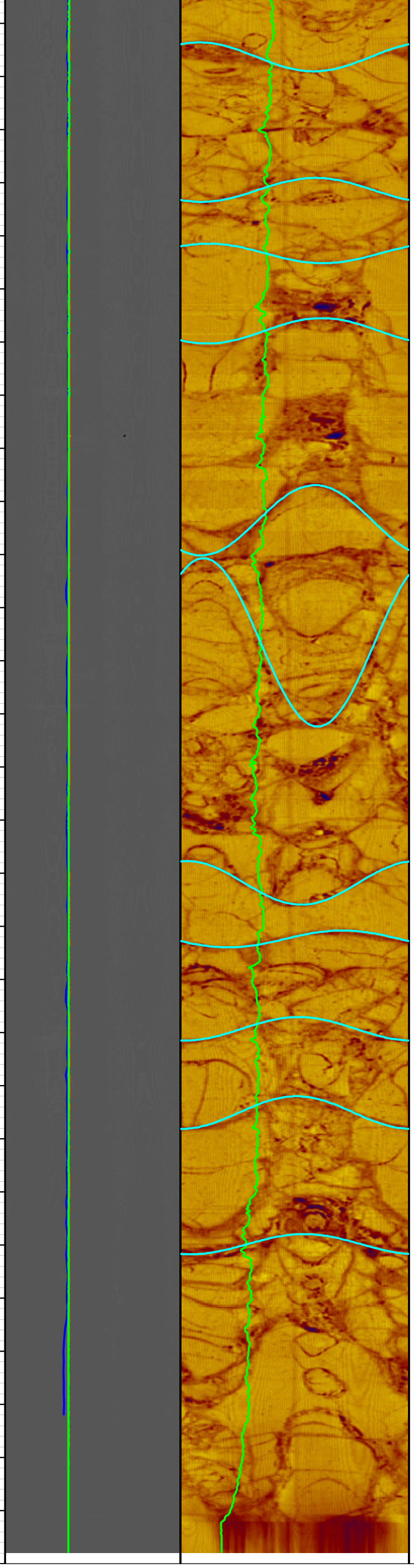
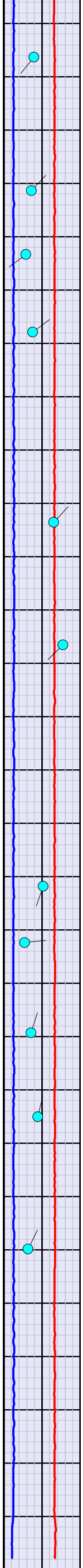




0° 90° 180° 270° 0°
DIPA
ABI Features

0 9000
ARI

0° 90° 180° 270° 0°
Oriented Mag North
Amp-High Pass

0° 90° 180° 270° 0°
Oriented Mag North

0° 90° 180° 270° 0°
DIPA
OBI Features

0° 90° 180° 270° 0°
Non Oriented, Rot'd by 192.0' Deg
Image_9.9'-41.0'

0° 90° 180° 270° 0°
Oriented Mag North
Image-NM

0.8 G 1.2

Enlargements

2 Inches 7
Ave-Acoustic Caliper

2 Inches 7
Max-Acoustic Caliper

2 Inches 7

0 100
DIPT
Tad - OBI

0 100
DIPT
Tad - ABI

0 360
Azi-OBI

0 Deg 8
Tilt-OBI

0 360

	3-Arm Caliper 0° 90° 180° 270° 0° Oriented Mag North Radius Image	Amplitude-Static 0° 90° 180° 270° 0° Oriented Mag North Amplitude-NM	0° 3-D View	0.8 G 1.2 Gravity 40 uT 60 Mag Field	0 300 Azi-ABI 0 Deg 8 Tilt-ABI	
1in:1ft Depth	GT-13 ABI40 & OBI40 2G Summary					

QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

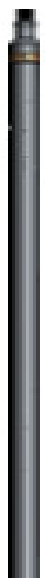
Can only be logged in fluid filled holes

ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

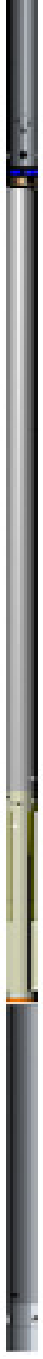
Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)



3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-13 / DH17-26
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-12 / DH17-27		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

OTHER SERVICES
OPTICAL TELEVIEWER
E-LOG
DUAL INDUCTION
TEMPERATURE
FLUID RESISTIVITY
SONIC

PERMANENT DATUM			ELEVATION	K.B.	
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	
DATE	1-17-17		TYPE FLUID IN HOLE	FORMATION WATER	
RUN No	1 & 5		MUD WEIGHT	N/A	
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY	N/A	
DEPTH-DRILLER	250 FT		LEVEL	~ 63 FT	
DEPTH-LOGGER	250 FT		MAX. REC. TEMP.	26.10 Deg C	
BTM LOGGED INTERVAL	250 FT		IMAGE ORIENTED TO:	MAGNETIC NORTH	
TOP LOGGED INTERVAL	63 FT		SAMPLE INTERVAL	0.010 FT	
DRILLER / RIG#	BOART		LOGGING TRUCK	TRUCK #310	
RECORDED BY / Logging Eng.	M. QUINONES / D. ECKMAN		TOOL STRING/SN	ALT QL ABI40 2G SN 143003	
WITNESSED BY	GOLDER		LOG TIME:ON SITE/OFF SITE	11:00 AM	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	15 FT	HWT	STEEL	SURFACE	15 FT
2	HQ	15 FT	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	1-17-17	**Date**	1-17-17	**Date**	1-17-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	ALT 4 RX SONIC
Tool SN	4953	**Tool SN**	5513	**Tool SN**	4572
From	SURFACE	**From**	58 FT	**From**	58 FT
To	250 FT	**To**	250 FT	**To**	250 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	1--17-17	**Operation Check**	1-17-17	**Operation Check**	1-17-17
Calibration Check	1-17-17	**Calibration Check**	1-17-17	**Calibration Check**	1-17-17
Time Logged	11:20 AM	**Time Logged**	12:00 PM	**Time Logged**	12:13 PM

Date	1-17-17	**Date**	1-17-17	**Date**	1-17-17
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	QL DUAL IND.	**Tool Model**	ALT QL ABI40 2G	**Tool Model**	ALT QL OBI40 2G
Tool SN	6261	**Tool SN**	143003	**Tool SN**	152511
From	SURFACE	**From**	63 FT	**From**	10 FT
To	250 FT	**To**	250 FT	**To**	117 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	1-17-17	**Operation Check**	1-17-17	**Operation Check**	1-17-17
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	12:34 PM	**Time Logged**	12:55 PM	**Time Logged**	1:35 PM

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 6"

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

GT-12 ABI40 & OBI40 2G Summary

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 10000

ABI Features — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Image_14.1'-49.0' — Non Oriented, Rot'd by 133.2' Deg — 0° 90° 180° 270° 0°

OBI Features — DIPA — 0° 90° 180° 270° 0°

Tilt - ABI — 0 Deg 10

Azi - ABI — 0 360

Tilt - OBI — 0 Deg 10

Azi-Edited — OBI

Tadpole OB — DIPT — 0 100

Tadpole AB — DIPT — 0 100



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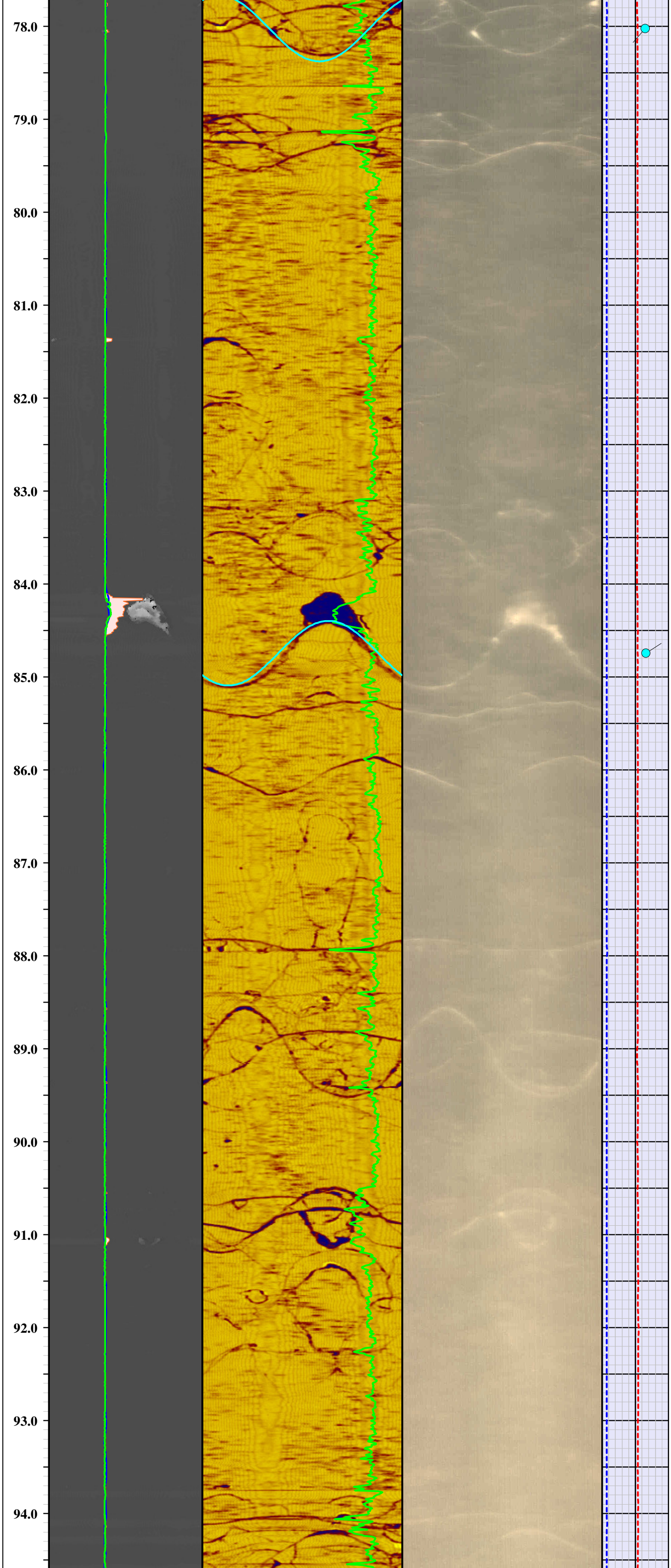
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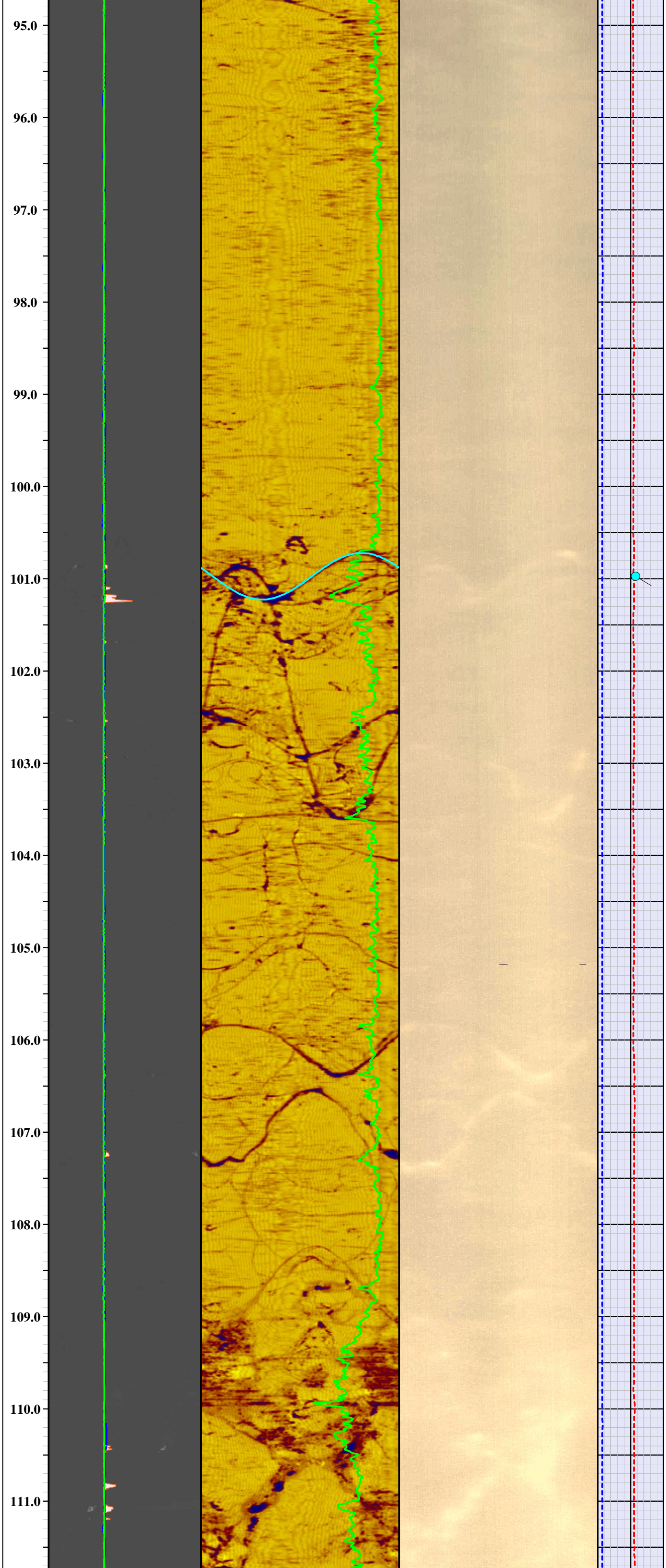
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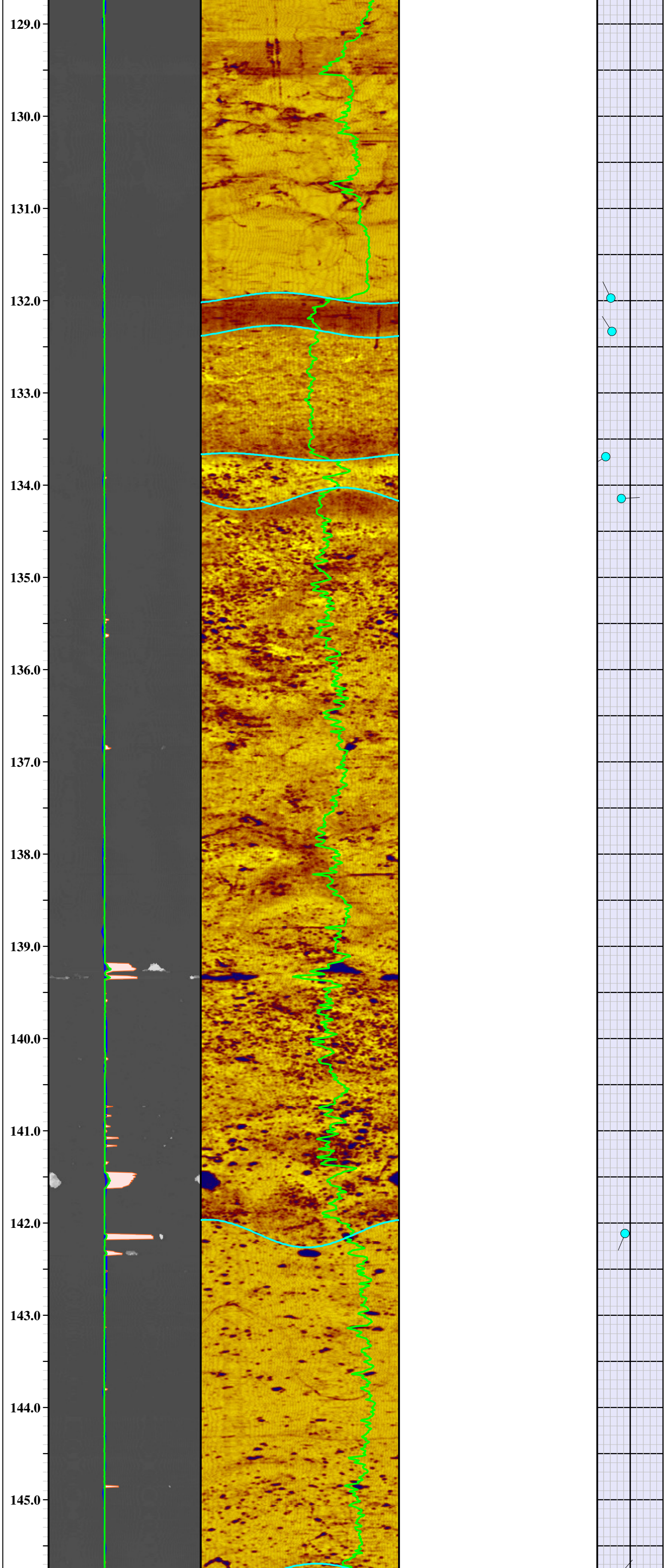
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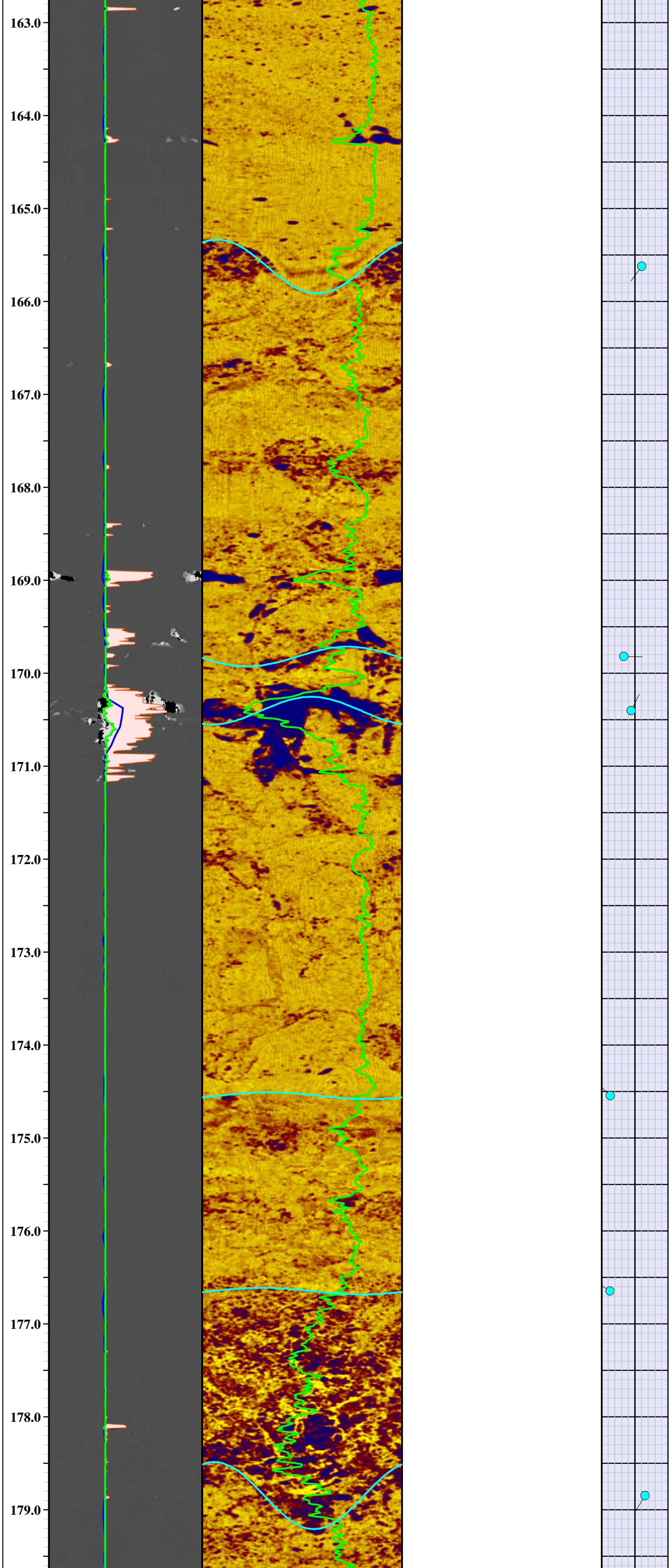
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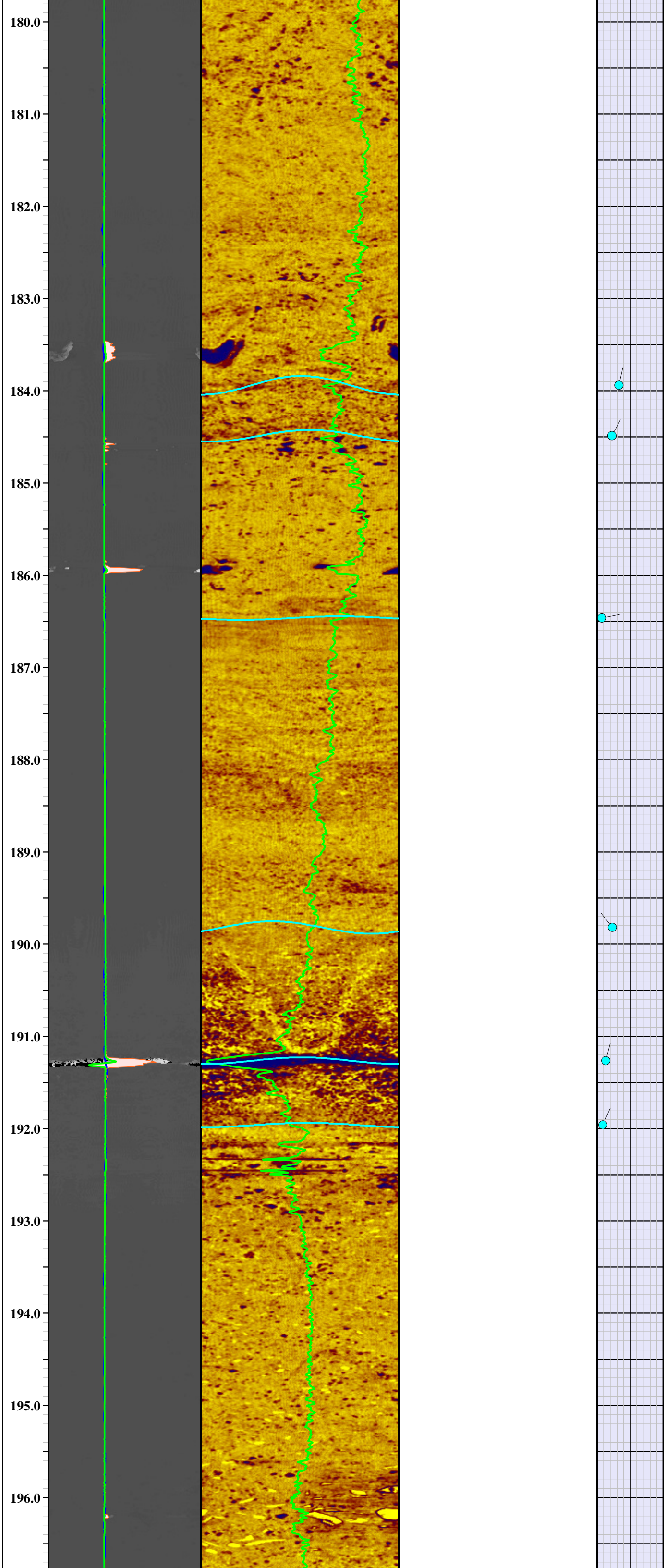
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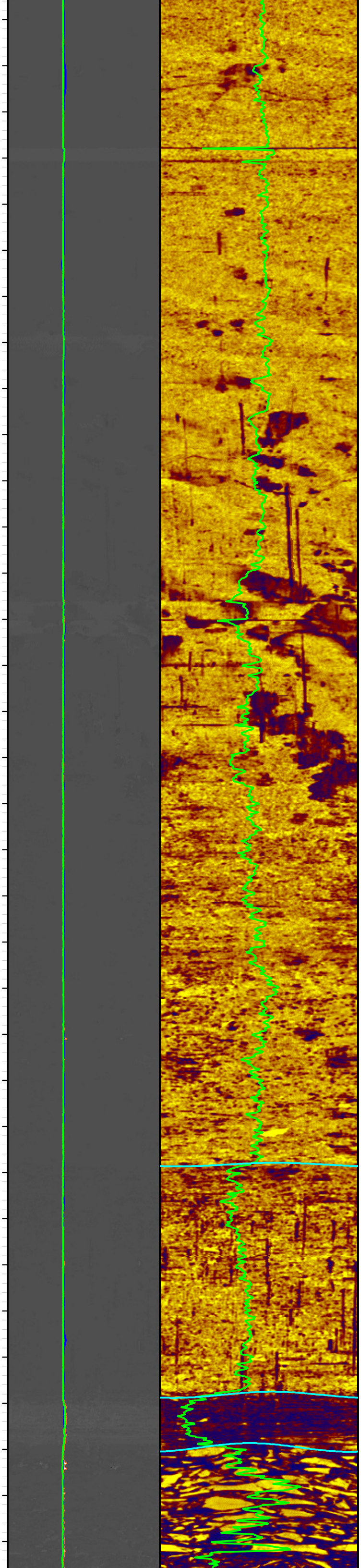
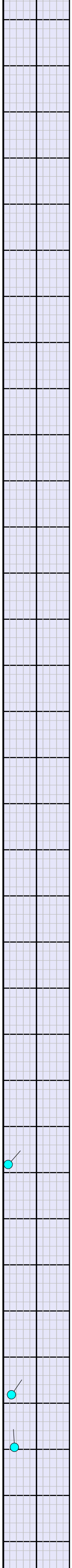
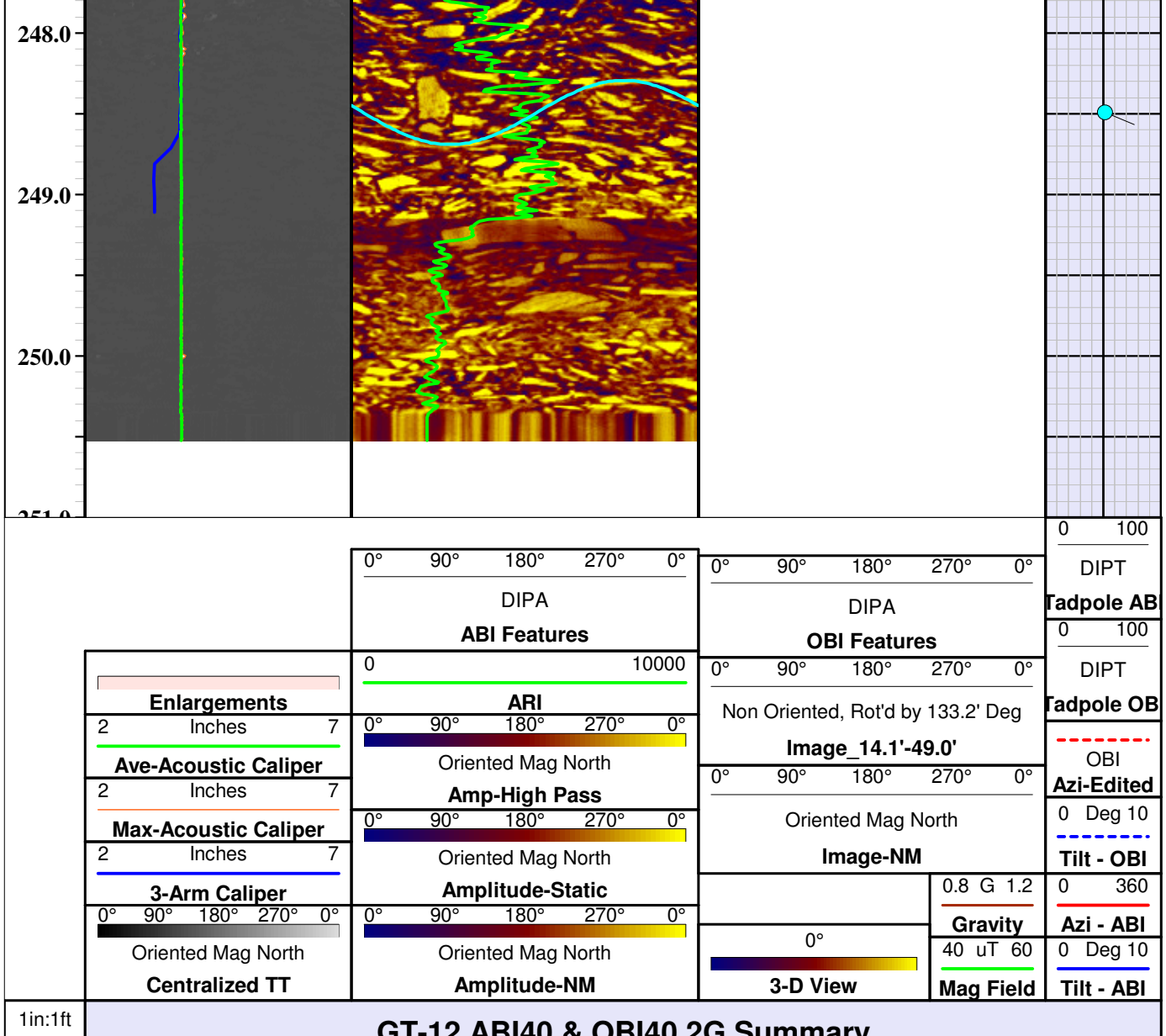






	Enlargements	0° 90° 180° 270° 0° DIPA ABI Features	0° 90° 180° 270° 0° DIPA OBI Features		0 100 DIPT Tadpole ABI
	2 Inches 7 Ave-Acoustic Caliper	0 10000 ARI	0° 90° 180° 270° 0° Non Oriented, Rot'd by 133.2' Deg Image_14.1'-49.0'		0 100 DIPT Tadpole OBI
	2 Inches 7 Max-Acoustic Caliper	0° 90° 180° 270° 0° Oriented Mag North Amp-High Pass	0° 90° 180° 270° 0° Oriented Mag North Image-NM		OBI Azi-Edited
	2 Inches 7 3-Arm Caliper	0° 90° 180° 270° 0° Oriented Mag North Amplitude-Static		0.8 G 1.2 Gravity	0 Deg 10 Tilt - OBI
	0° 90° 180° 270° 0° Oriented Mag North Centralized TT	0° 90° 180° 270° 0° Oriented Mag North Amplitude-NM	0° 3-D View	40 uT 60 Mag Field	0 360 Azi - ABI
1in:1ft Depth					0 Deg 10 Tilt - ABI

GT-12 ABI40 & OBI40 2G Summary

QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009

Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

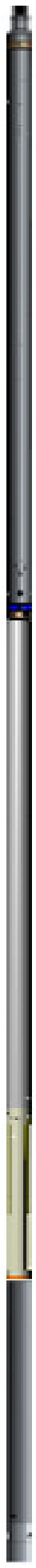
ABI Imaging Window



1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-12 / DH17-27
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY RESOLUTION COPPER MINING

WELL ID GT-23

FIELD NEAR WEST

COUNTY PINAL STATE ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

LOCATION SEC TWP RGE

OTHER SERVICES
OPTICAL TELEVIEWER
E-LOG
TEMPERATURE
FLUID RESISTIVITY
SONIC

PERMANENT DATUM ELEVATION K.B.

LOG MEAS. FROM GROUND LEVEL ABOVE PERM. DATUM D.F.

DRILLING MEAS. FROM GROUND LEVEL G.L.

DATE	1-19-17	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	1 & 5	MUD WEIGHT	N/A
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	250 FT	LEVEL	~ 30 FT
DEPTH-LOGGER	250 FT	MAX. REC. TEMP.	25.95 Deg C
BTM LOGGED INTERVAL	250 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.010 FT
DRILLER / RIG#	BOART	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	M. QUINONES / A. OLSON	TOOL STRING/SN	ALT QL ABI40 2G SN 143003
WITNESSED BY	GOLDER	LOG TIME:ON SITE/OFF SITE	7:30 AM

RUN	BOREHOLE RECORD		CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	HWT	STEEL	SURFACE	20 FT
2	HQ	20 FT	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	1-19-17	**Date**	1-19-17	**Date**	1-19-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5513	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	40 FT
To	250 FT	**To**	250 FT	**To**	250 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	1-19-17	**Operation Check**	1-19-17	**Operation Check**	1-19-17
Calibration Check	1-19-17	**Calibration Check**	1-19-17	**Calibration Check**	N/A
Time Logged	7:40 AM	**Time Logged**	8:00 AM	**Time Logged**	8:15 AM

Date	1-19-17	**Date**	1-19-17	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL OBI40 2G	**Tool Model**	ALT QL ABI40 2G	**Tool Model**	
Tool SN	152511	**Tool SN**	143003	**Tool SN**	
From	15 FT	**From**	30 FT	**From**	
To	30 FT	**To**	250 FT	**To**	
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	
Truck No	310	**Truck No**	310	**Truck No**	
Operation Check	1-19-17	**Operation Check**	1-19-17	**Operation Check**	
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	8:30 AM	**Time Logged**	8:50 AM	**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 6"

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

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Depth 1in:1ft

GT-23 ABI40 & OBI40 2G Summary

Radius Image — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 3 Inches 5

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ABI Features — DIPA — 0° 90° 180° 270° 0°

ARI — 0 11000

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

OBI Features — DIPA — 0° 90° 180° 270° 0°

Tilt-ABI — 0 Deg 8

Azi-ABI — 0 360

Tilt-OBI — 0 Deg 8

Azi-OBI — 0 360

Tad - ABI — DIPT — 0 100

Tad - OBI — DIPT — 0 100

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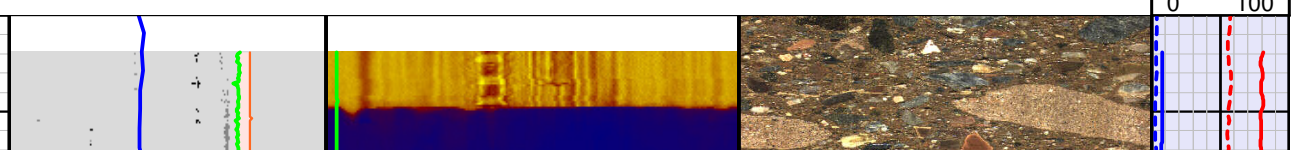

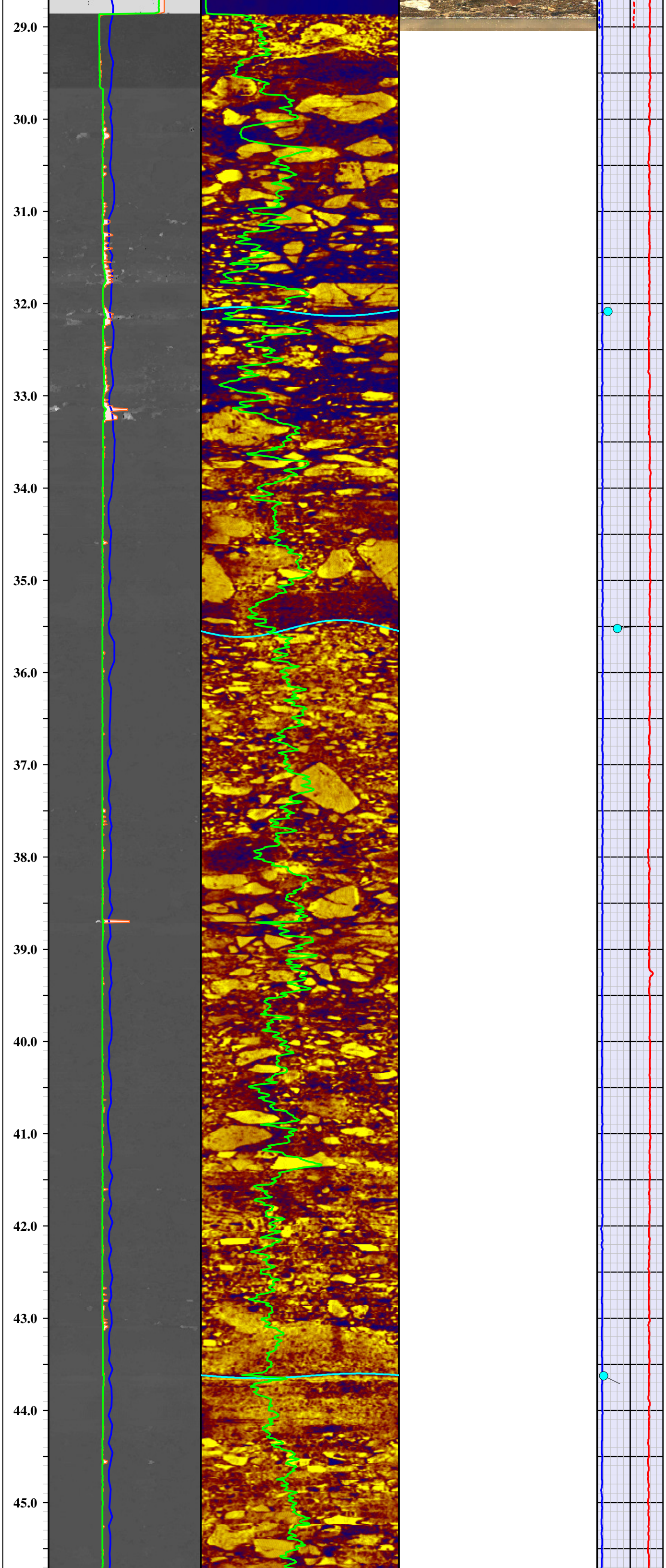
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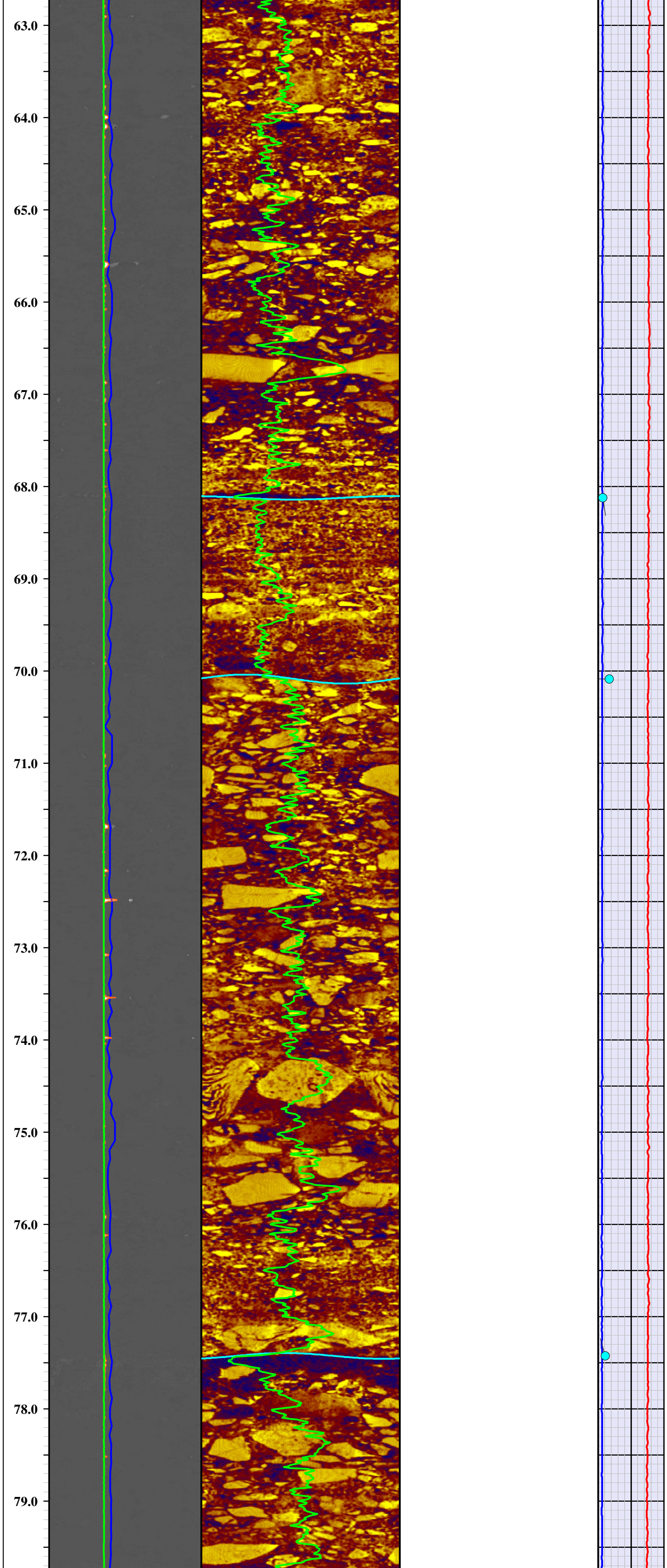
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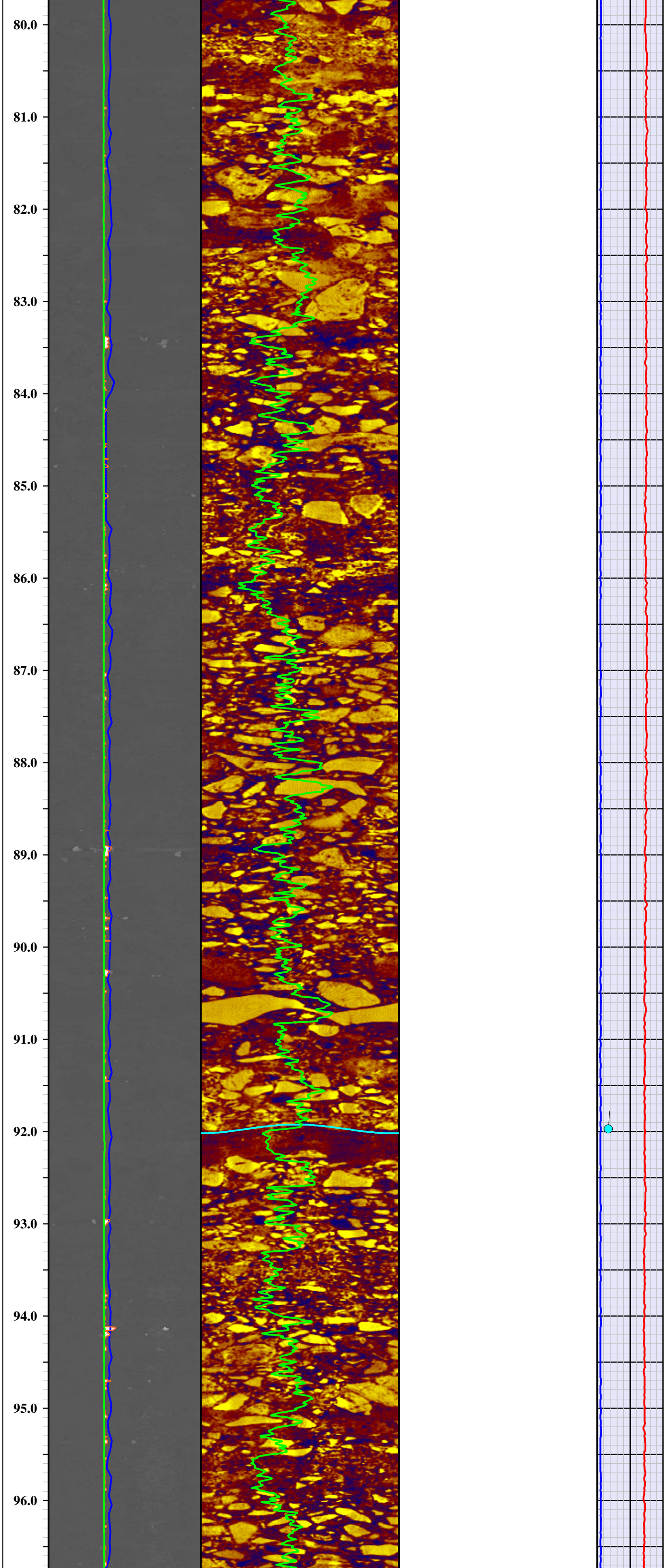
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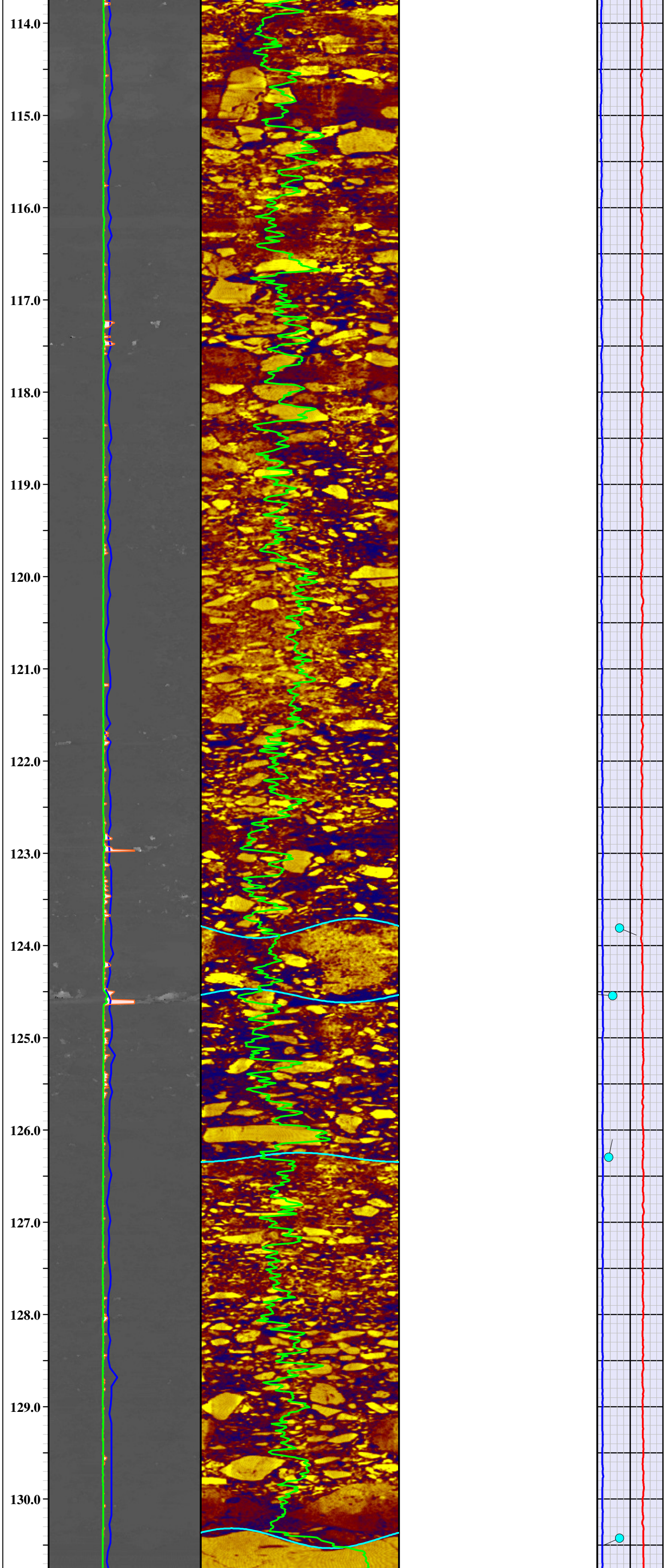
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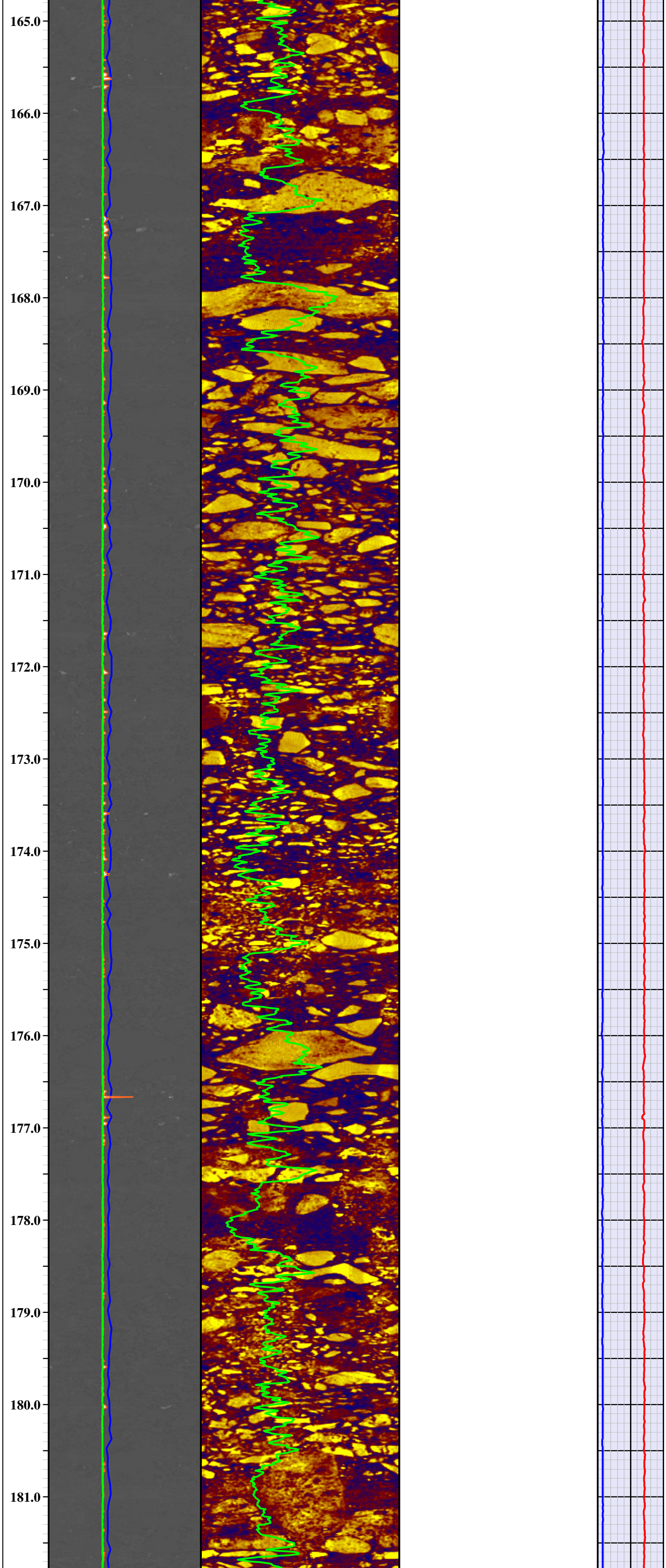
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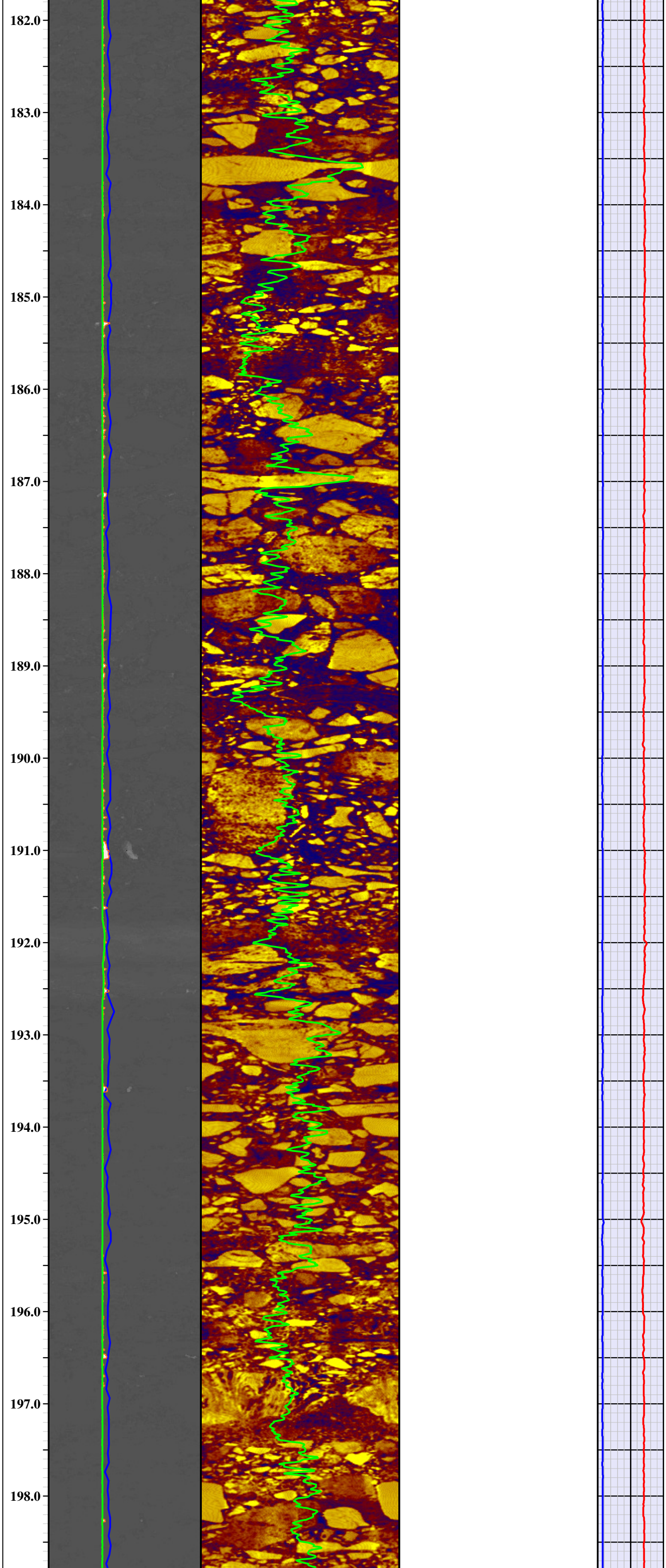
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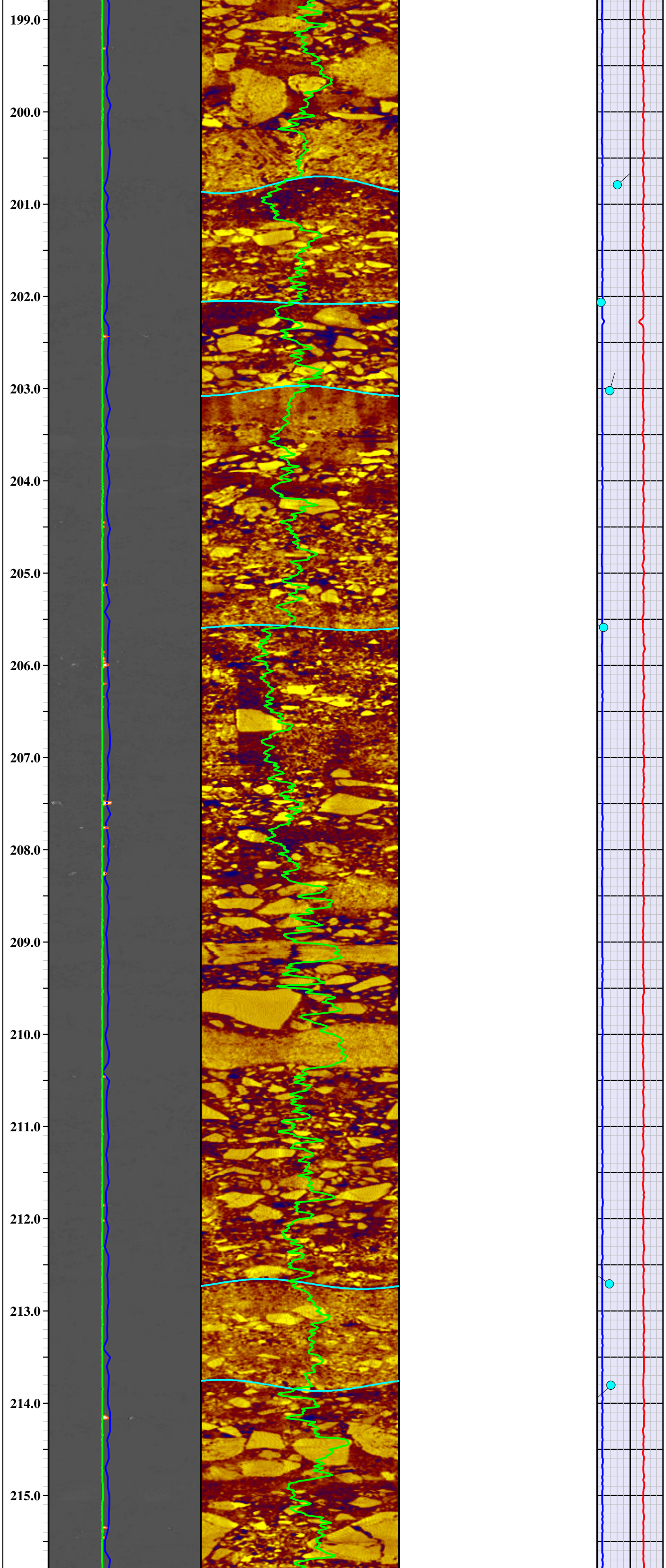
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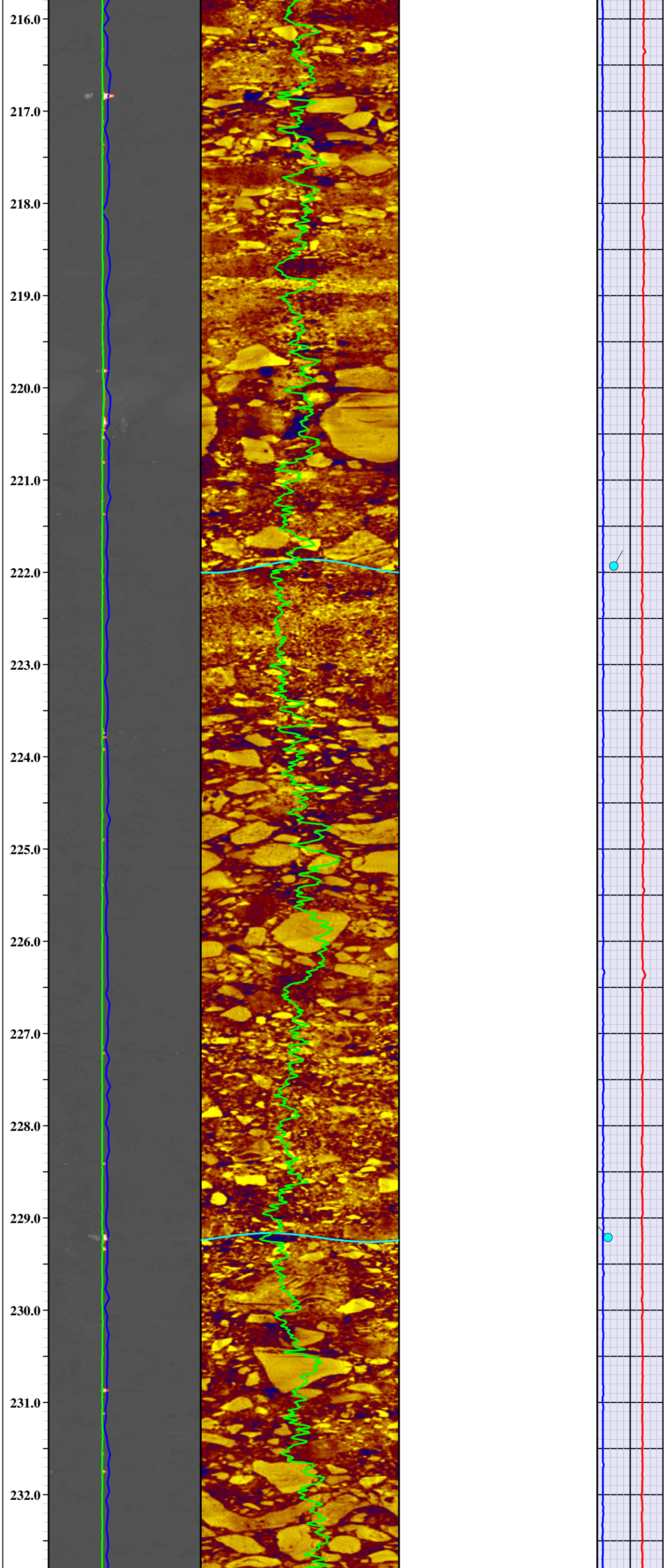
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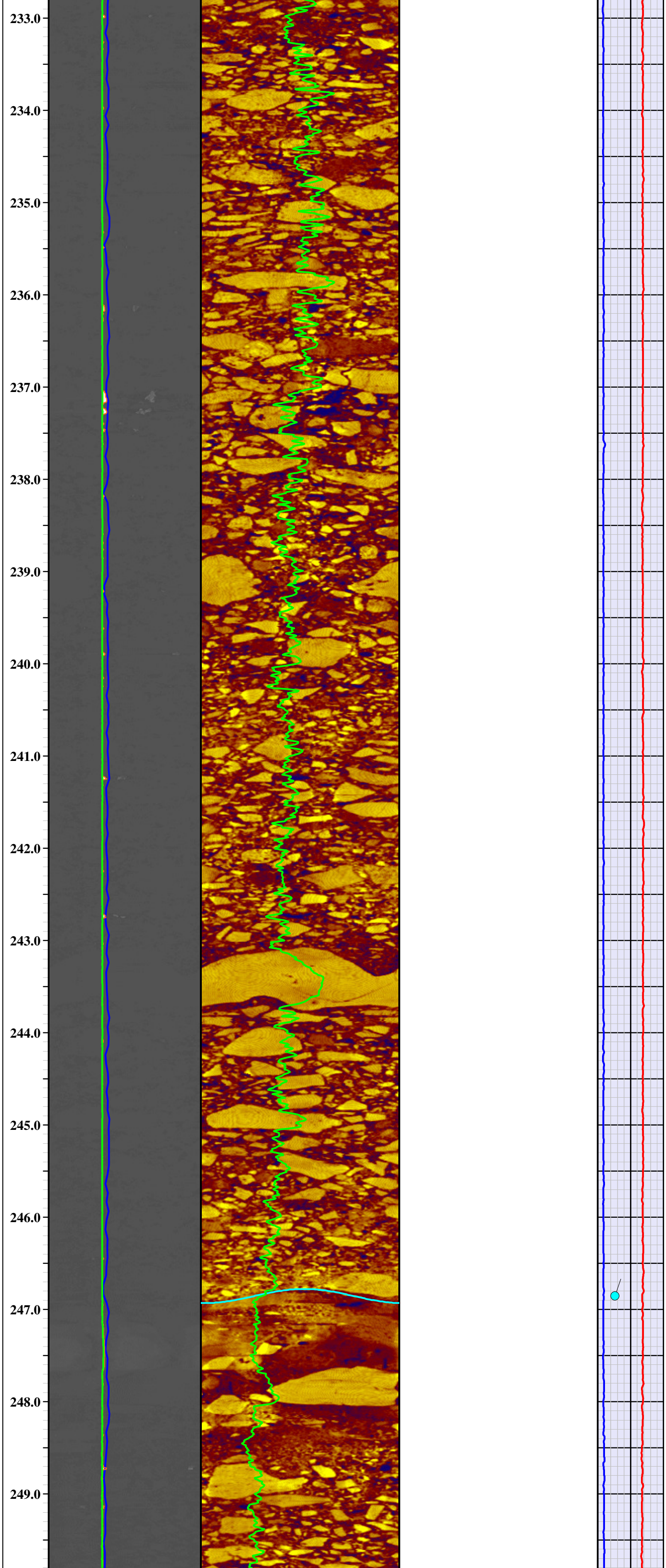
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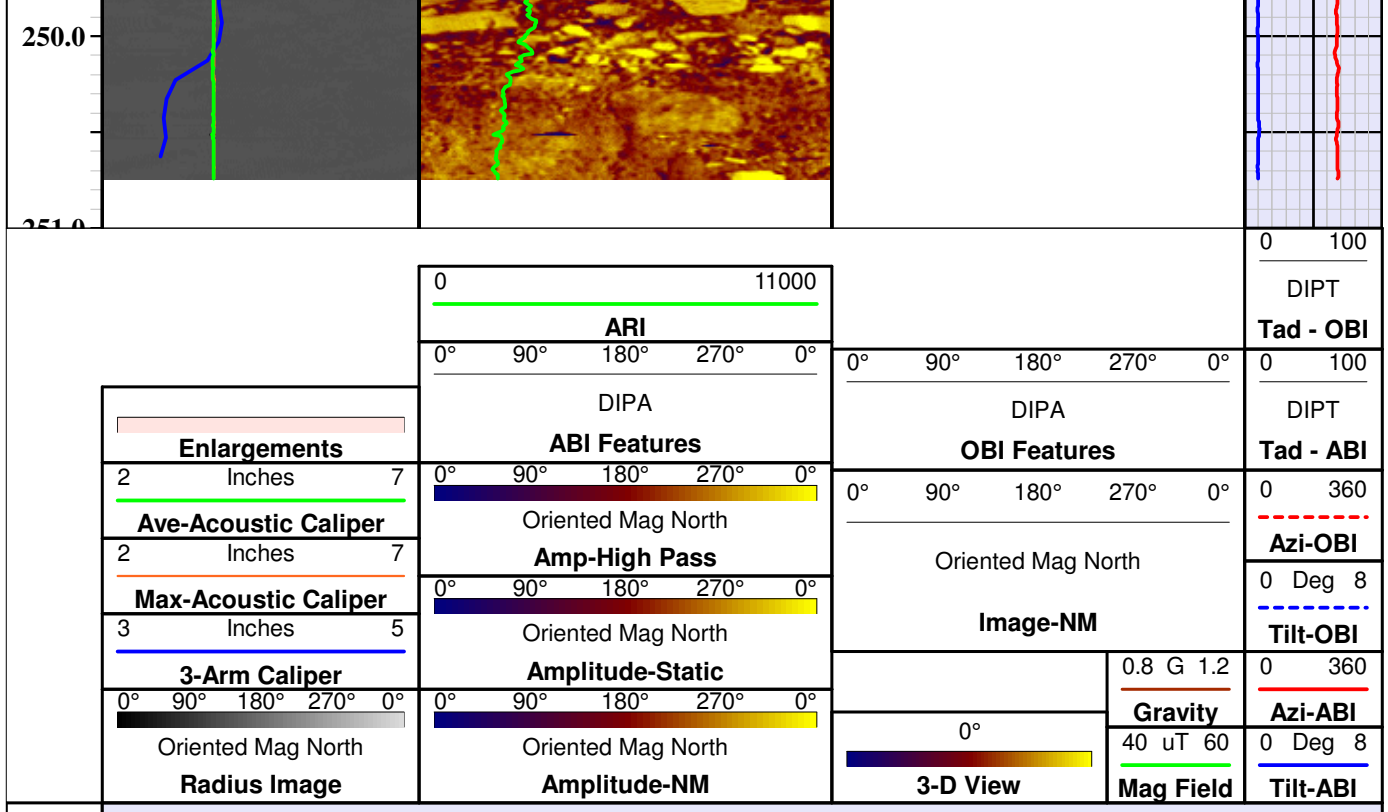


QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

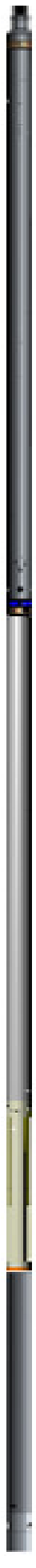
Can only be logged in fluid filled holes

ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-23
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-25 / DH17-30		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

OTHER SERVICES: TEMP / FLUID RES, GAMMA, E-LOG, SONIC

LOCATION: SEC | TWP | RGE

PERMANENT DATUM			ELEVATION	K.B.	
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	
DATE	01-27-17		TYPE FLUID IN HOLE	FORMATION WATER	
RUN No	4		MUD WEIGHT	N/A	
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY	N/A	
DEPTH-DRILLER	249.0 FT		LEVEL	~ 21 FT	
DEPTH-LOGGER	250.0 FT		MAX. REC. TEMP.	25.1 Deg C	
BTM LOGGED INTERVAL	250.0 FT		IMAGE ORIENTED TO:	MAGNETIC NORTH	
TOP LOGGED INTERVAL	15.0 FT		SAMPLE INTERVAL	0.010 FT	
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK	TRUCK #310	
RECORDED BY / Logging Eng.	E. BEAM		TOOL STRING/SN	ALT QL ABI40 2G SN 143003	
WITNESSED BY	BOART		LOG TIME:ON SITE/OFF SITE	7:00 AM	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	HWT	STEEL	SURFACE	20 FT
2	HQ	20 FT	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	01-27-17	**Date**	01-27-17	**Date**	01-27-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	E LOG 40 GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5513	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	250.0 FT	**To**	250.0 FT	**To**	250.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	01-26-17	**Operation Check**	01-26-17	**Operation Check**	01-26-17
Calibration Check	01-26-17	**Calibration Check**	01-26-17	**Calibration Check**	N/A
Time Logged	8:00 AM	**Time Logged**	8:30 AM	**Time Logged**	9:00 AM

Date	01-27-17	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143003	**Tool SN**		**Tool SN**	
From	15.0 FT	**From**		**From**	
To	250.0 FT	**To**		**To**	
Recorded By	E. BEAM	**Recorded By**		**Recorded By**	
Truck No	310	**Truck No**		**Truck No**	
Operation Check	01-26-17	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	9:30 AM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 6"

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

GT-25 ABI40 2G Summary

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

Cent TT_21.1'-49.0' — Non Oriented, Rot'd by 196.7' Deg — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude_21.1'-49.0' — Non Oriented, Rot'd by 196.7' Deg — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 9000

ABI Features — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

Tadpole — DIPT — 0 100

Tilt — 0 Deg 8

Azi-Edited — 0 360

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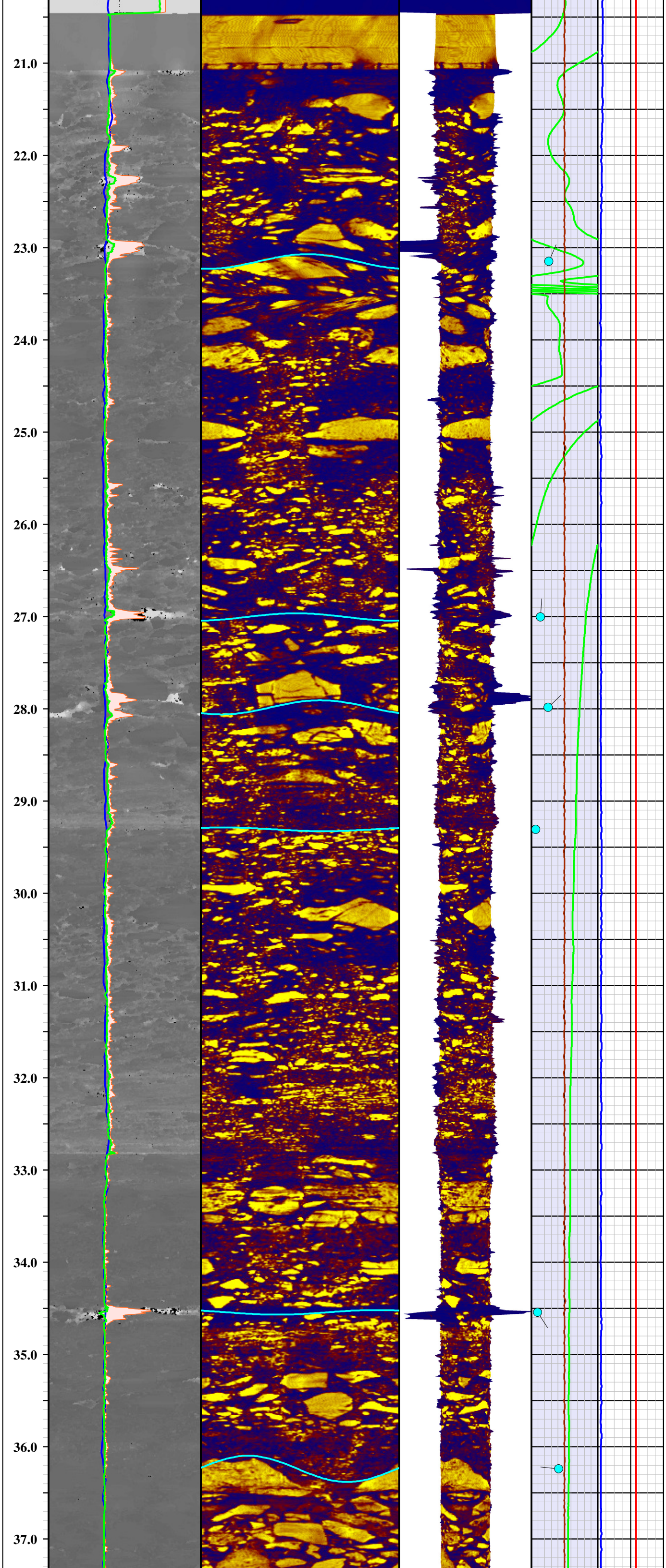
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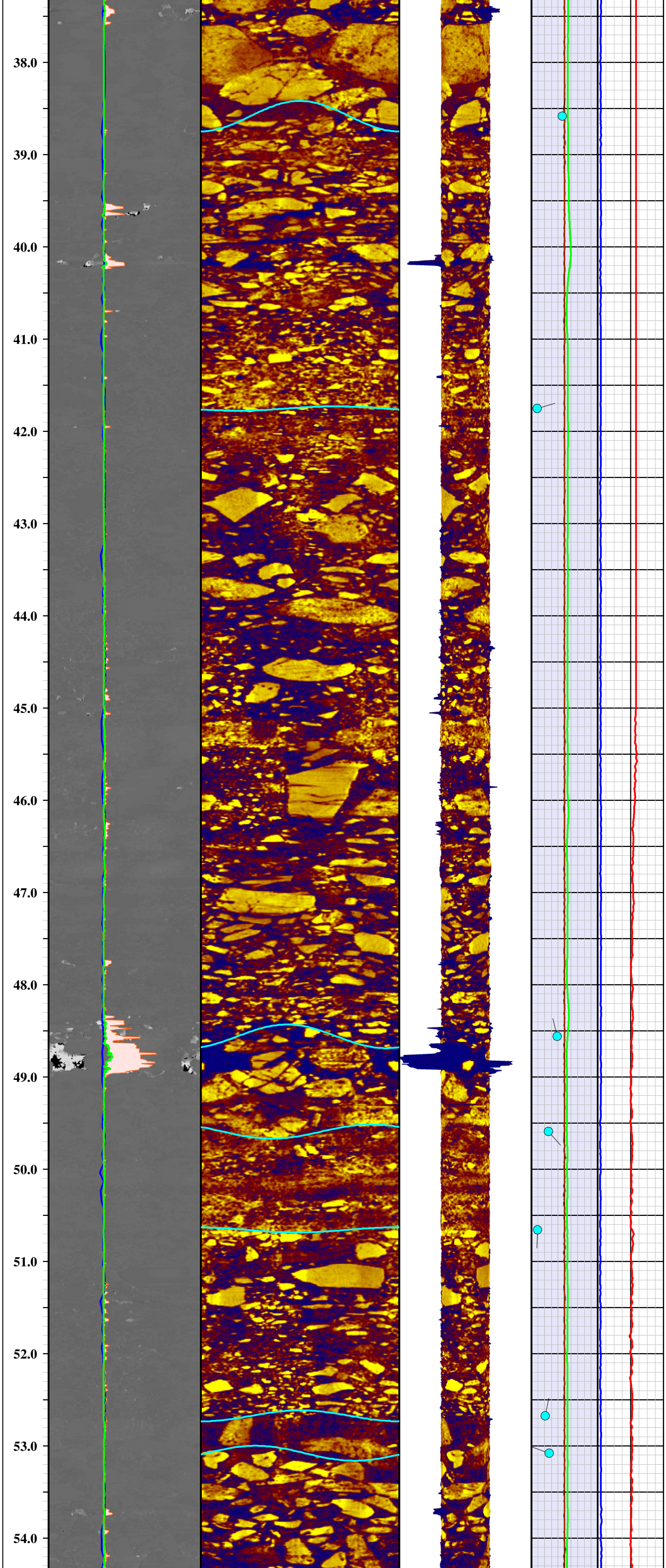
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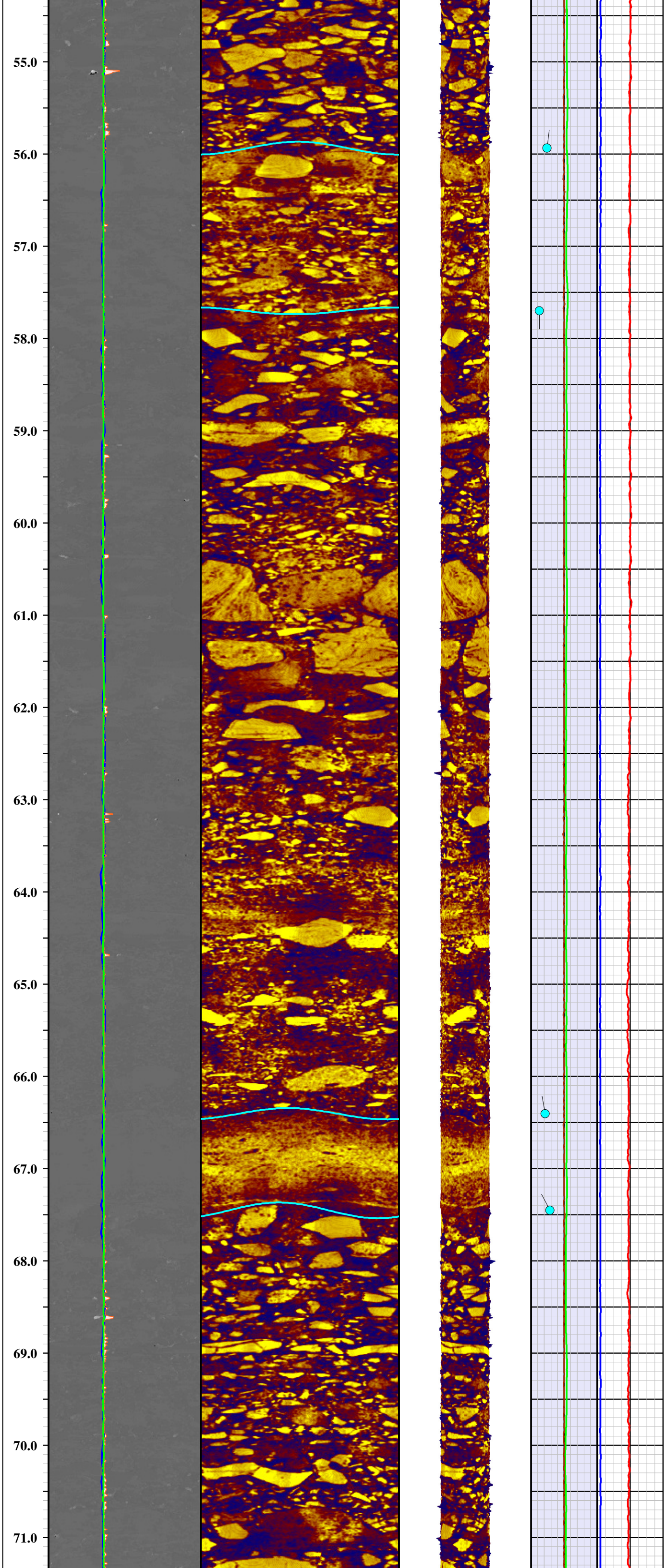
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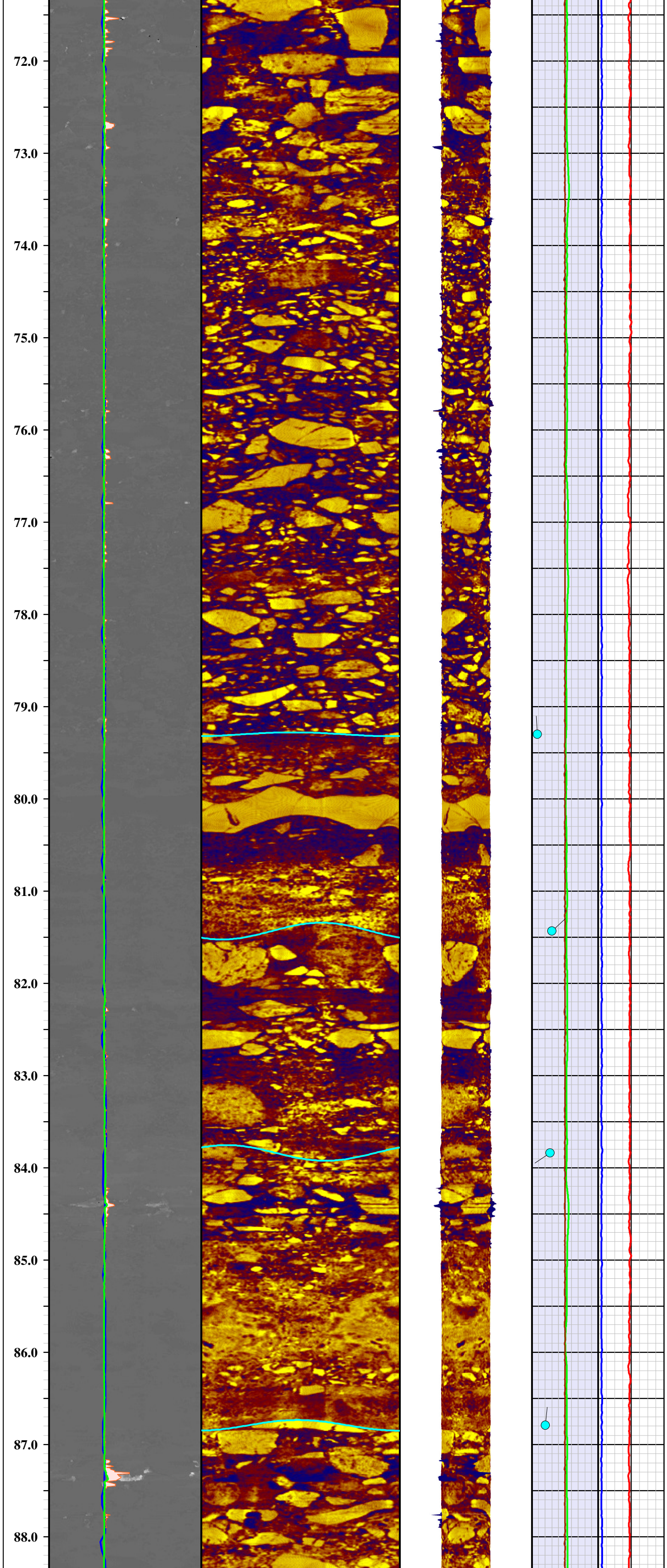
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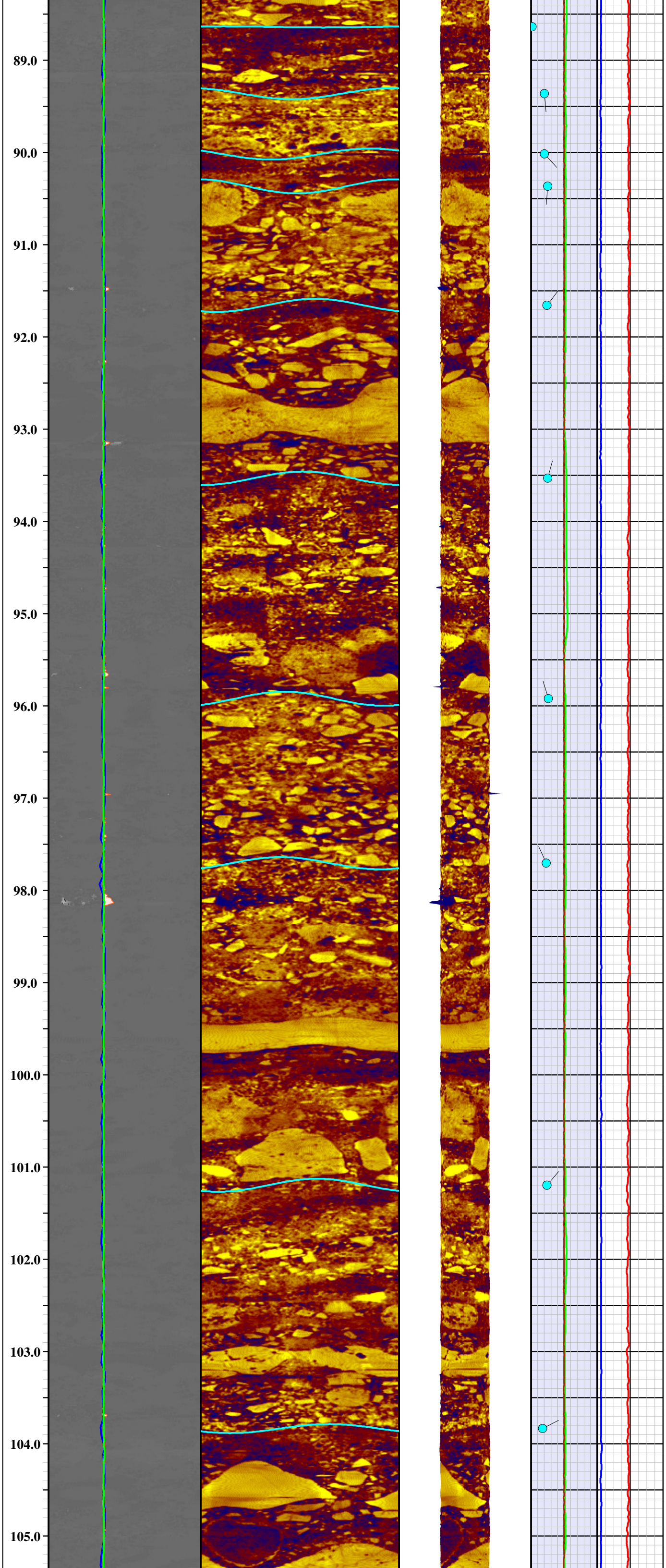
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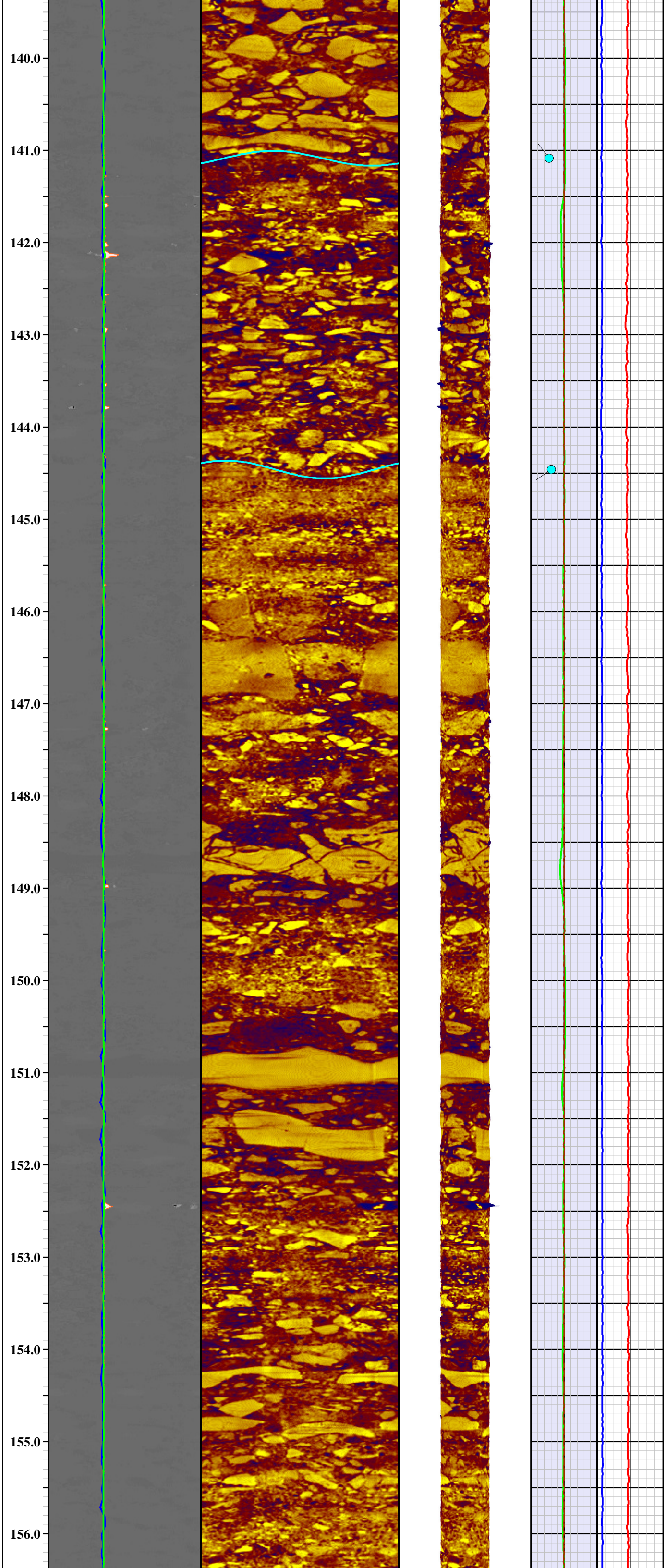
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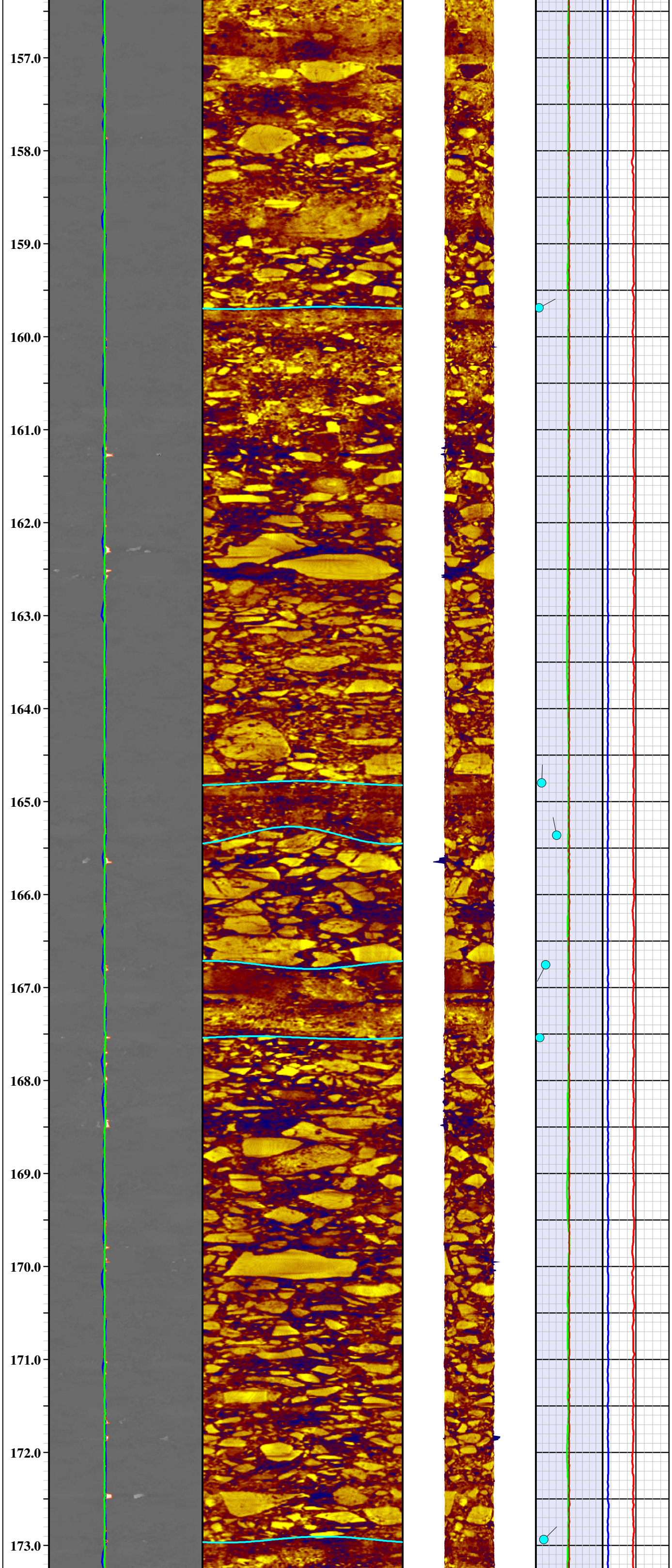
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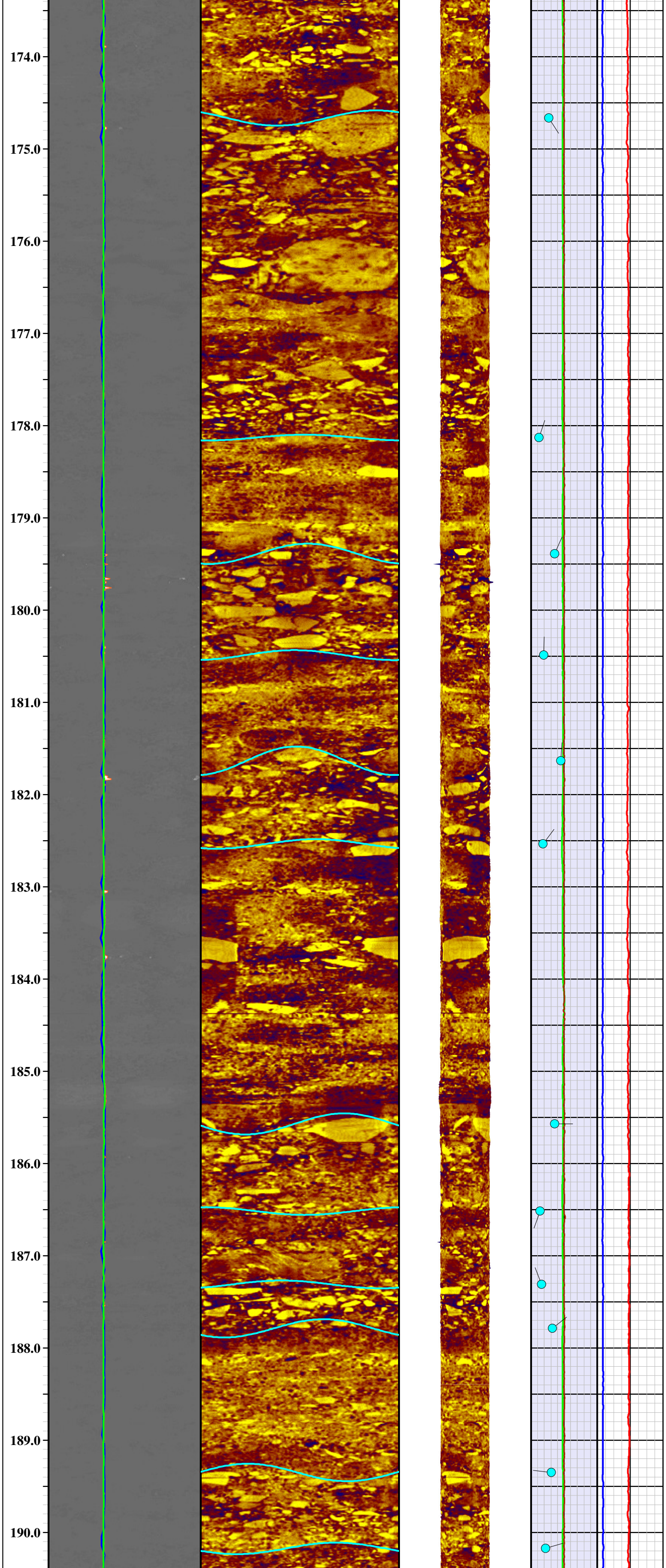
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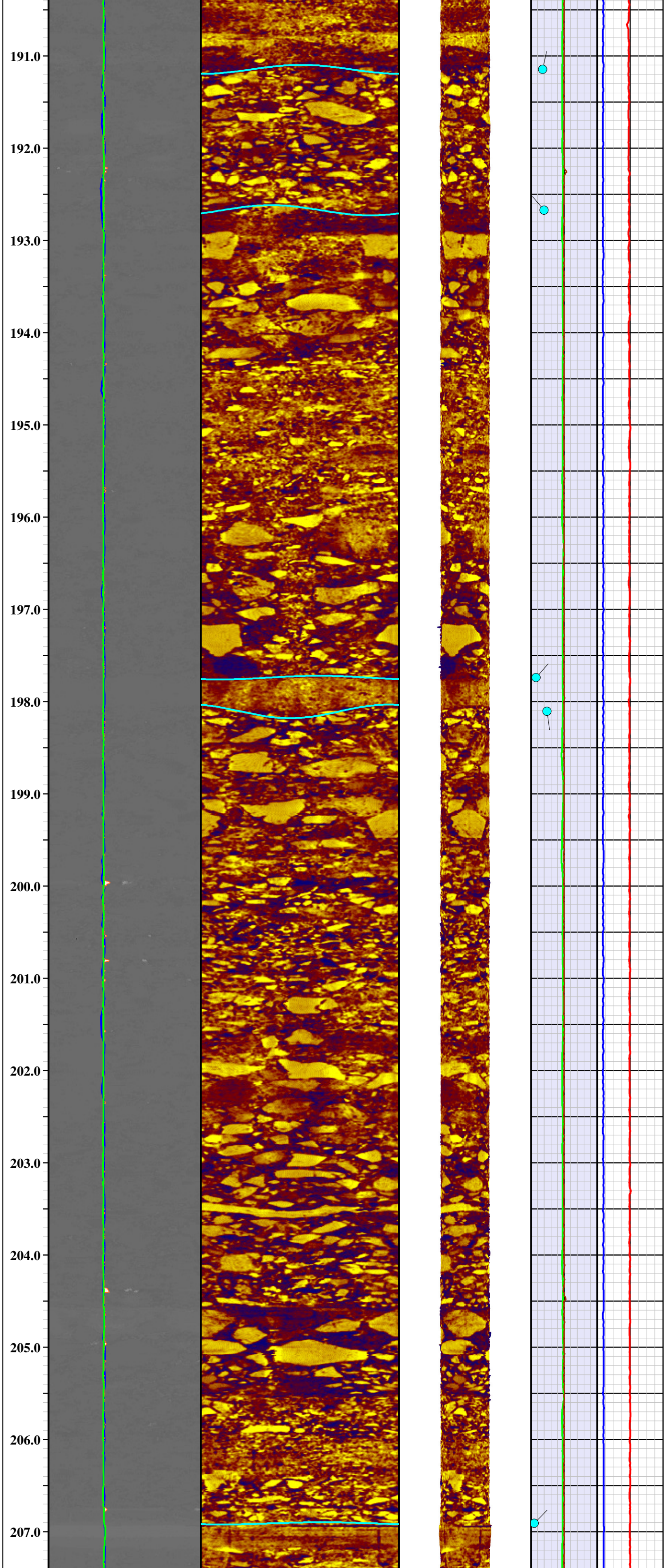
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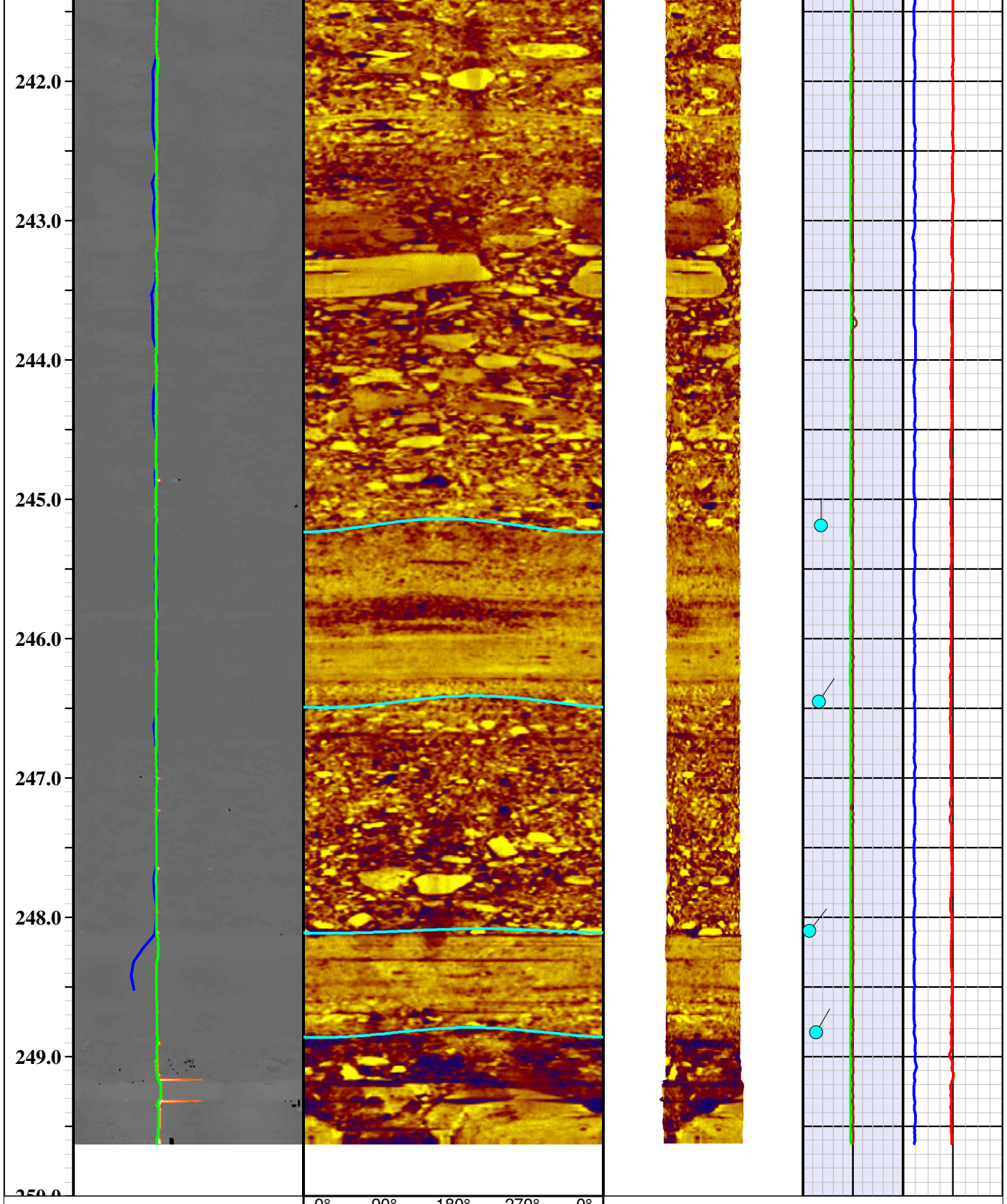

		0° 90° 180° 270° 0° DIPA **ABI Features**			
Enlargements		0 9000 **ARI**			
2 Inches 7 **Ave-Acoustic Caliper**		0° 90° 180° 270° 0° Oriented Mag North **Amp-High Pass**			
2 Inches 7 **Max-Acoustic Caliper**		0° 90° 180° 270° 0° Oriented Mag North **Amplitude-Static**		0 100 DIPT **Tadpole**	
2 Inches 7 **3-Arm Caliper**				0.8 G 1.2 **Gravity**	0 360 **Azi-Edited**
0° 90° 180° 270° 0° Non Oriented, Rot'd by 196.7' Deg **Cent TT_21.1'-49.0'**		0° 90° 180° 270° 0° Non Oriented, Rot'd by 196.7' Deg **Amplitude_21.1'-49.0'**			
0° 90° 180° 270° 0° Oriented Mag North **Centralized TT**		0° 90° 180° 270° 0° Oriented Mag North **Amplitude-NM**	0° **3-D View**	40 uT 60 **Mag Field**	0 Deg 8 **Tilt**
1in:1ft **Depth**	**GT-25 ABI40 2G Summary**				

QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft



Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"



TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-25 / DH17-30
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	GT-42 / DH17-32		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

OTHER SERVICES: GAMMA, TEMP / FLUID RES, E-LOG, SONIC

LOCATION: SEC | TWP | RGE

PERMANENT DATUM			ELEVATION	K.B.	
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	
DATE	02-01-17		TYPE FLUID IN HOLE	FORMATION WATER	
RUN No	4		MUD WEIGHT	N/A	
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY	N/A	
DEPTH-DRILLER	250.0 FT		LEVEL	~ 16.8 FT	
DEPTH-LOGGER	250.0 FT		MAX. REC. TEMP.	24.7 Deg C	
BTM LOGGED INTERVAL	249.0 FT		IMAGE ORIENTED TO:	MAGNETIC NORTH	
TOP LOGGED INTERVAL	30.0 FT		SAMPLE INTERVAL	0.010 FT	
DRILLER / RIG#	BOART LONGYEAR		LOGGING TRUCK	TRUCK #310	
RECORDED BY / Logging Eng.	E. BEAM / D. ECKMAN		TOOL STRING/SN	ALT QL ABI40 2G SN 143003	
WITNESSED BY	BOART		LOG TIME:ON SITE/OFF SITE	7:00 AM	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	35 FT	HWT	STEEL	SURFACE	35 FT
2	HQ	35 FT	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	02-01-17	**Date**	02-01-17	**Date**	02-01-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	E-LOG 40 GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5513	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	250.0 FT	**To**	249.0 FT	**To**	249.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	01-26-17	**Operation Check**	01-26-17	**Operation Check**	01-26-17
Calibration Check	01-26-17	**Calibration Check**	01-26-17	**Calibration Check**	N/A
Time Logged	7:30 AM	**Time Logged**	8:00 AM	**Time Logged**	9:45 AM

Date	02-01-17	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143003	**Tool SN**		**Tool SN**	
From	30.0 FT	**From**		**From**	
To	249.0 FT	**To**		**To**	
Recorded By	E. BEAM	**Recorded By**		**Recorded By**	
Truck No	310	**Truck No**		**Truck No**	
Operation Check	01-26-17	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	10:00 AM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2" & 6"

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

GT-42 ABI40 2G Summary

Depth 1in:1ft

Radius Image — Oriented Mag North — 0° 90° 180° 270° 0°

Radius Image_34.8'-71.1' — Non Oriented, Rot'd by 31.7' Deg — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude_34.8'-71.1' — Non Oriented, Rot'd by 31.7' Deg — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ABI Features — DIPA — 0° 90° 180° 270° 0°

ARI — 0 11000

3-D View — 0°

Mag Field — 40 uT 60

Tilt — 0 Deg 8

Gravity — 0.8 G 1.2

Azi-Edited — 0 360

Tadpole — DIPT — 0 100

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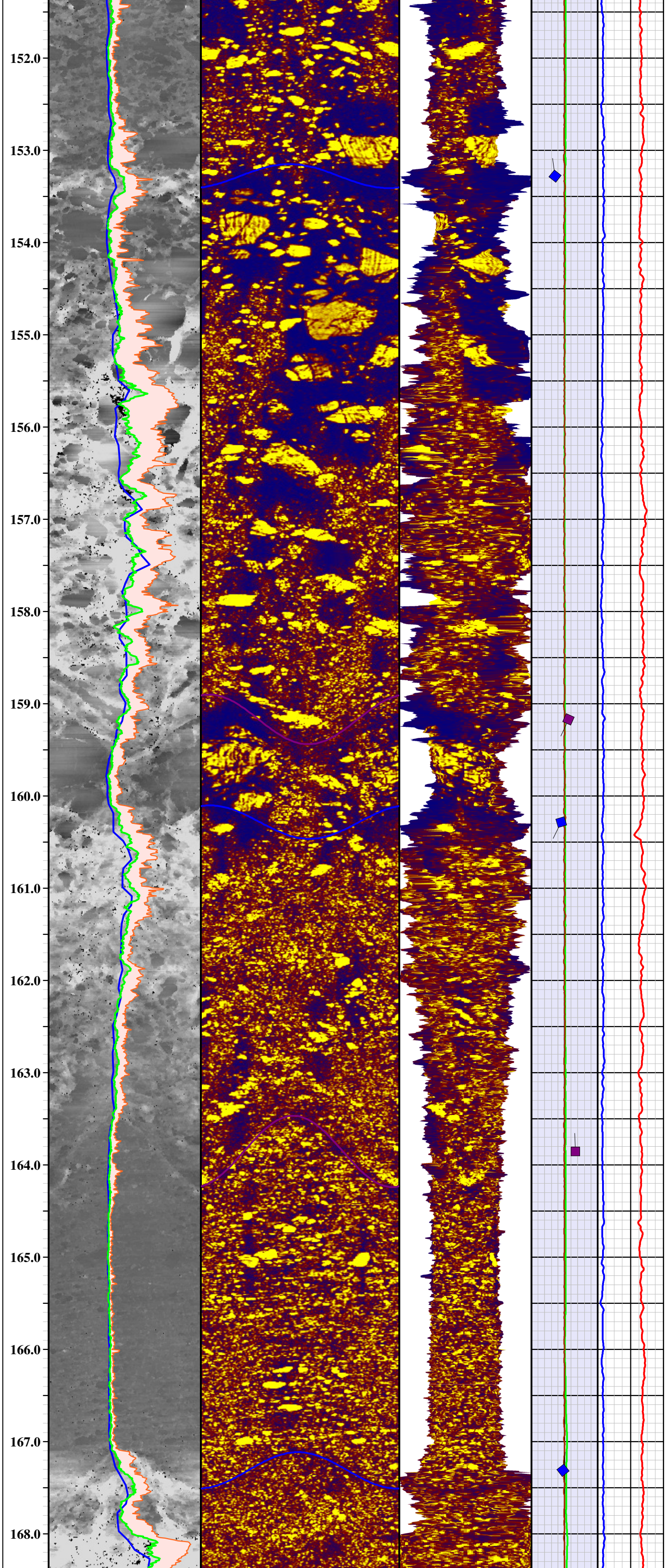
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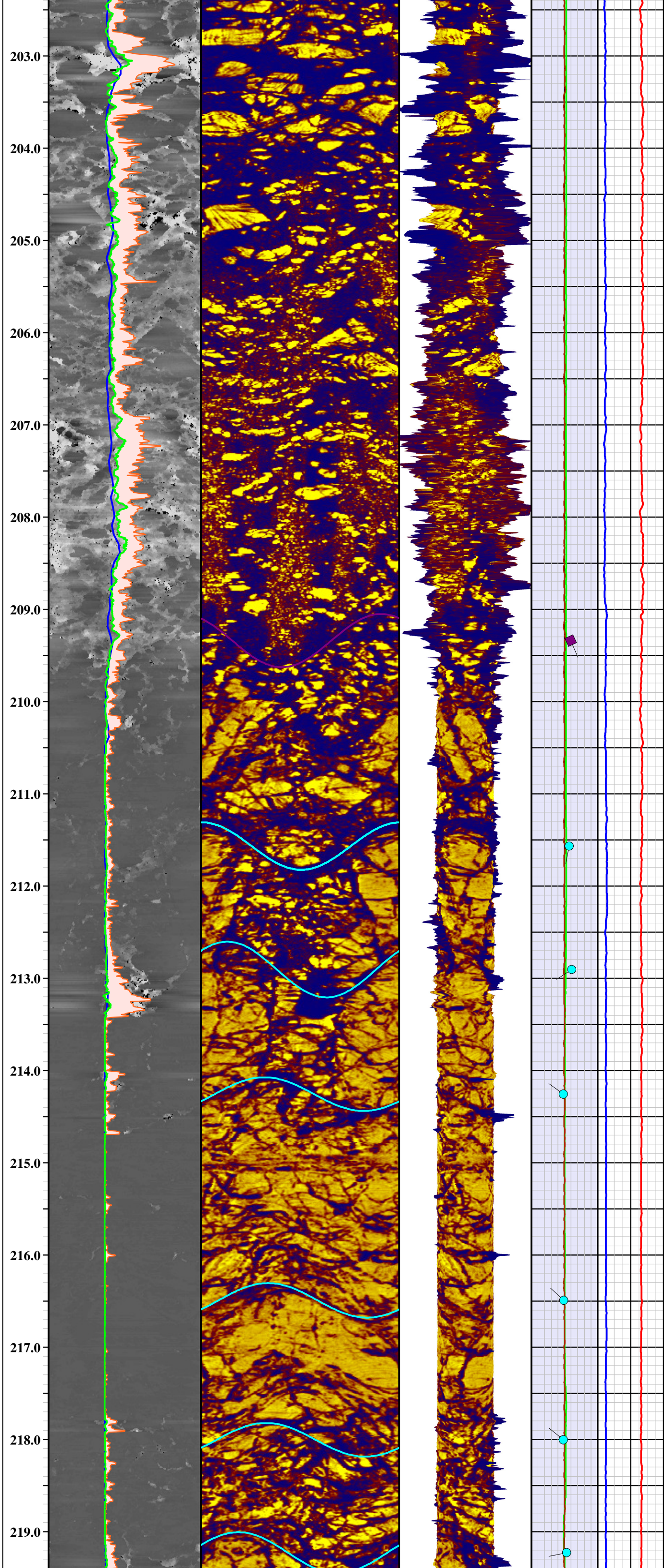
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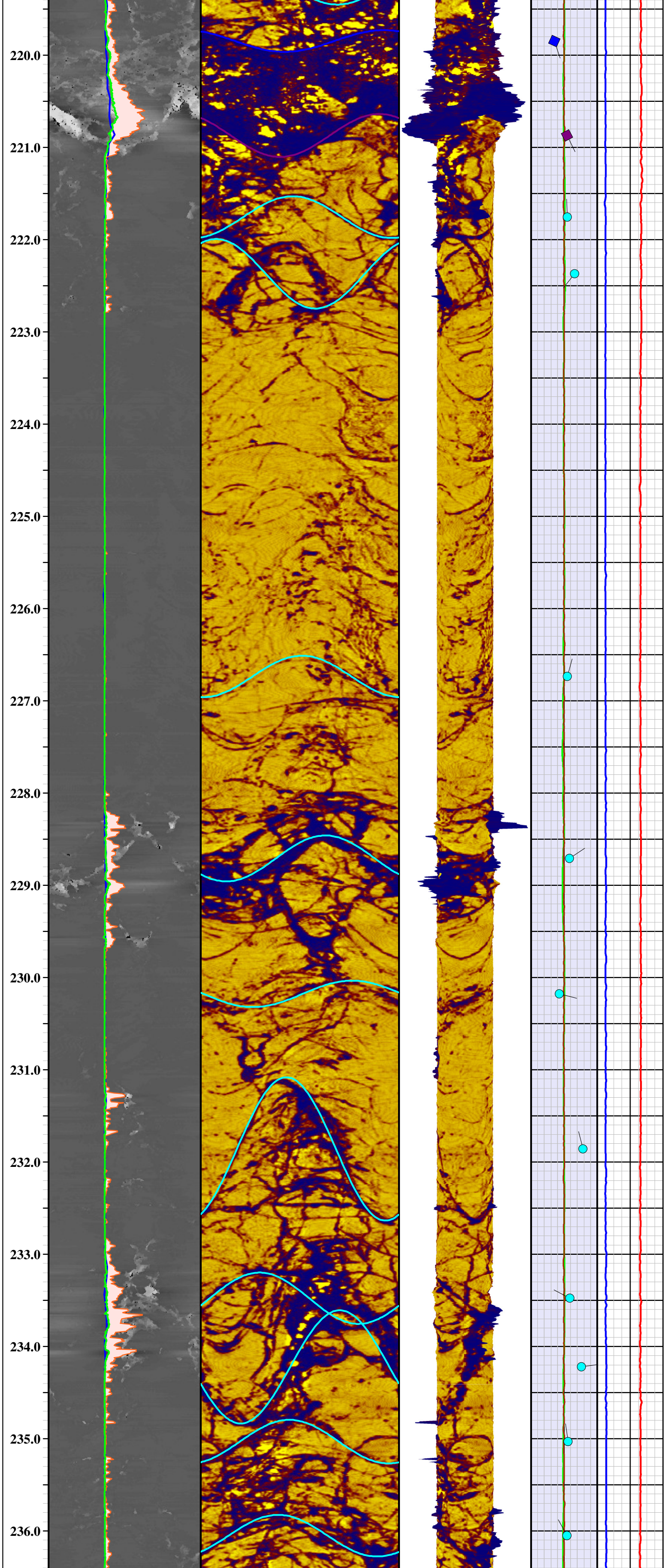
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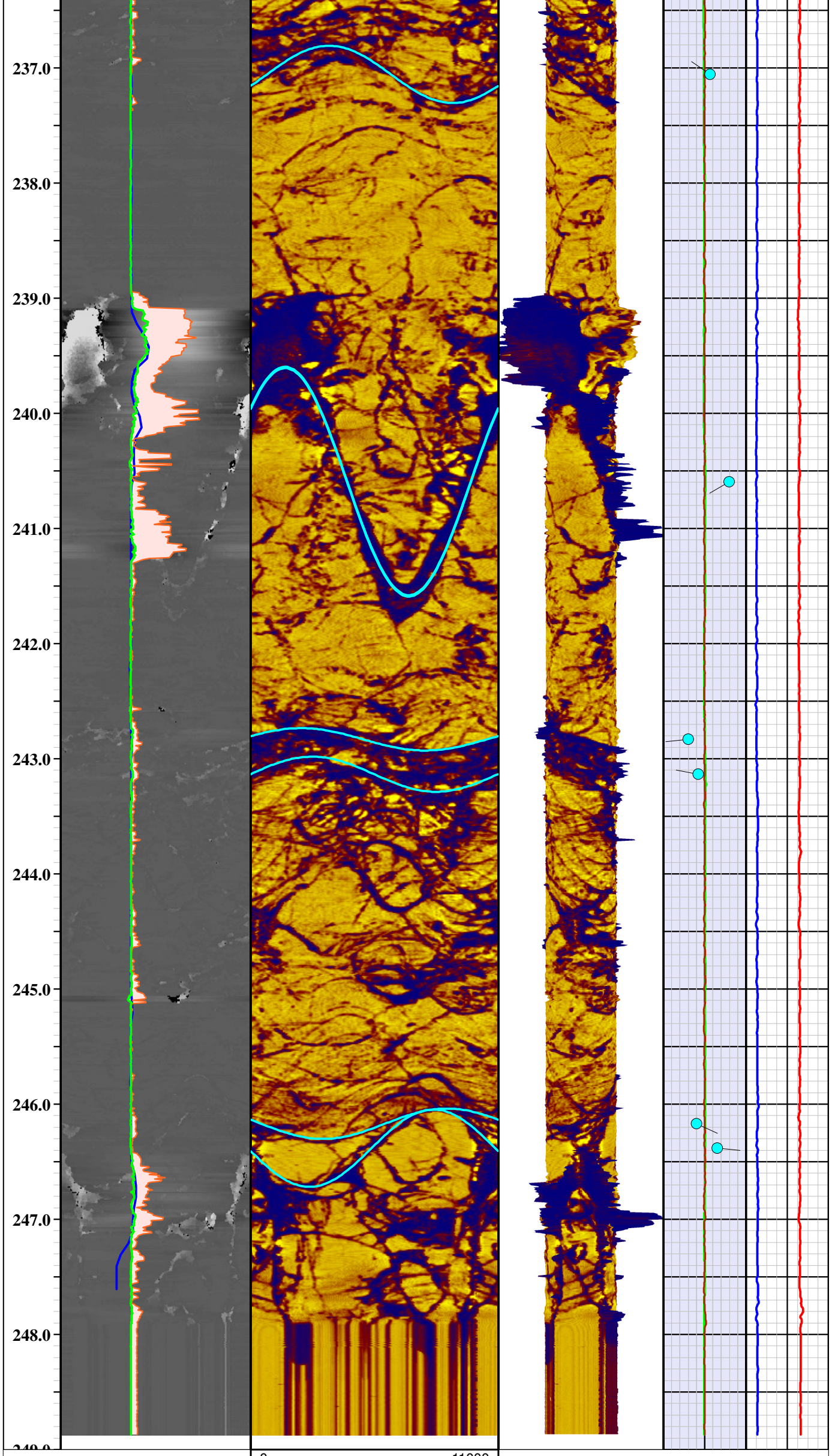

QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)



1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	GT-42 / DH17-32
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER COMPANY		
WELL ID	GT-28 / DH17-37		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

OTHER SERVICES
E-LOGS
4 RX SONIC
GAMMA
TEMP / FLUID RES

LOCATION	SEC	TWP	RGE		
PERMANENT DATUM	SURFACE		ELEVATION	K.B.	
LOG MEAS. FROM	SURFACE		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	SURFACE			G.L.	
DATE	02-09-17	TYPE FLUID IN HOLE		FORMATION FLUID	
RUN No	4	MUD WEIGHT		N/A	
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY		N/A	
DEPTH-DRILLER	250 FT	LEVEL		~ 13 FT	
DEPTH-LOGGER	250 FT	MAX. REC. TEMP.		25.86 DEG C	
BTM LOGGED INTERVAL	250 FT	IMAGE ORIENTED TO:		MAGNETIC NORTH	
TOP LOGGED INTERVAL	10 FT	SAMPLE INTERVAL		0.096FT	
DRILLER / RIG#	BOART LONGYEAR	LOGGING TRUCK		TRUCK #900	
RECORDED BY / Logging Eng.	K. MITCHELL/D. ECKMAN	TOOL STRING/SN		ALT QL ABI40 2G SN 143003	
WITNESSED BY	BOART LONGYEAR	LOG TIME:ON SITE/OFF SITE		1:30 PM	3:30 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	HWT SHOE	SURFACE	20 FT	HWT	STEEL	SURFACE	20 FT
2	HQ	20 FT	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	02-09-17	**Date**	02-09-17	**Date**	02-09-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	ALT 4 RX SONIC	**Tool Model**	MSI E-LOG 40GRP
Tool SN	4183	**Tool SN**	5185	**Tool SN**	5513
From	SURFACE	**From**	15 FT	**From**	20 FT
To	250 FT	**To**	250 FT	**To**	250 FT
Recorded By	K. MITCHELL	**Recorded By**	K. MITCHELL	**Recorded By**	K. MITCHELL
Truck No	900	**Truck No**	900	**Truck No**	900
Operation Check	02-09-17	**Operation Check**	02-09-17	**Operation Check**	02-09-17
Calibration Check	02-09-17	**Calibration Check**	N/A	**Calibration Check**	02-09-17
Time Logged	1:30 PM	**Time Logged**	2:00 PM	**Time Logged**	2:30 PM

Date	02-09-17	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143003	**Tool SN**		**Tool SN**	
From	10 FT	**From**		**From**	
To	250 FT	**To**		**To**	
Recorded By	K. MITCHELL	**Recorded By**		**Recorded By**	
Truck No	900	**Truck No**		**Truck No**	
Operation Check	02-09-17	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	2:45 PM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2.66" & 3.51"

E-Log Calibration Range: 0-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

GT-28 ABI40 2G Summary

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

Cent TT_20.5'-49.0' — on Oriented, Rot'd by 105.0 De — 0° 90° 180° 270° 0°

3-Arm Caliper — 2 Inches 7

Max-Acoustic Caliper — 2 Inches 7

Ave-Acoustic Caliper — 2 Inches 7

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude_20.5'-49.0' — Non Oriented, Rot'd by 105.0 Deg — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Amp-High Pass — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 8000

ABI Features — DIPA — 0° 90° 180° 270° 0°

3-D View — 0°

Mag Field — 40 uT 60

Tilt — 0 Deg 8

Gravity — 0.8 G 1.2

Azi-Edited — 0 360

Tadpole — DIPT — 0 100

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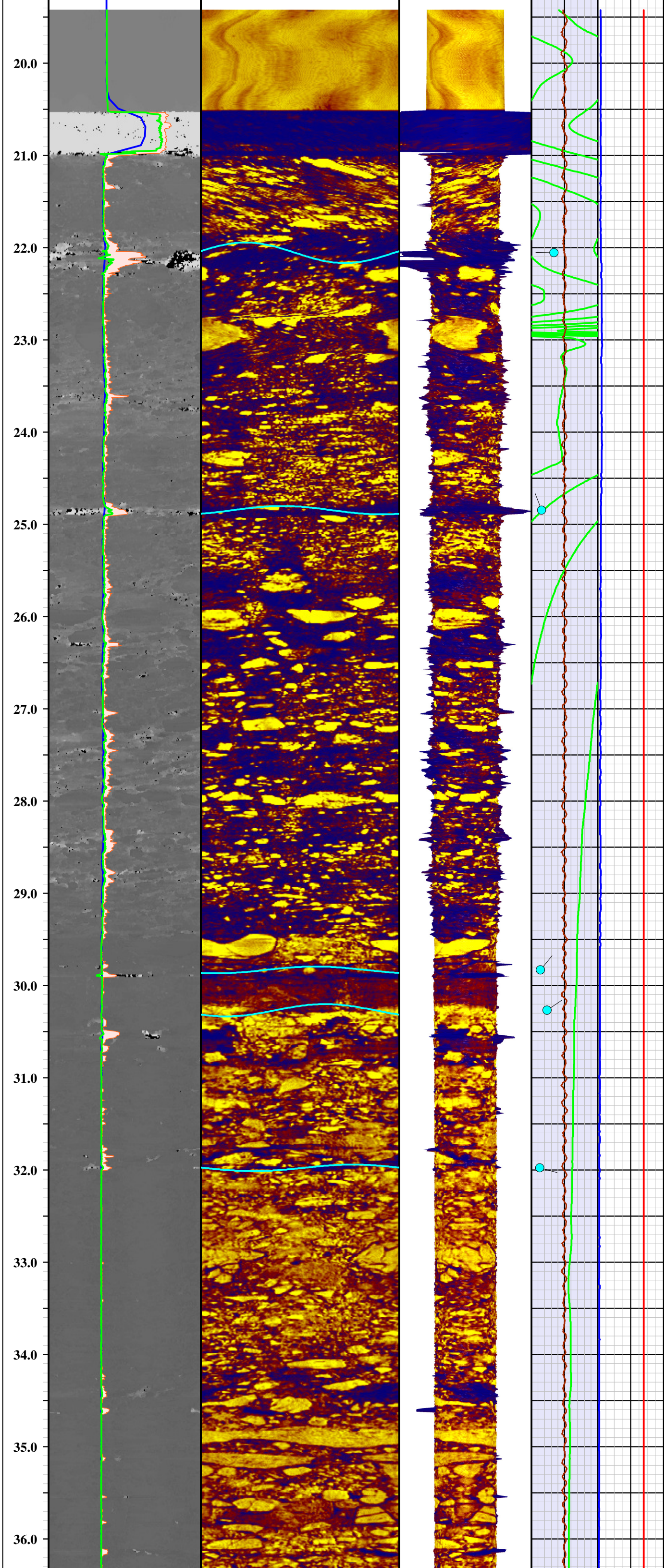
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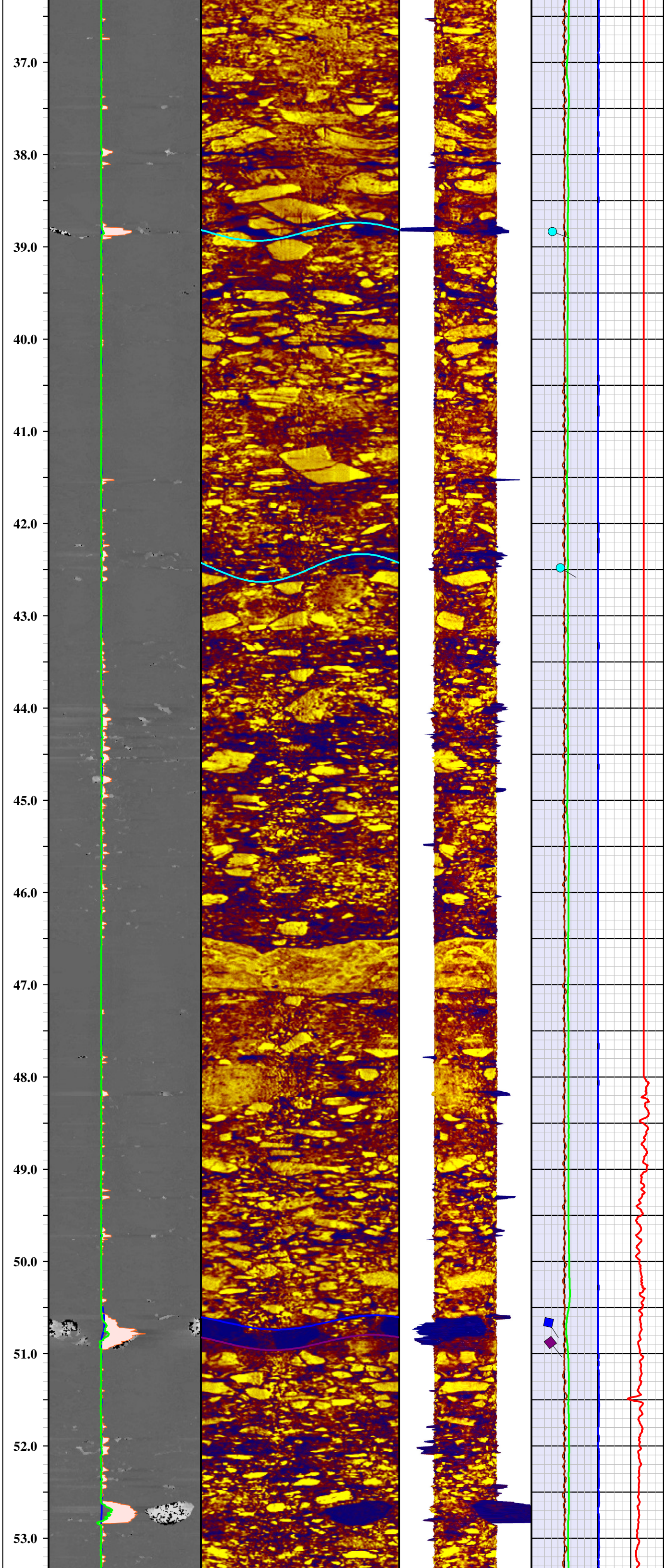
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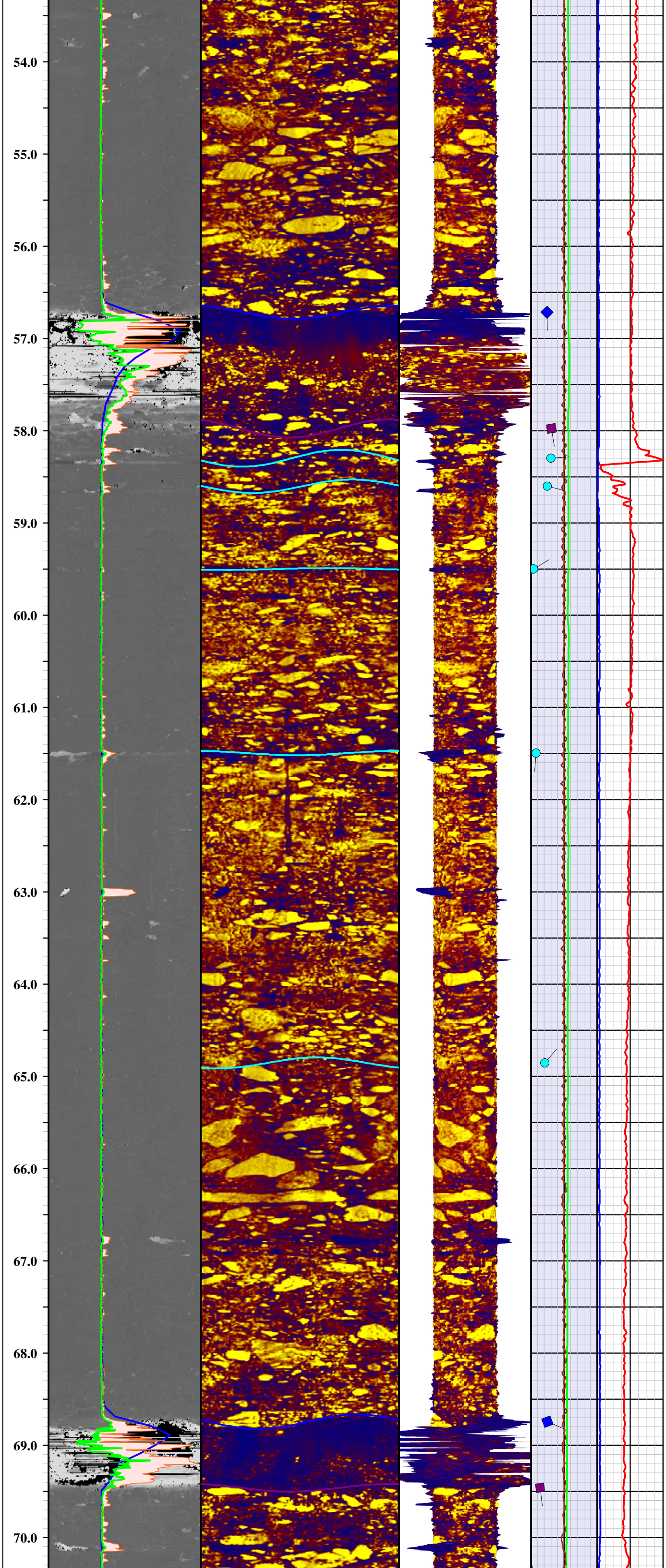
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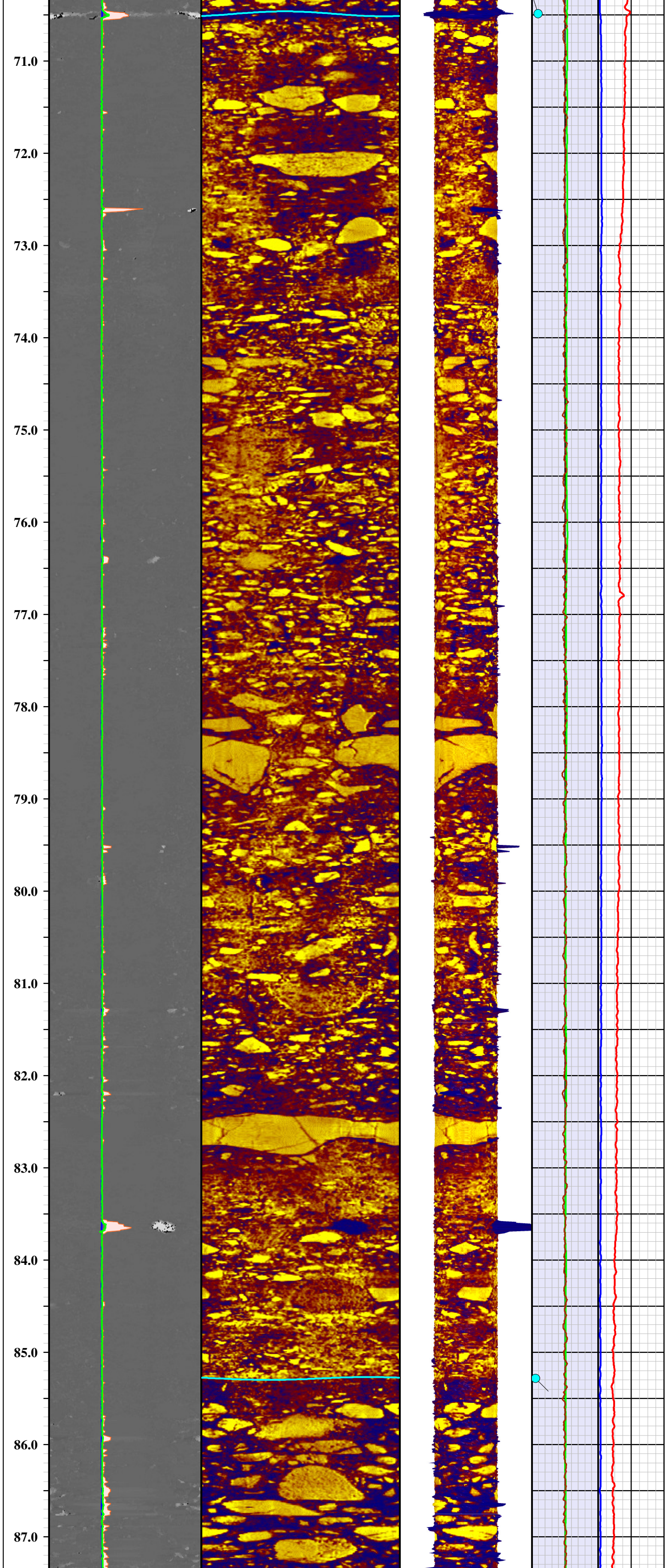
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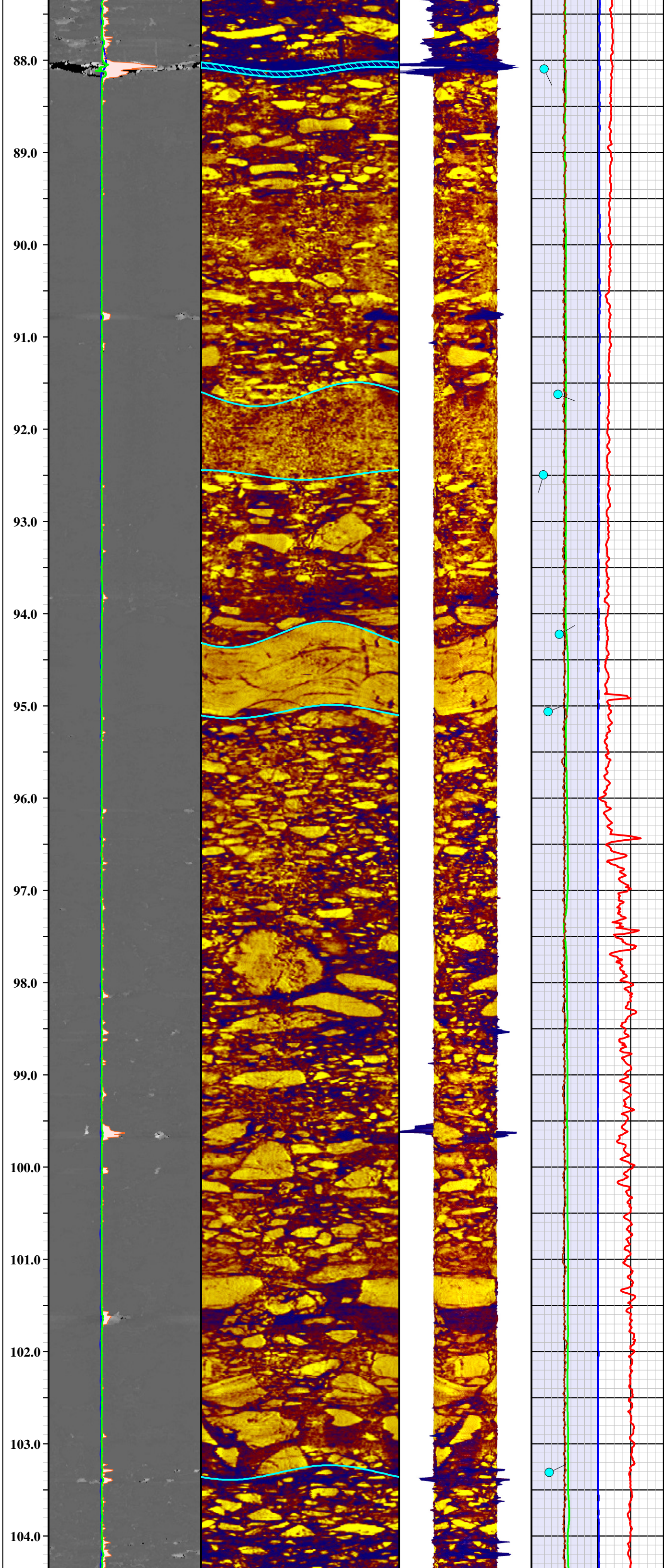
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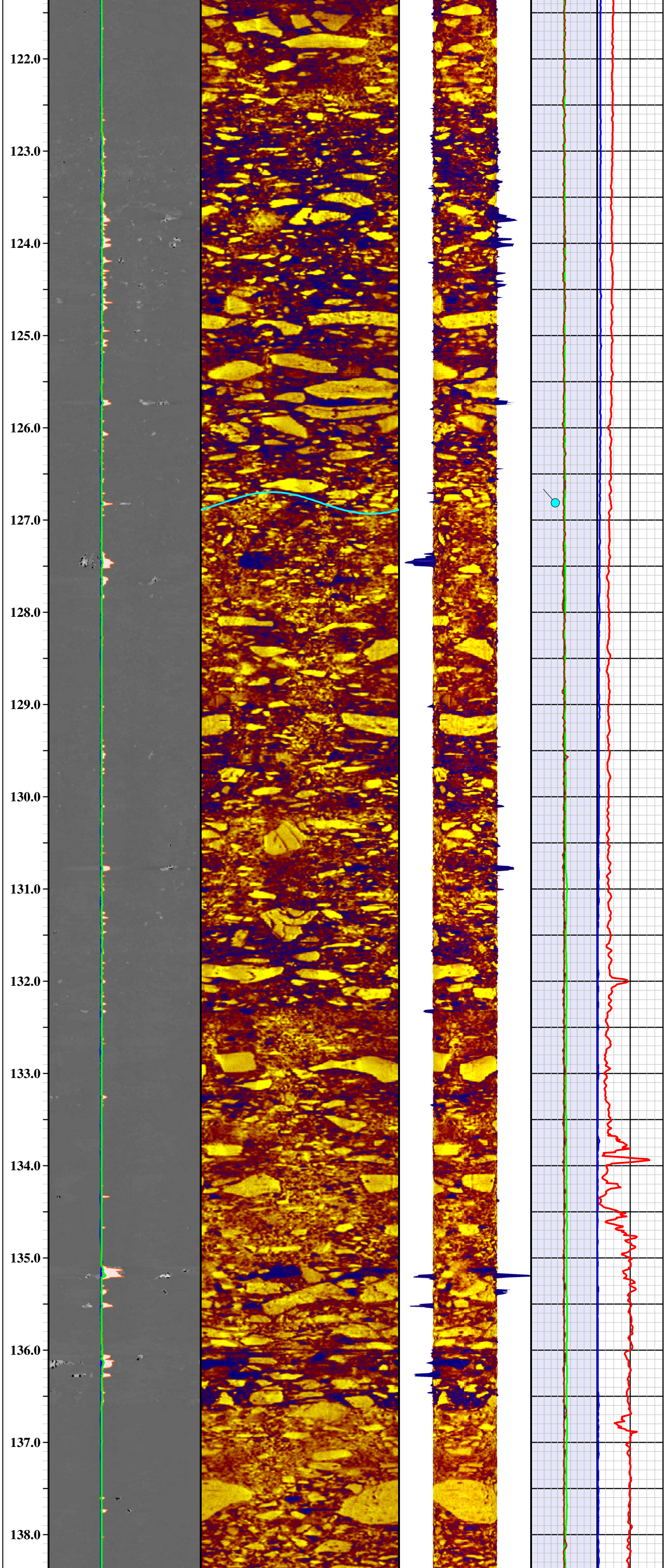
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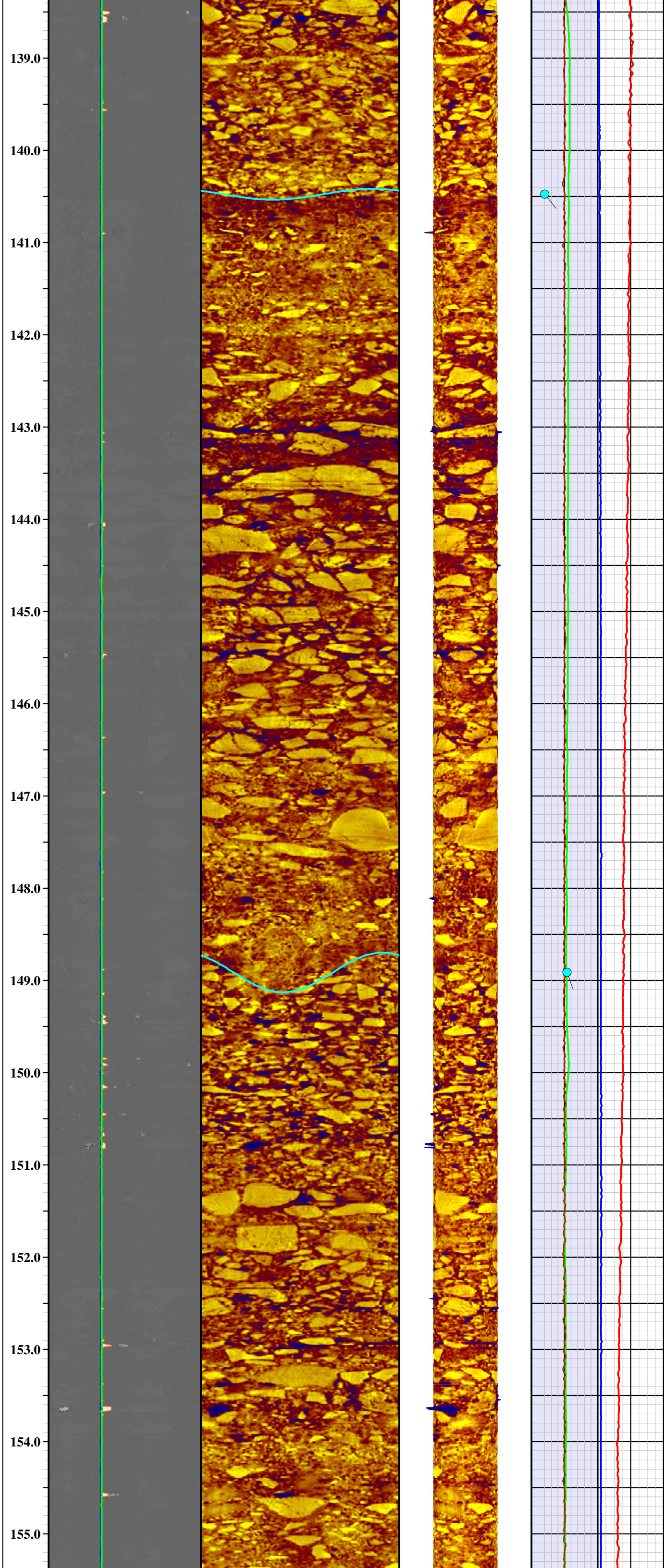
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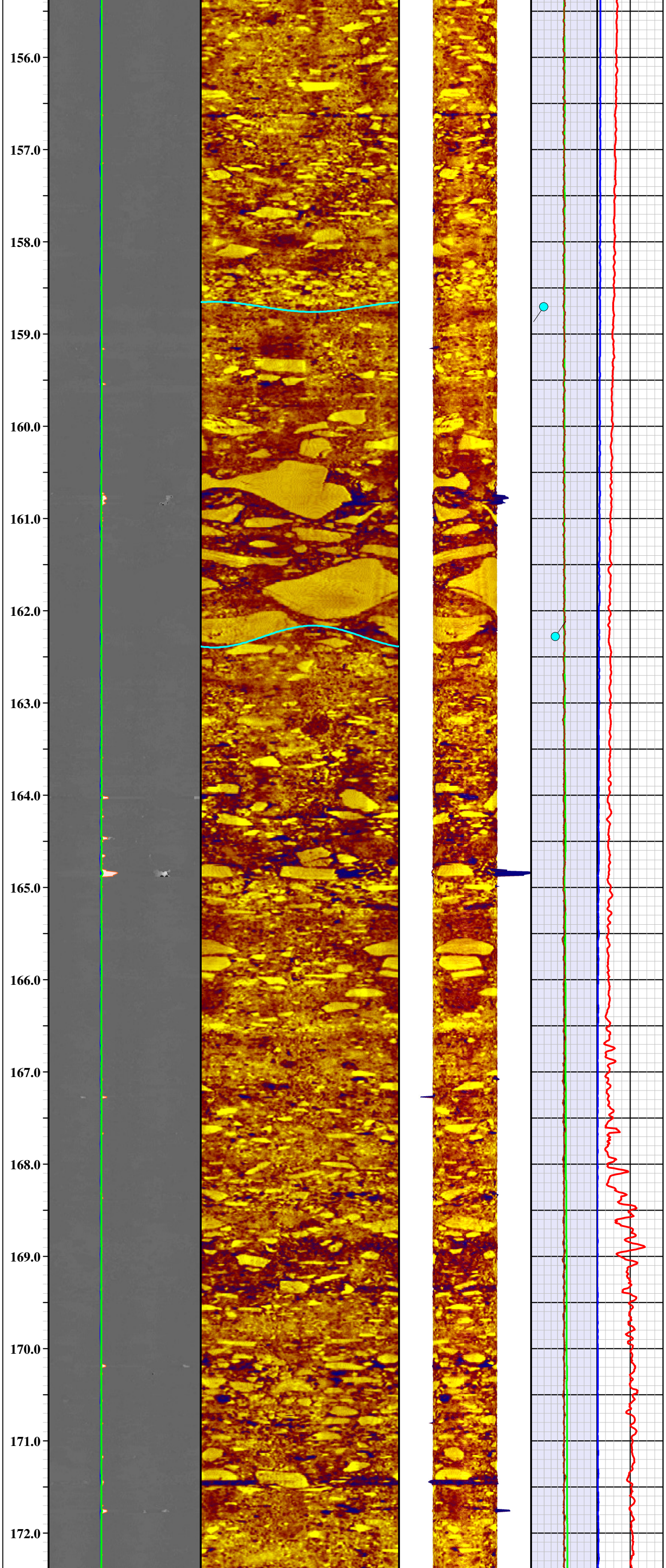
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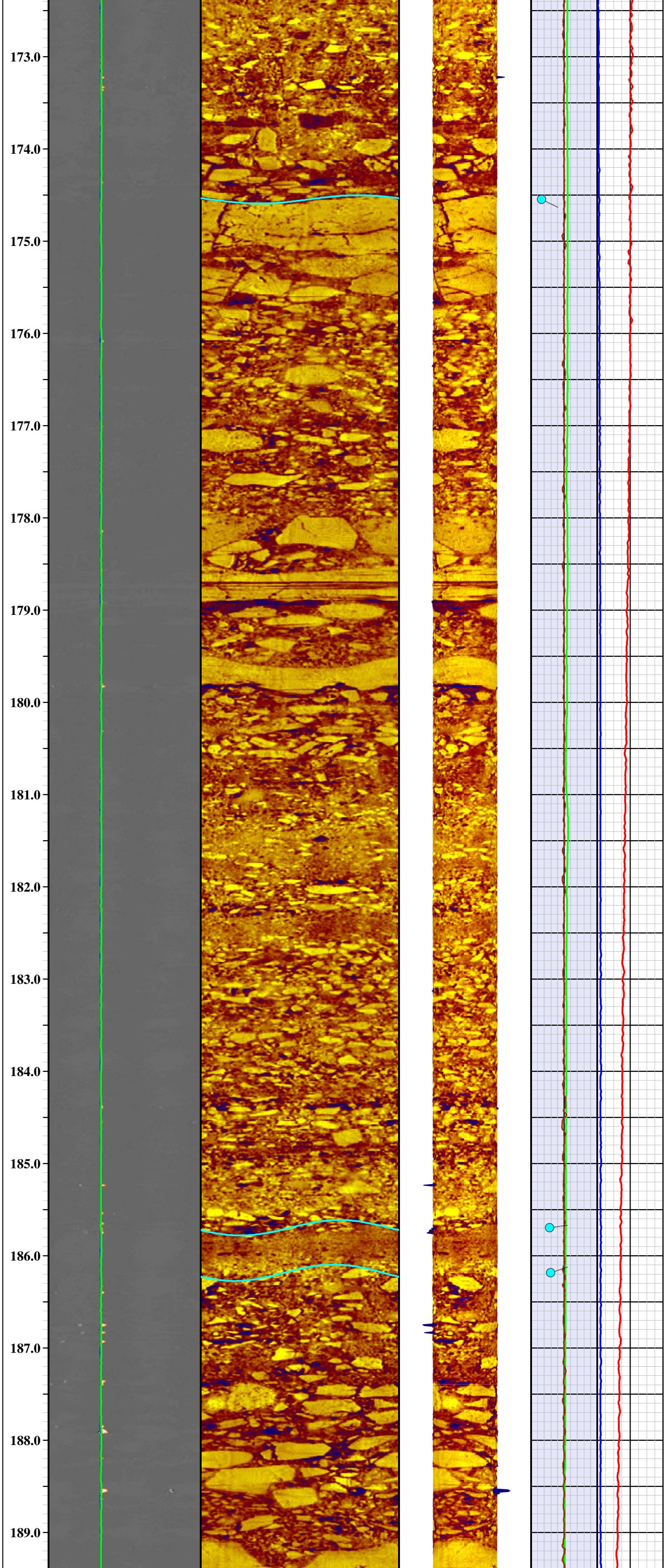
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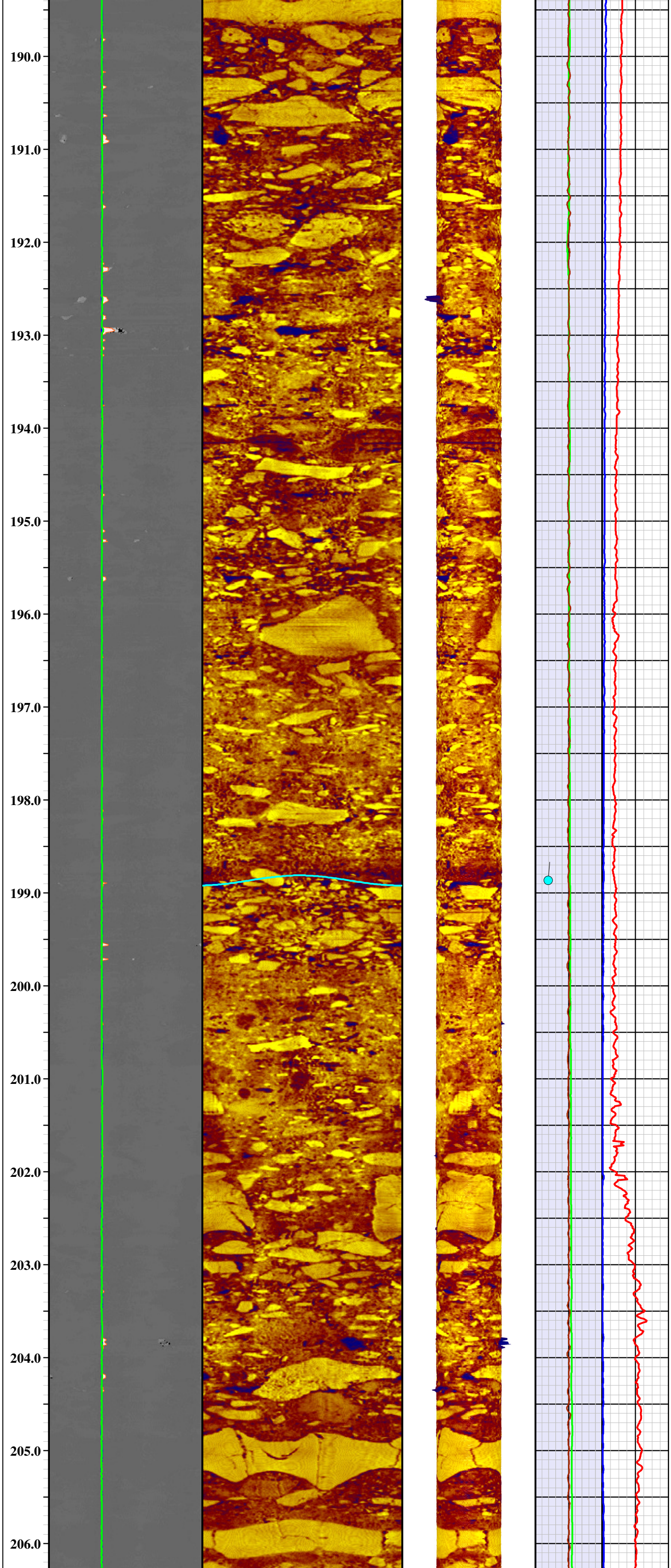
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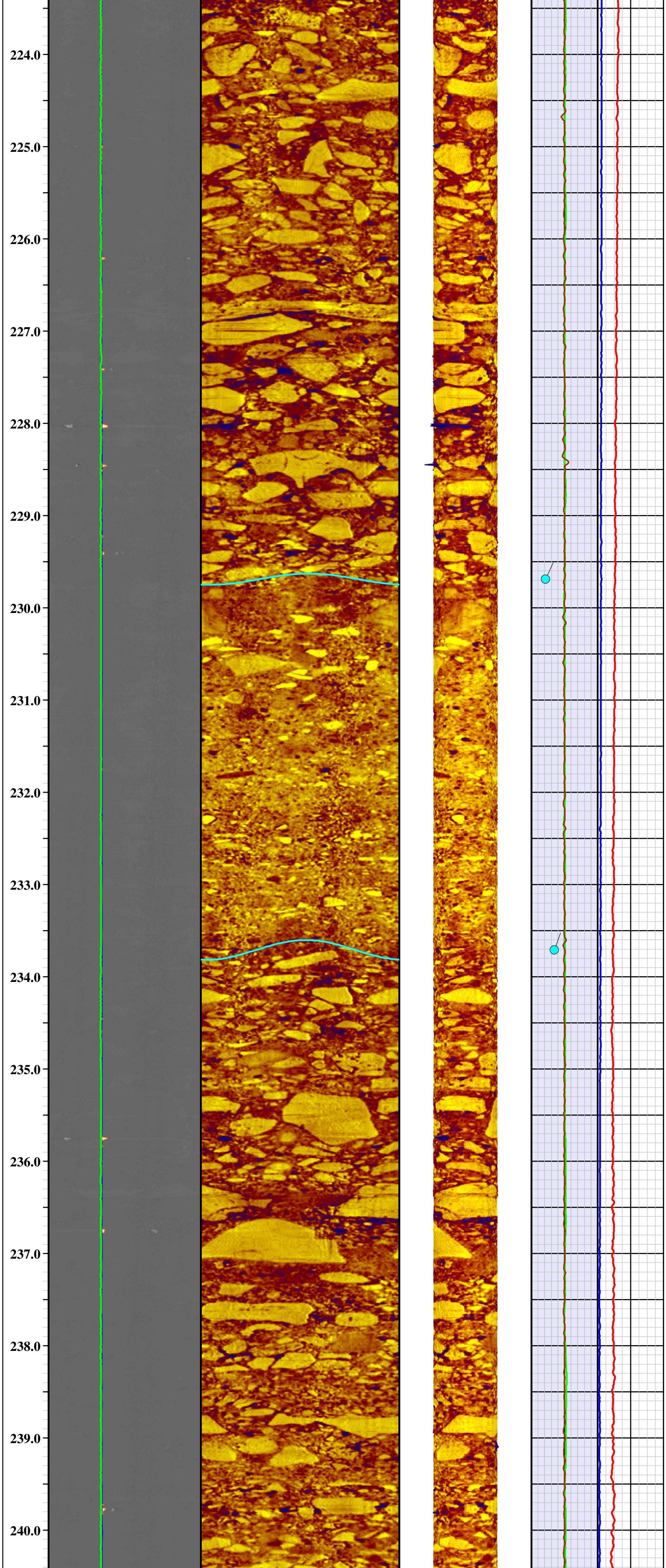
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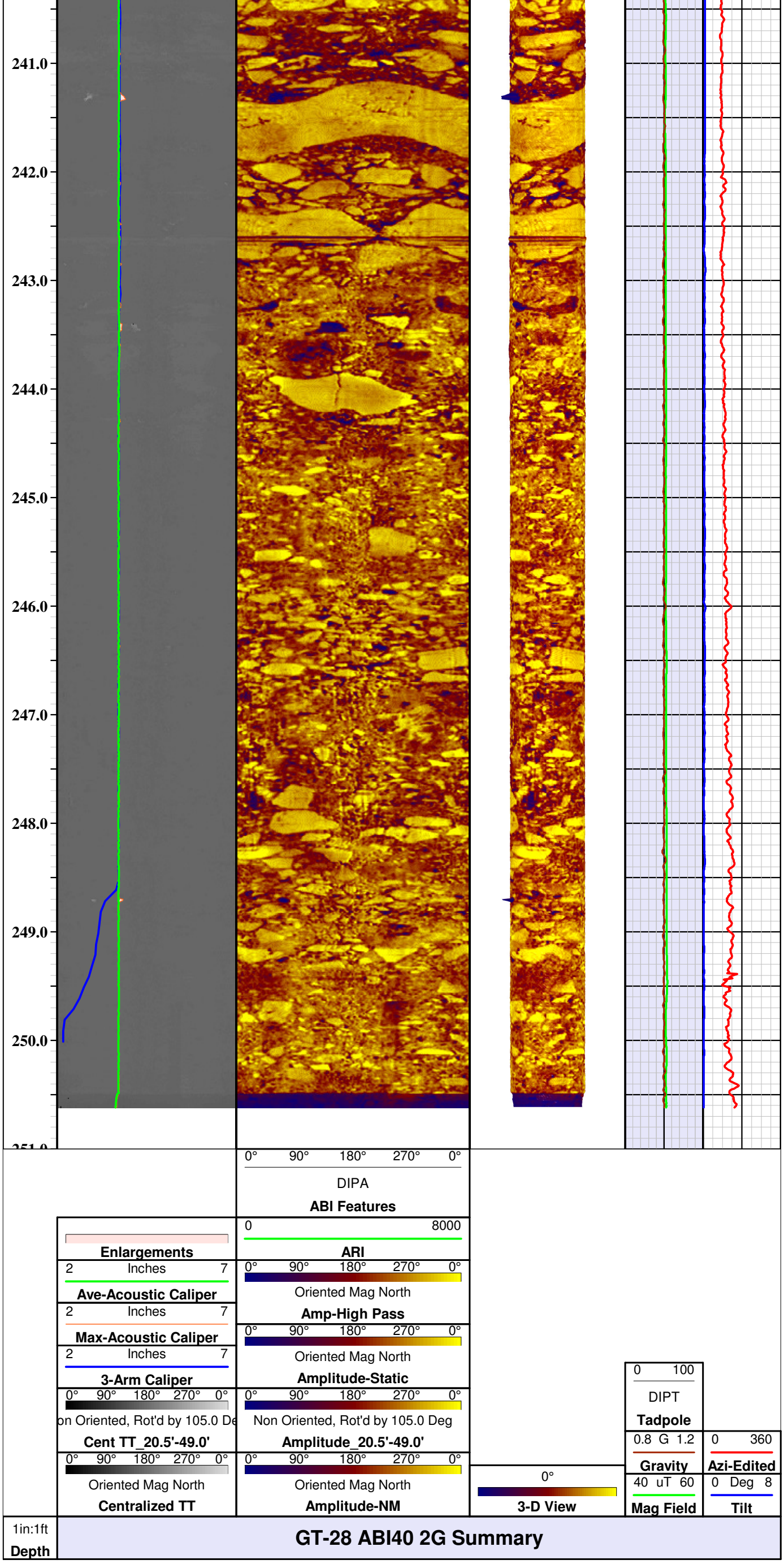


QL ABI-40 2G Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 143002, 143003 & 143009



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer



Probe Length = 1.62 m or 5.25 ft

Probe Weight = 6.7 kg or 14.7 lbs

Distance from Acoustic Image Window to Orientation Sensor = 0.92 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.2 deg

Beam Width = 1.5 mm

Frequency = 1.2 MHz

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

Run Centralized with External Bow Spring Centralizers

Can only be logged in fluid filled holes

ABI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)



Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER CO
Well	GT-28 / DH-37
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY RESOLUTION COPPER COMPANY

WELL ID GT-22 (DSH17-38)

FIELD NEAR WEST

COUNTY PINAL STATE ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER

MORE: CALIPER

LOCATION

SEC TWP RGE

OTHER SERVICES
E-LOGS
4 RX SONIC
GAMMA
TEMP / FLUID RES
OPTICAL TELEVIEWER

PERMANENT DATUM	SURFACE	ELEVATION	K.B.
LOG MEAS. FROM	SURFACE	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	SURFACE		G.L.

DATE	02-16-17	TYPE FLUID IN HOLE	MUD
RUN No	1/2	MUD WEIGHT	FORMATION FLUID
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	250 FT	LEVEL	~ 20.0 FT
DEPTH-LOGGER	251 FT	MAX. REC. TEMP.	26.73 DEG C
BTM LOGGED INTERVAL	251 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	20 FT	SAMPLE INTERVAL	0.010 FT
DRILLER / RIG#	BOART LONGYEAR	LOGGING TRUCK	TRUCK #900
RECORDED BY / Logging Eng.	E. TURNER / D. ECKMAN	TOOL STRING/SN	ALT AB140-2G SN 143003
WITNESSED BY	BOART LONGYEAR	LOG TIME: ON SITE/OFF SITE	1:30 PM PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	HWT SHOE	SURFACE	20 FT	HWT	STEEL	SURFACE	15 FT
2	HQ	15 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	02-16-17	**Date**	02-16-17	**Date**	02-16-17
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	ALT QL AB140 2G	**Tool Model**	MSI E-LOG 40GRP
Tool SN	4183	**Tool SN**	143003	**Tool SN**	5513
From	SURFACE	**From**	20 FT	**From**	20 FT
To	250 FT	**To**	250 FT	**To**	250 FT
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	E. TURNER
Truck No	900	**Truck No**	900	**Truck No**	900
Operation Check	02-09-17	**Operation Check**	02-09-17	**Operation Check**	02-09-17
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	02-09-17
Time Logged	1:40 PM	**Time Logged**	2:15 PM	**Time Logged**	3:05 PM

Date	02-16-17	**Date**	2-16-17	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT 4 RX SONIC	**Tool Model**	ALT QL OBI40 2G	**Tool Model**	
Tool SN	4572	**Tool SN**	152511	**Tool SN**	
From	20 FT	**From**	15 FT	**From**	
To	250 FT	**To**	20 FT	**To**	
Recorded By	E. TURNER	**Recorded By**	E. TURNER	**Recorded By**	
Truck No	900	**Truck No**	900	**Truck No**	
Operation Check	02-09-17	**Operation Check**	02-09-17	**Operation Check**	
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	3:50 PM	**Time Logged**	4:30 PM	**Time Logged**	

Additional Comments:

Caliper Arms Used: 3" **Calibration Points:** 2.66" & 4.72"

E-Log Calibration Range: 0-10,000 OHM-M **Calibration Points:** 1 & 10,000 OHM-M

Breakout Legend

Acoustic Image Features Legend

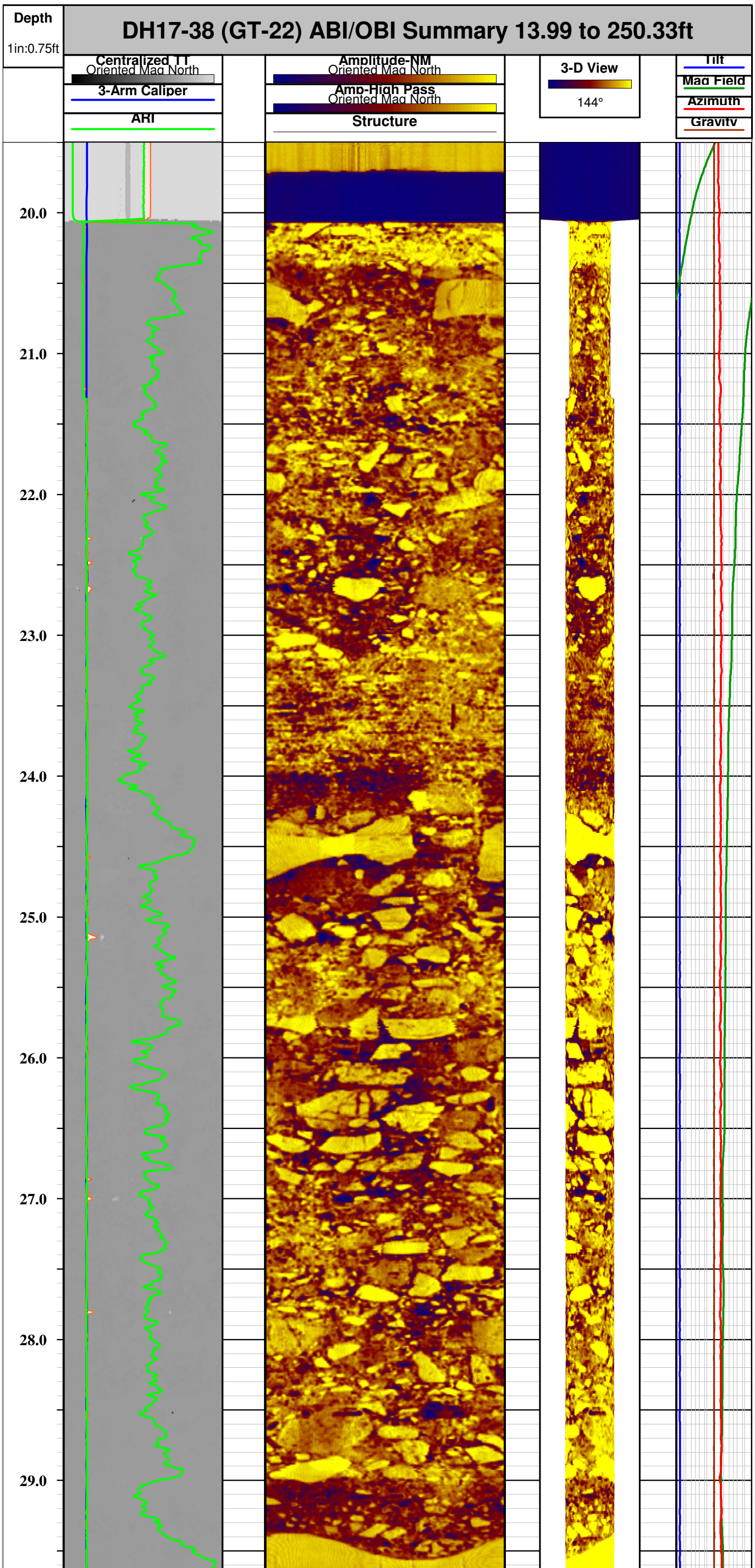
TV StrucTop TV Struc discrete TV Struc Bot

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt



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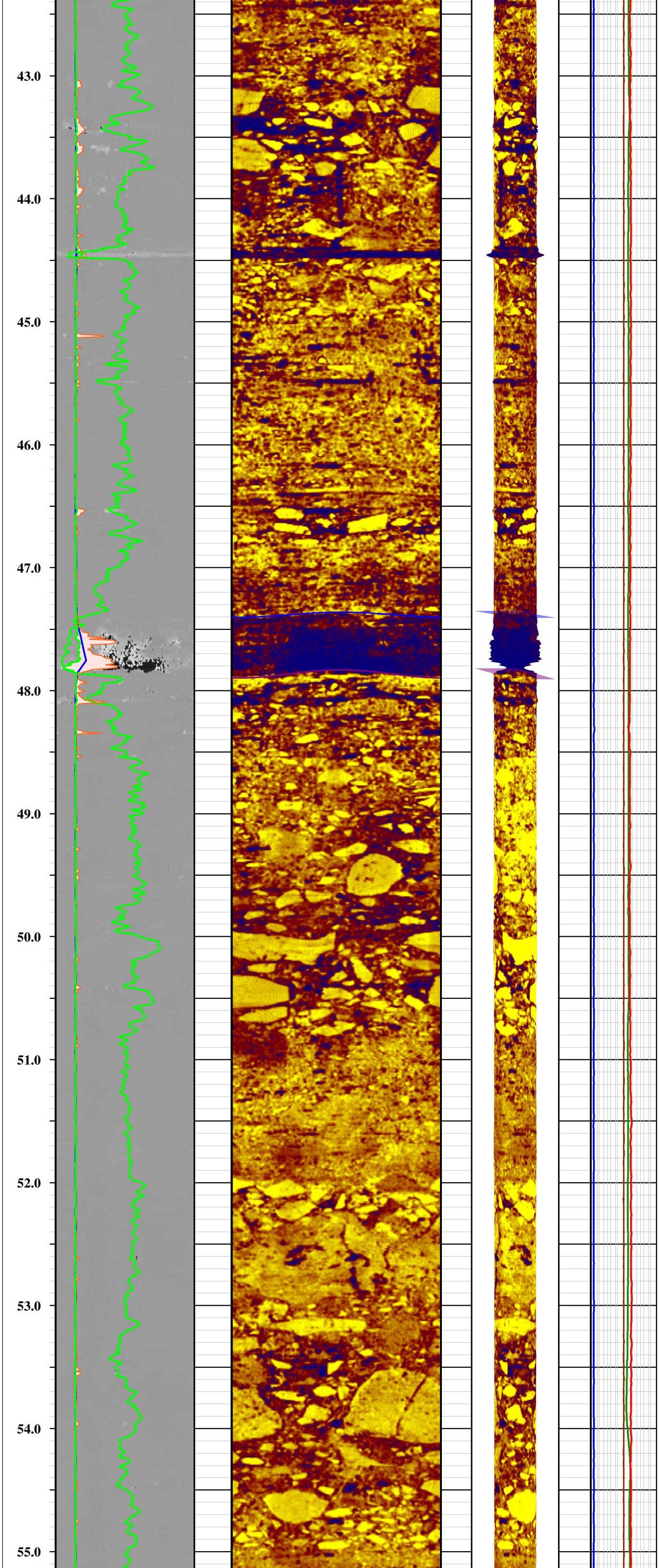
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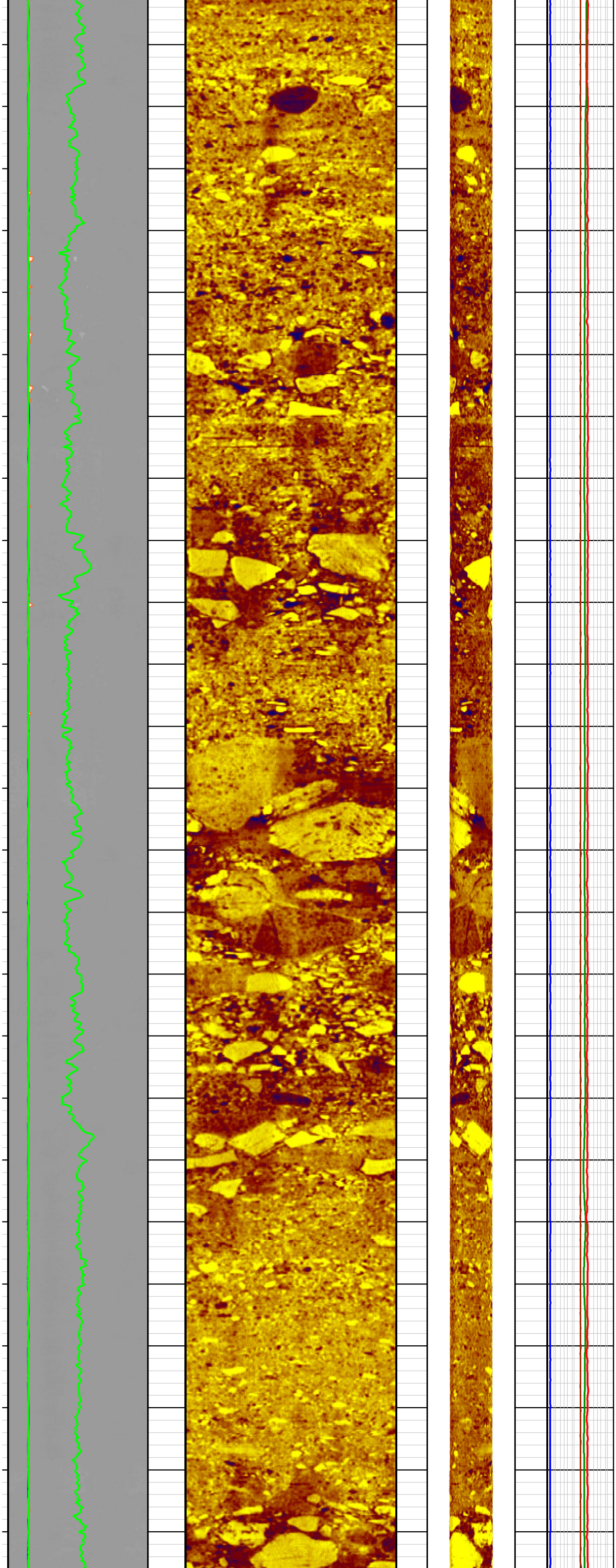

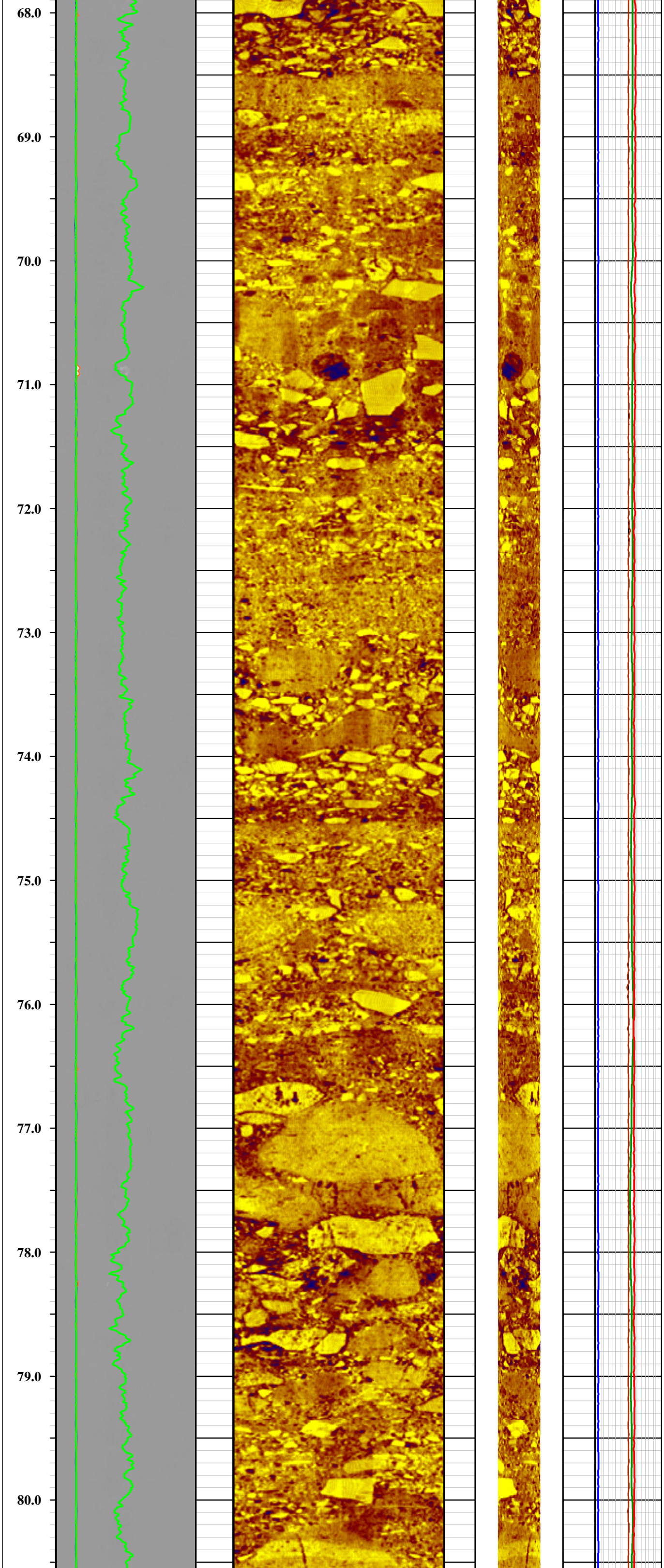
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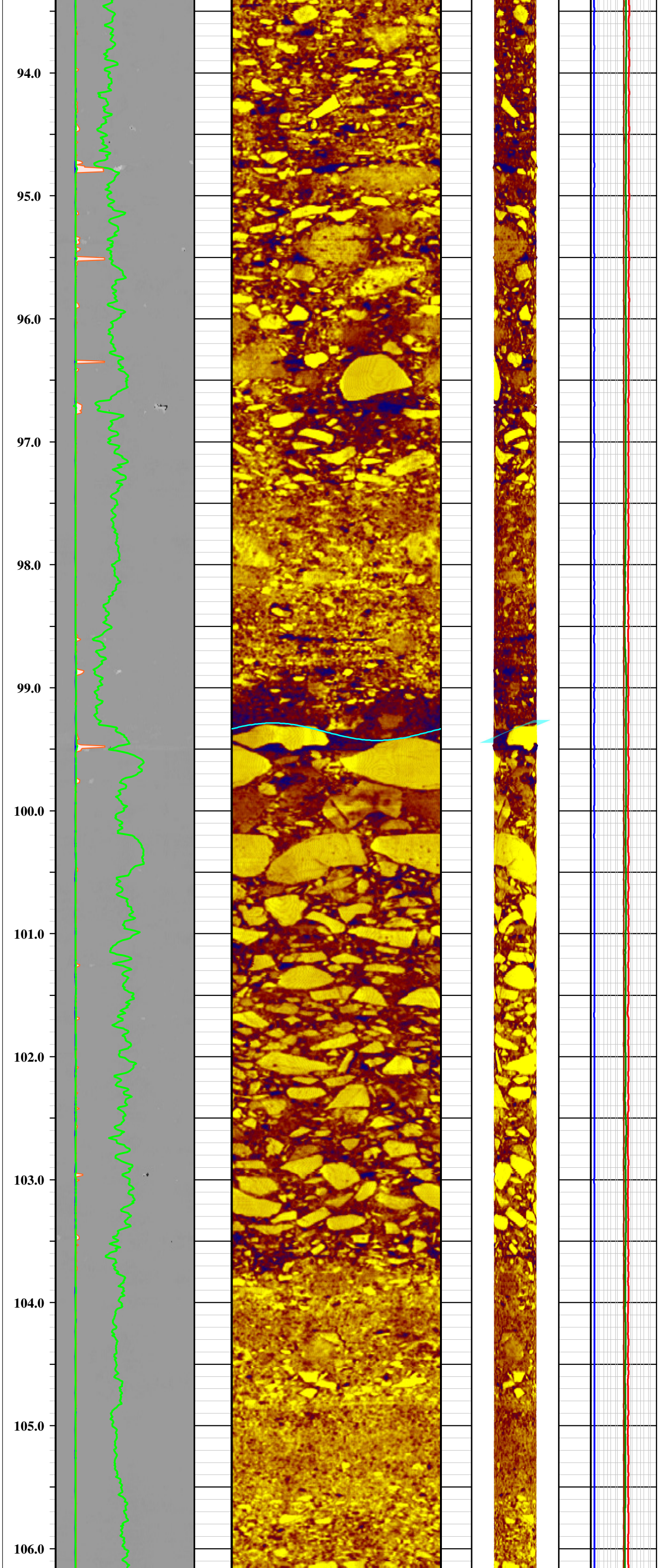
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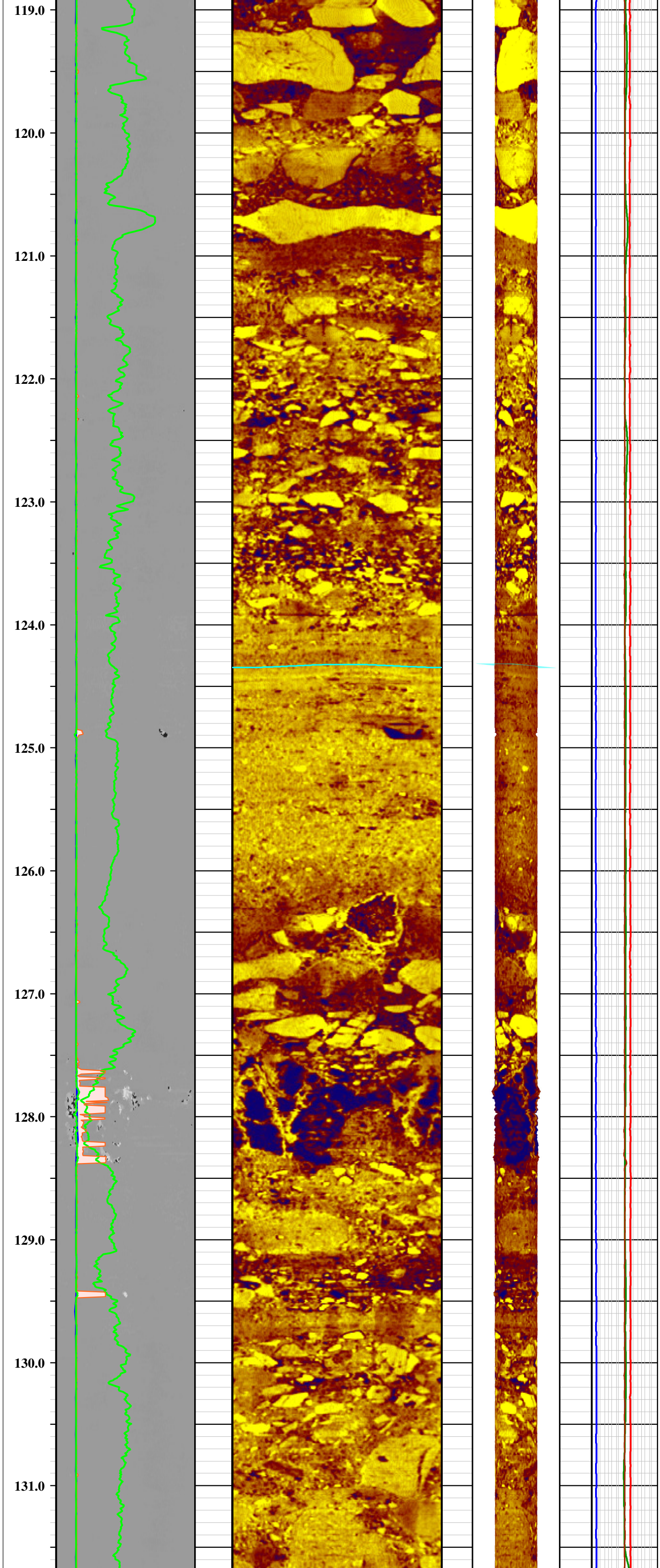
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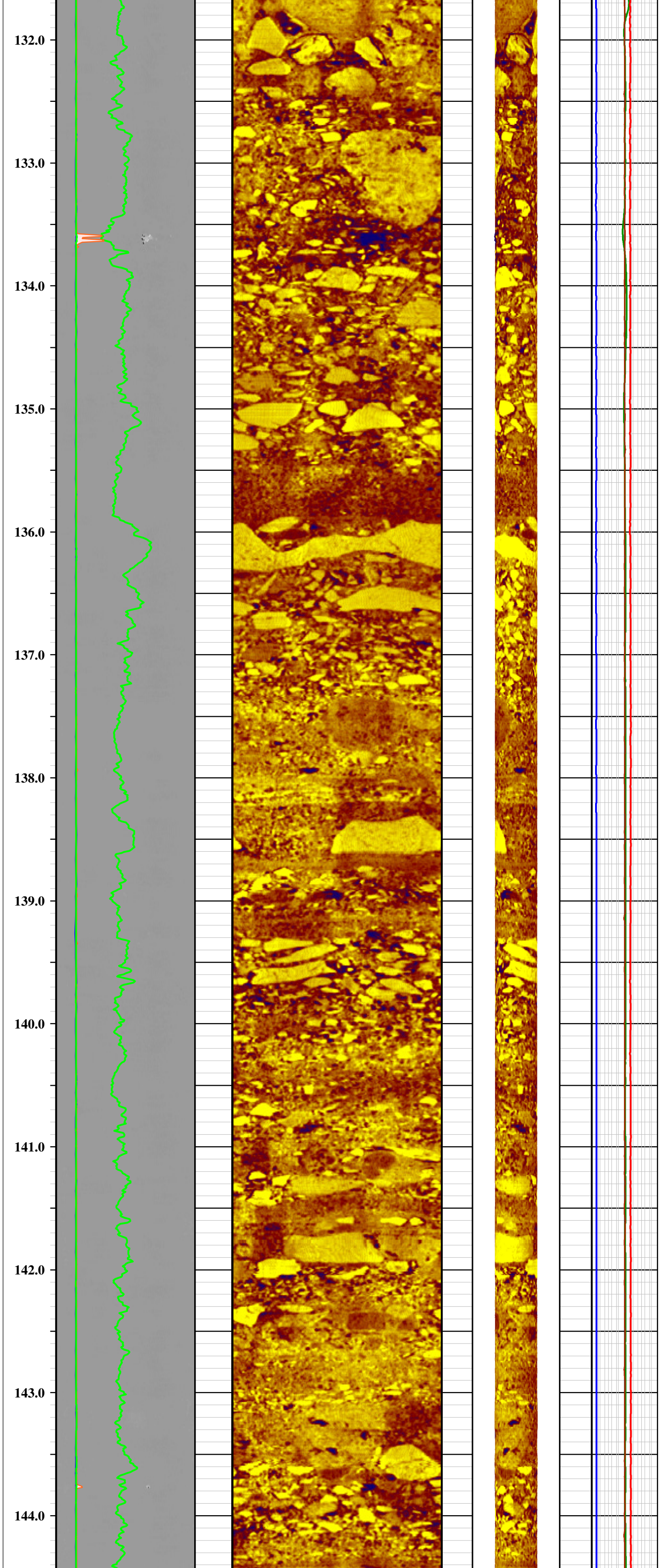
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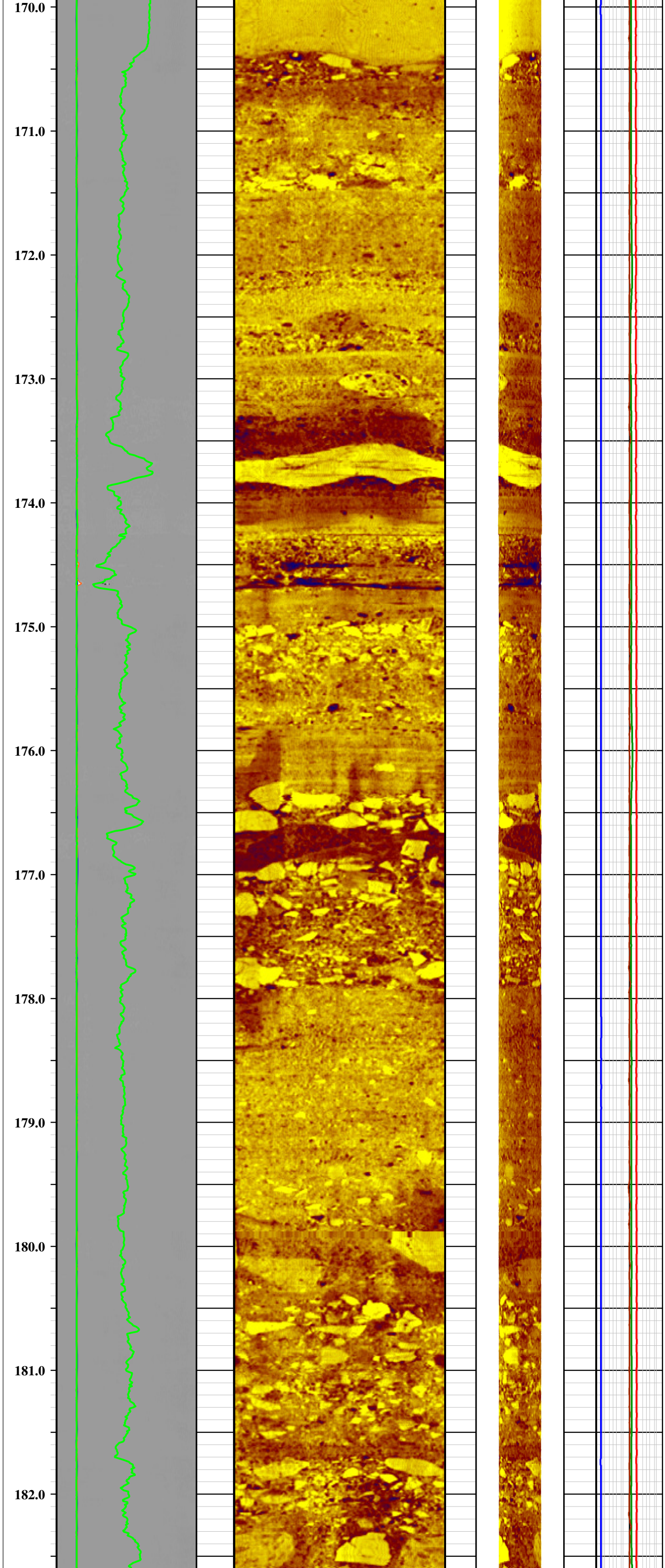
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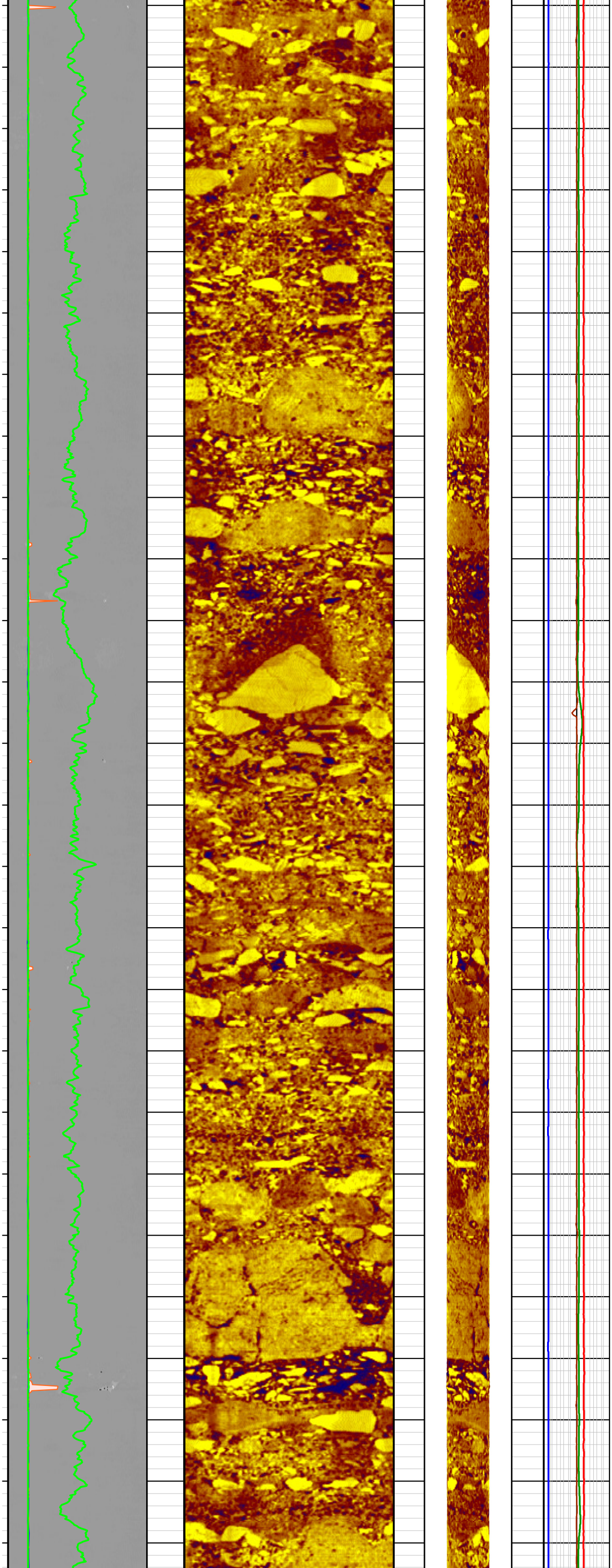

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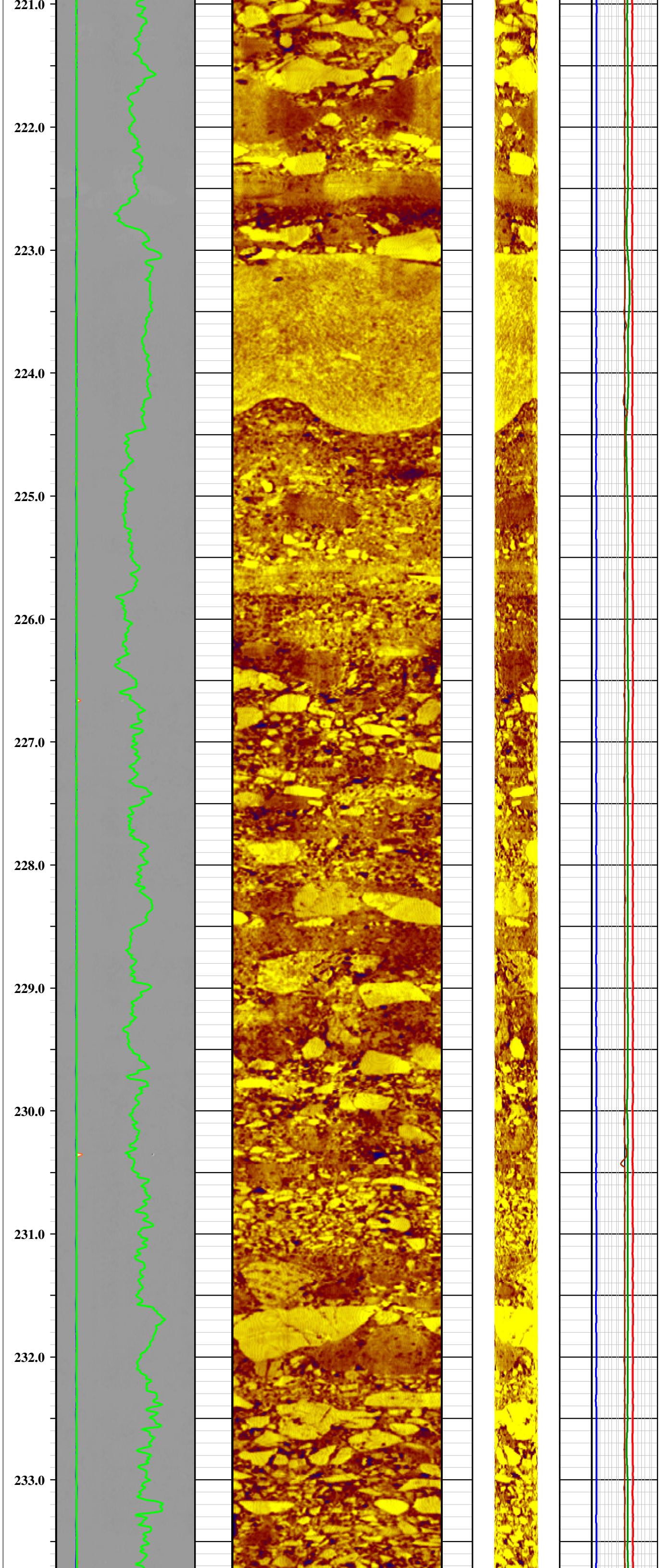
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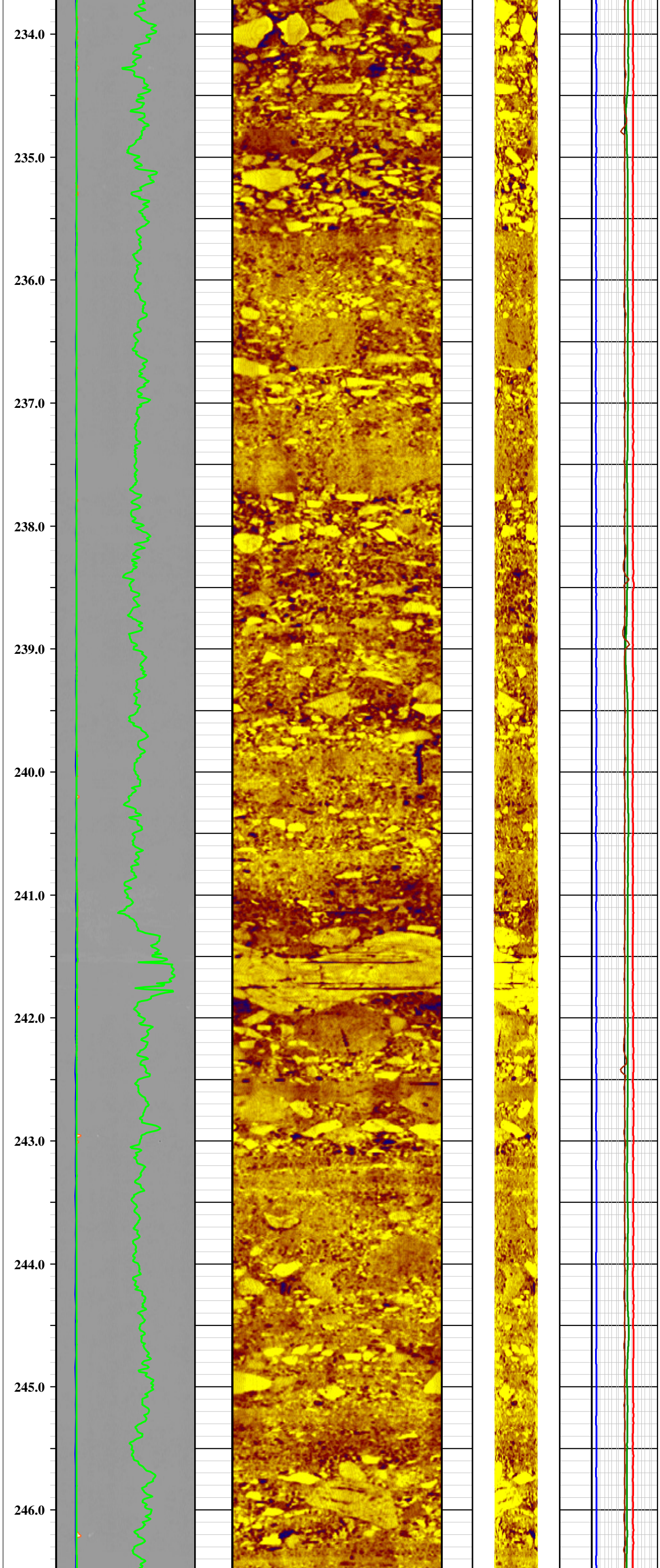
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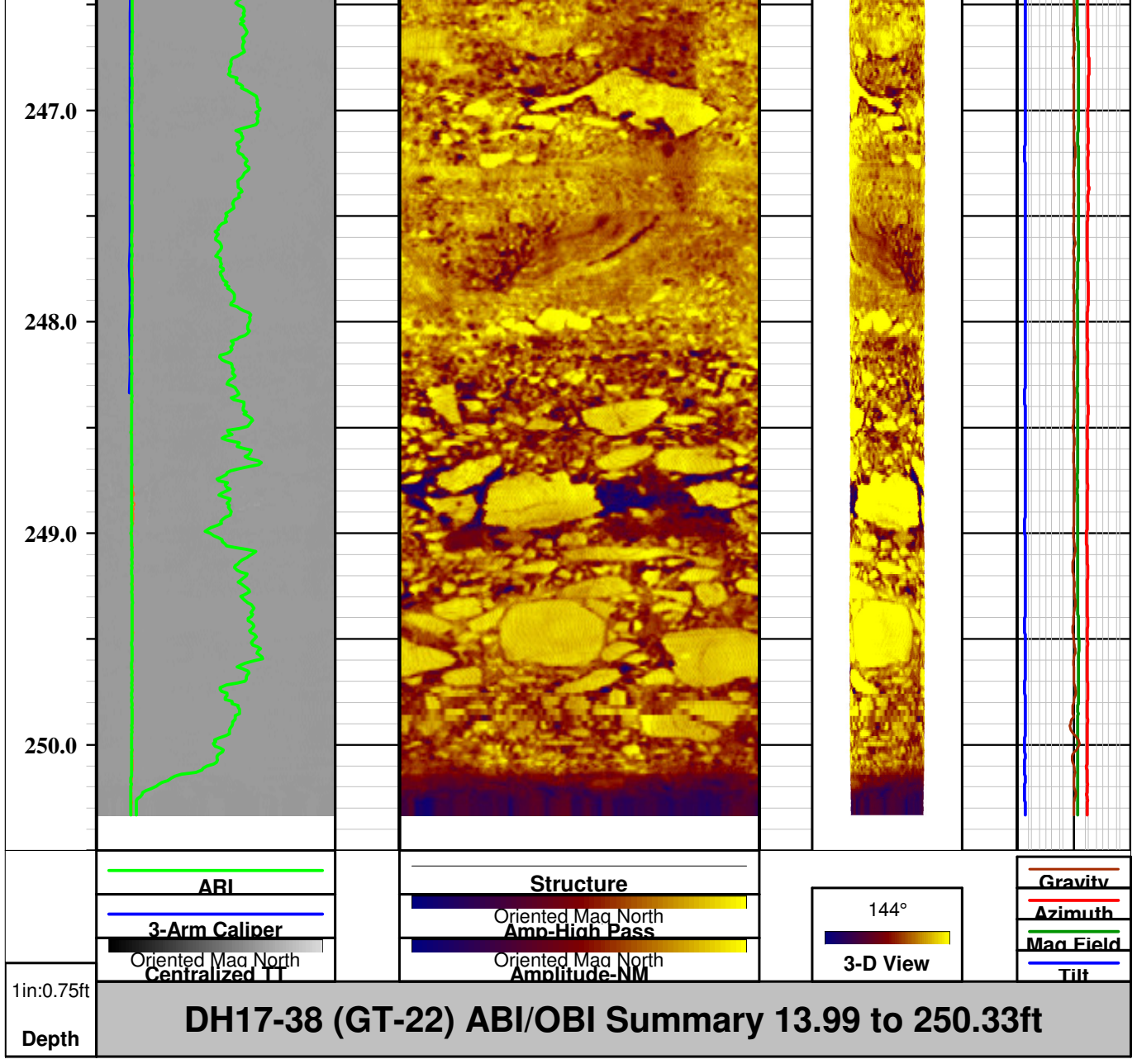
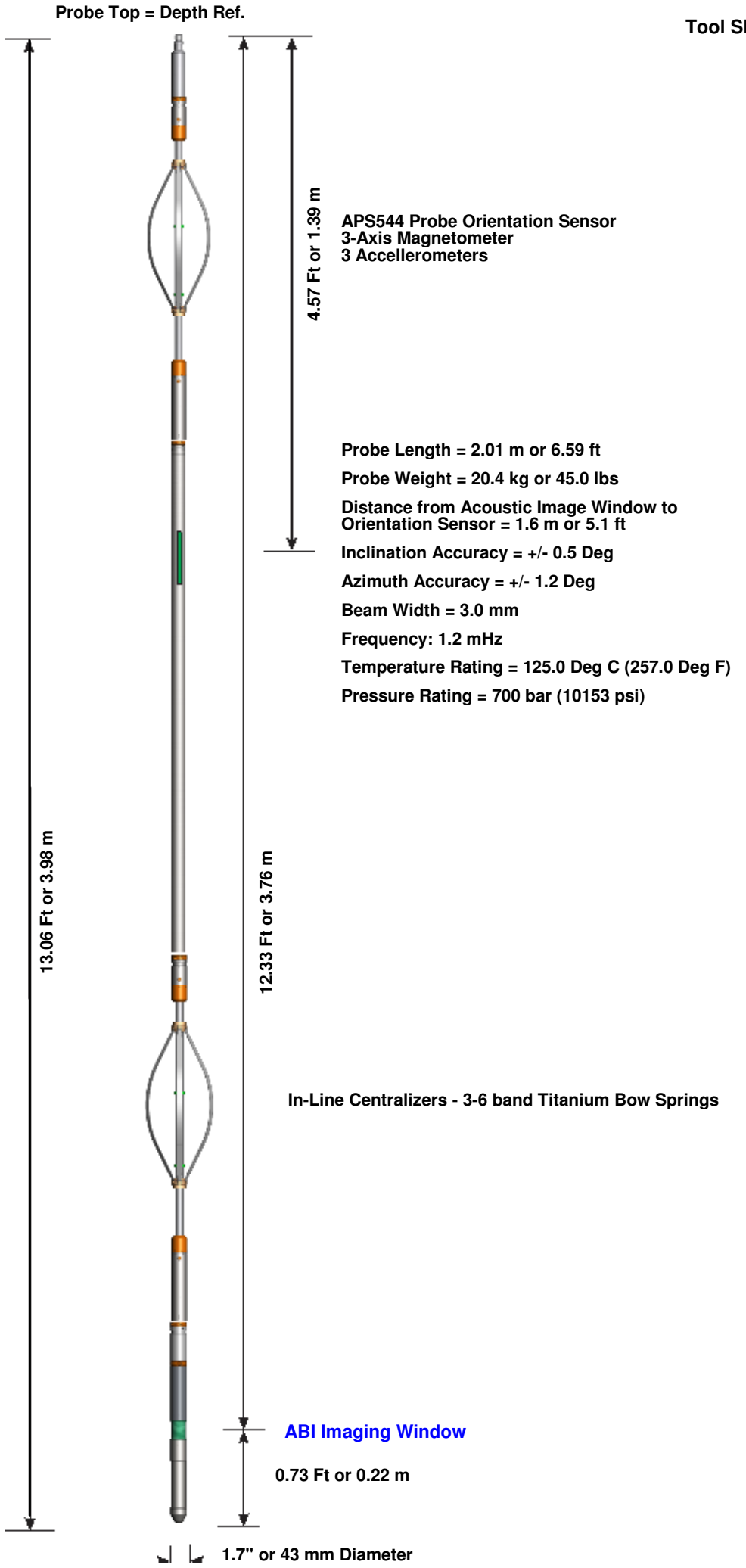


DH17-38 (GT-22) ABI/OBI Summary 13.99 to 250.33ft

ABI Legend

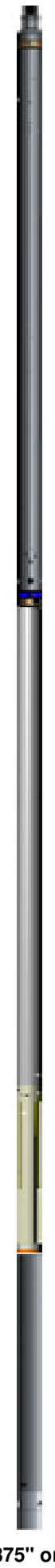
Mnemonics	Description

ABI-43 Acoustic Borehole Imager



MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER CO
Well	GT-22 (DH17-38)
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	DS-16-01				
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS: ABI TELEVIEWER				OTHER SERVICES	
MORE: 3-ARM CALIPER				TEMPERATURE	
				FLUID RESISTIVITY	
LOCATION				NAT. GAMMA	
				E-LOGS	
				SONIC	
SEC	TWP	RGE	ELEVATION	K.B.	
PERMANENT DATUM					
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

DATE	9-15-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	1 & 4		MUD WEIGHT		N/A
TYPE LOG	ABI - CALIPER		VISCOSITY		N/A
DEPTH-DRILLER	875 FT.		LEVEL		~ 50 FT.
DEPTH-LOGGER	875 FT.		MAX. REC. TEMP.		32.3 DEG. C
BTM LOGGED INTERVAL	875 FT.		IMAGE ORIENTED TO:		N/A
TOP LOGGED INTERVAL	SURFACE		SAMPLE INTERVAL		0.01 FT.
DRILLER / RIG#	NATIONAL		LOGGING TRUCK		TRUCK #300
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER		TOOL STRING/SN		QL ABI40-2G SN 143002
WITNESSED BY	BILL - M & A		LOG TIME:ON SITE/OFF SITE		4:15 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT.	20 IN.	STEEL	SURFACE	20 FT.
2	10 3/4	20 FT.	447 FT.				
3	9 7/8	447 FT.	TOTAL DEPTH				

COMMENTS:

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Tool Summary:

Date	9-15-16	**Date**	9-15-16	**Date**	9-15-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	MSI COMBO TOOL	**Tool Model**	MSI 40GRP	**Tool Model**	ALT 4RX SONIC
Tool SN	4953	**Tool SN**	5019	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	875 FT.	**To**	875 FT.	**To**	875 FT.
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	300	**Truck No**	300	**Truck No**	300
Operation Check	9-13-16	**Operation Check**	9-13-16	**Operation Check**	9-13-16
Calibration Check	9-13-16	**Calibration Check**	9-13-16	**Calibration Check**	N/A
Time Logged	12:05 A.M.	**Time Logged**	12:55 A.M.	**Time Logged**	1:40 A.M.

Date	9-15-16	**Date**		**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ABI 40-2G	**Tool Model**		**Tool Model**	
Tool SN	143002	**Tool SN**		**Tool SN**	
From	SURFACE	**From**		**From**	
To	875 FT.	**To**		**To**	
Recorded By	A. OLSON	**Recorded By**		**Recorded By**	
Truck No	300	**Truck No**		**Truck No**	
Operation Check	9-13-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	2:35 A.M.	**Time Logged**		**Time Logged**	

Additional Comments:

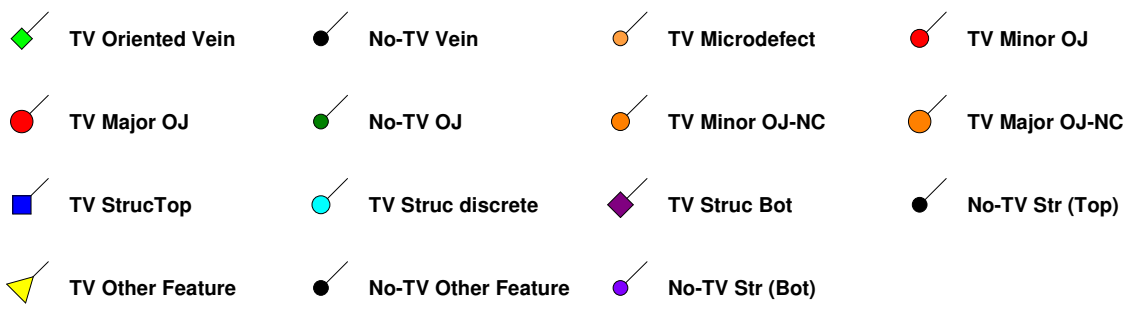
Caliper Arms Used: 9 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend



Breakout Legend

Breakout Legend

DS-N ABI40 Summary_47.64 to 876.56ft

Depth
1in:1ft

ralized TT - Conditional te
Oriented Mag North
0° 90° 180° 270° 0°

3-Arm Caliper
10 Inches 15

Max Acoustic Caliper
10 in 15

Ave Acoustic Caliper
10 in 15

Enlargements

Ave Acoustic Caliper#1
10 in 15

Amplitude-NM
Oriented Mag North
0° 90° 180° 270° 0°

Amplitude-Static
Oriented Mag North
0° 90° 180° 270° 0°

ARI
0 2100

Structure
0° 90° 180° 270° 0°

3-D View
0°

Mag Field
40 uT 60

Gravity
0.8 G 1.2

Tilt
0 Deg 5

Azimuth
0 Deg 360

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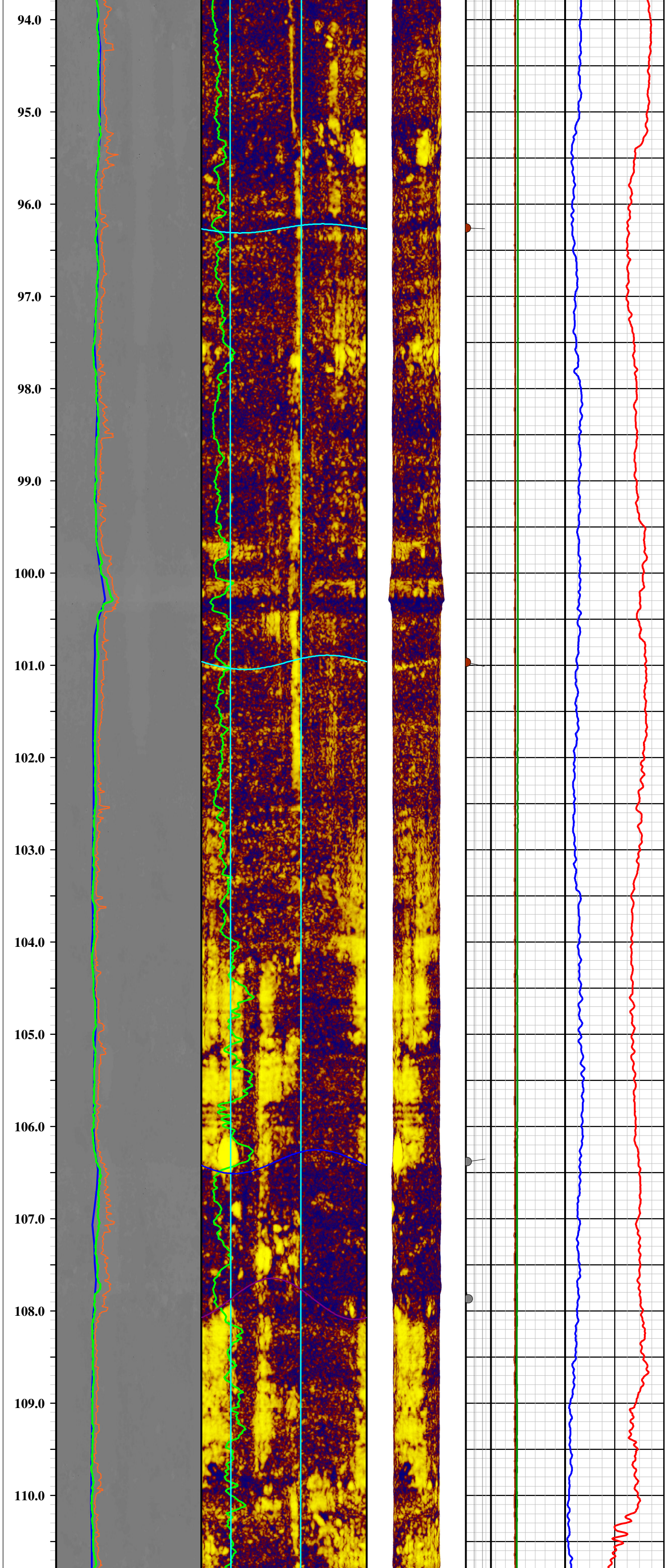
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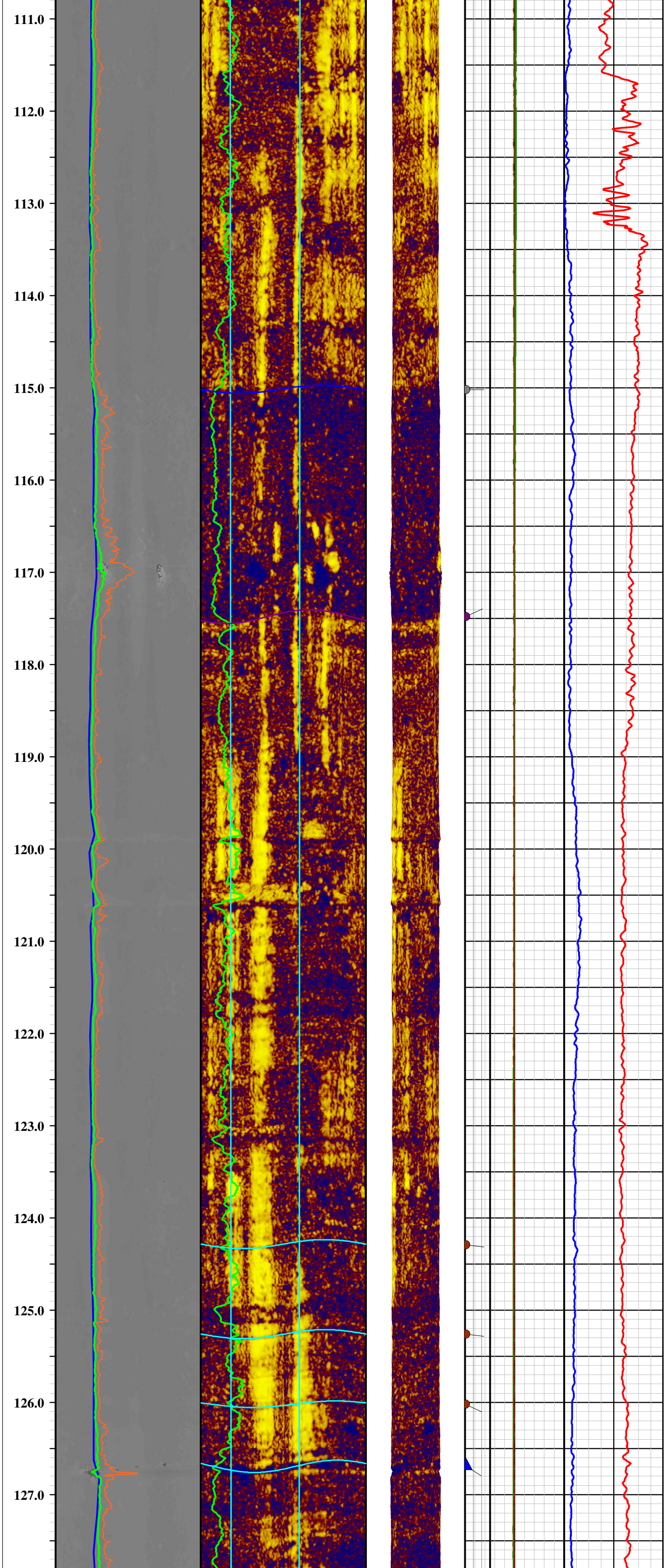
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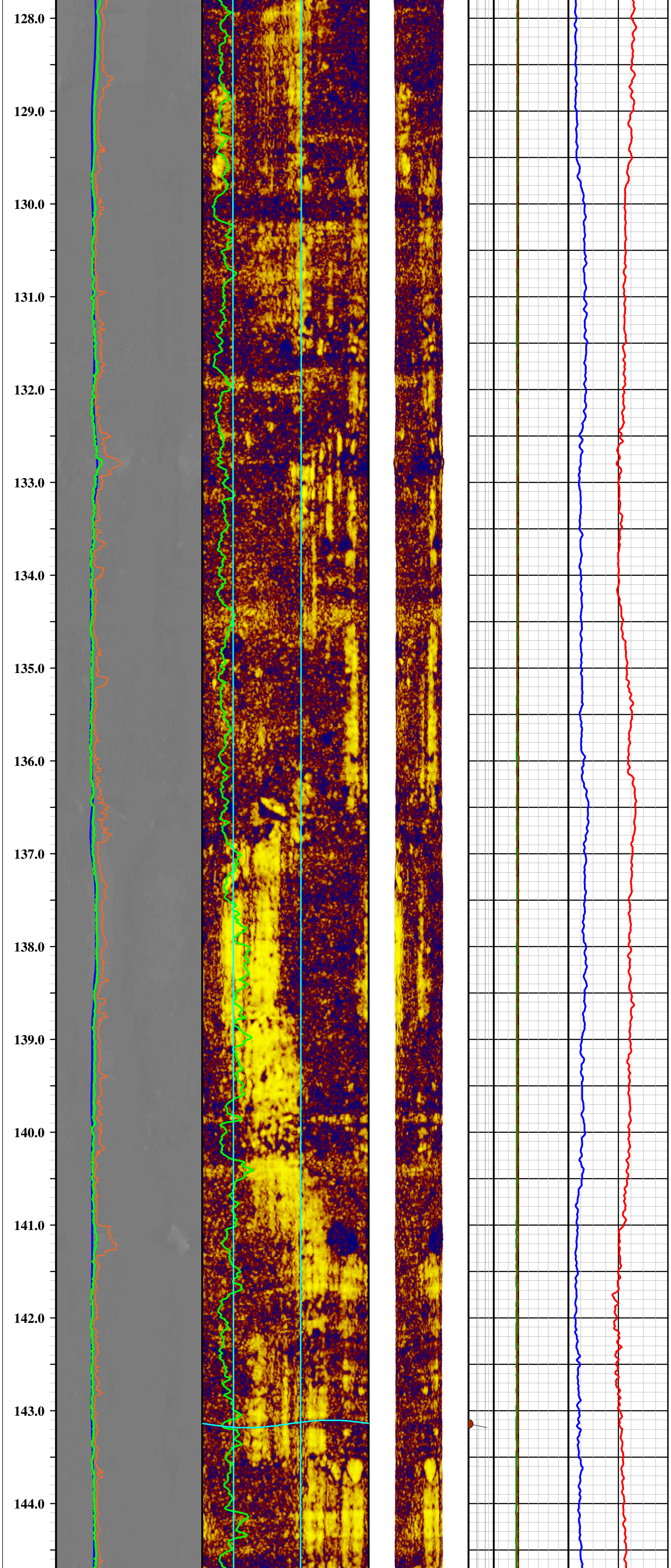
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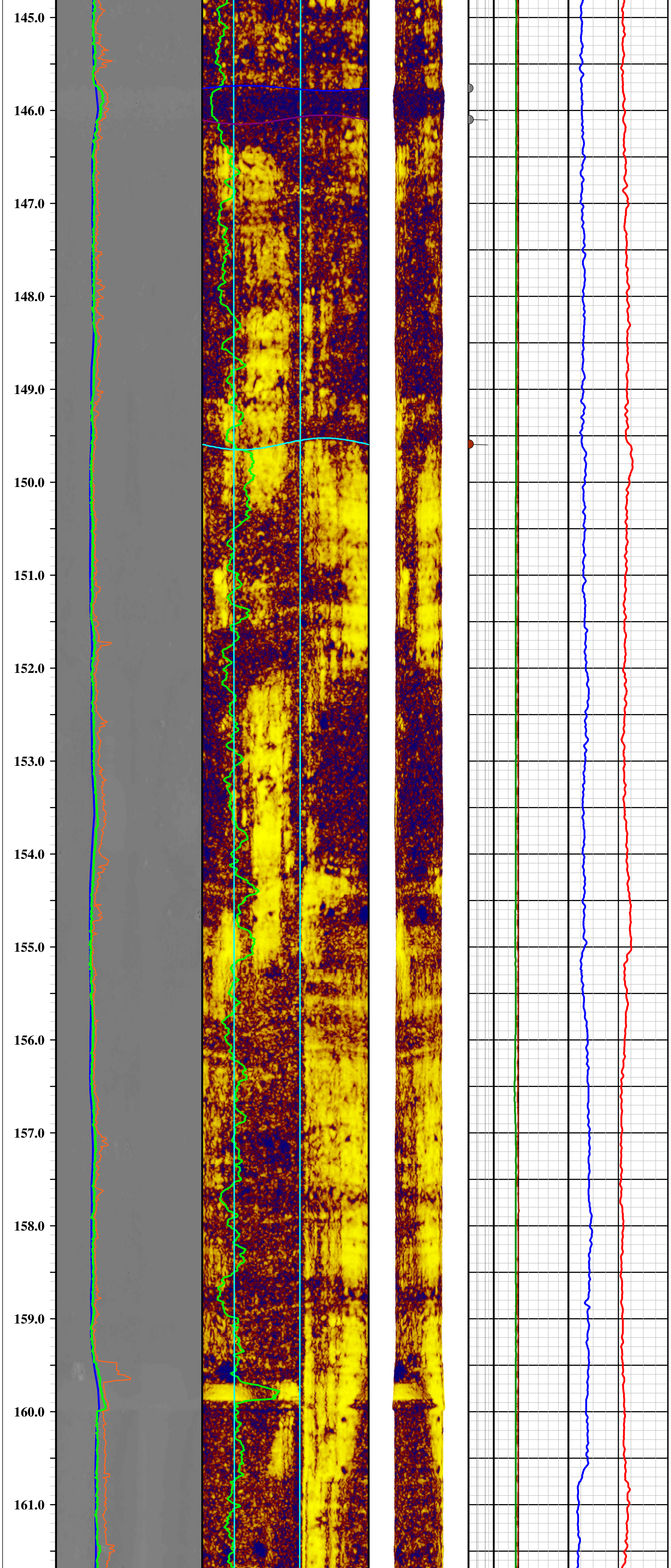
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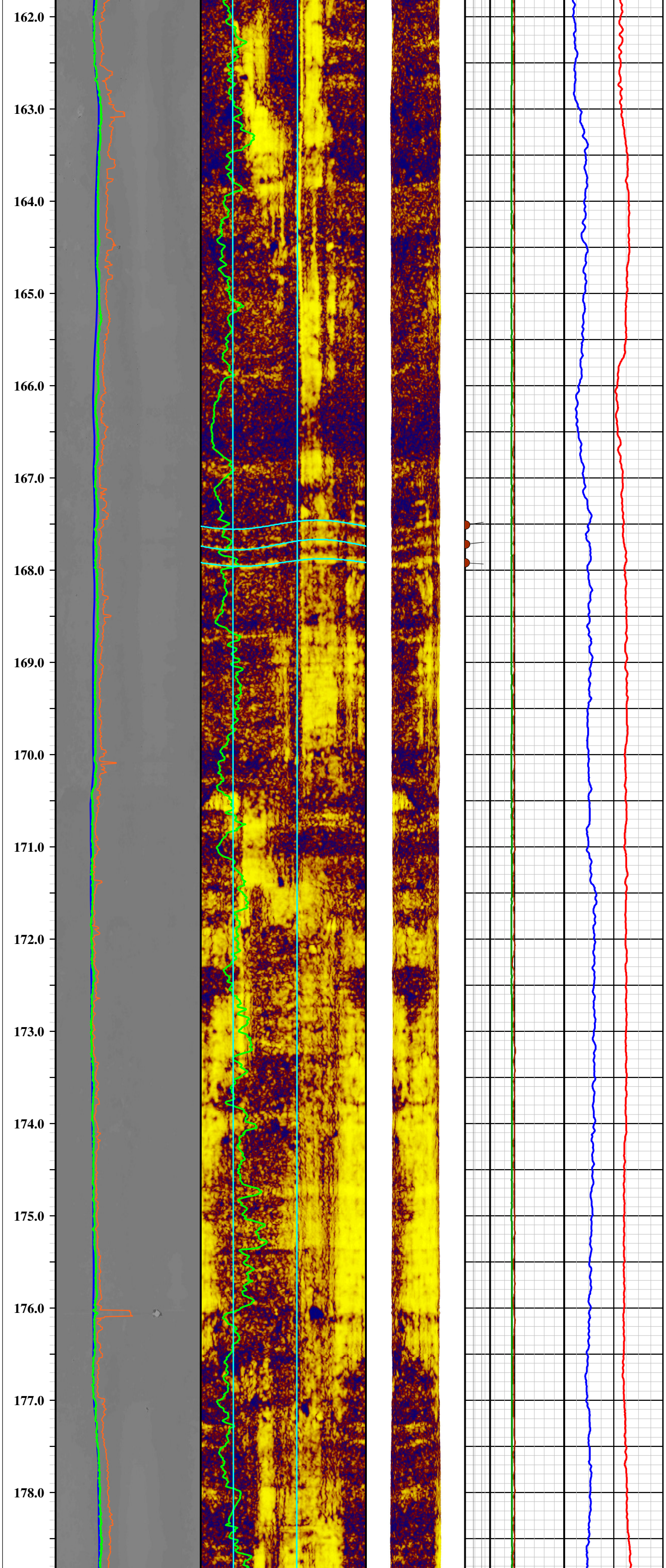
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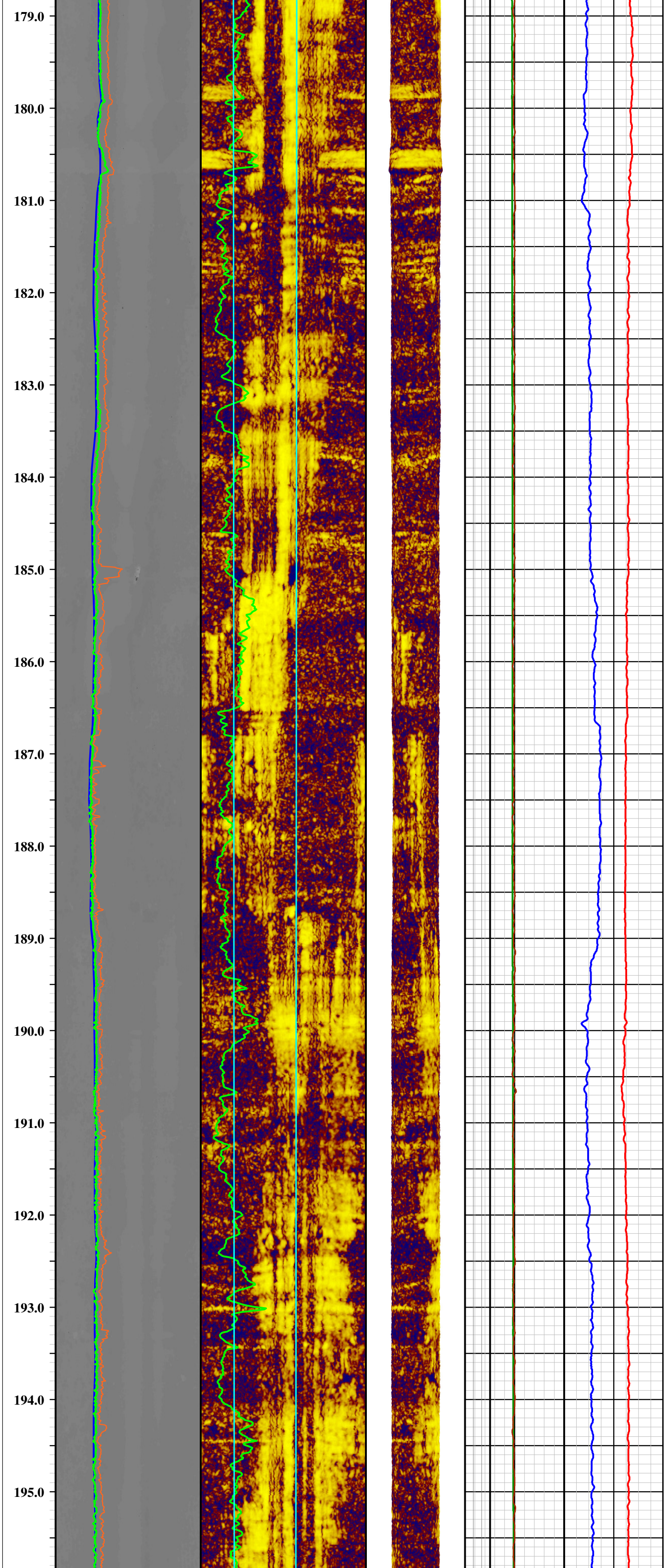
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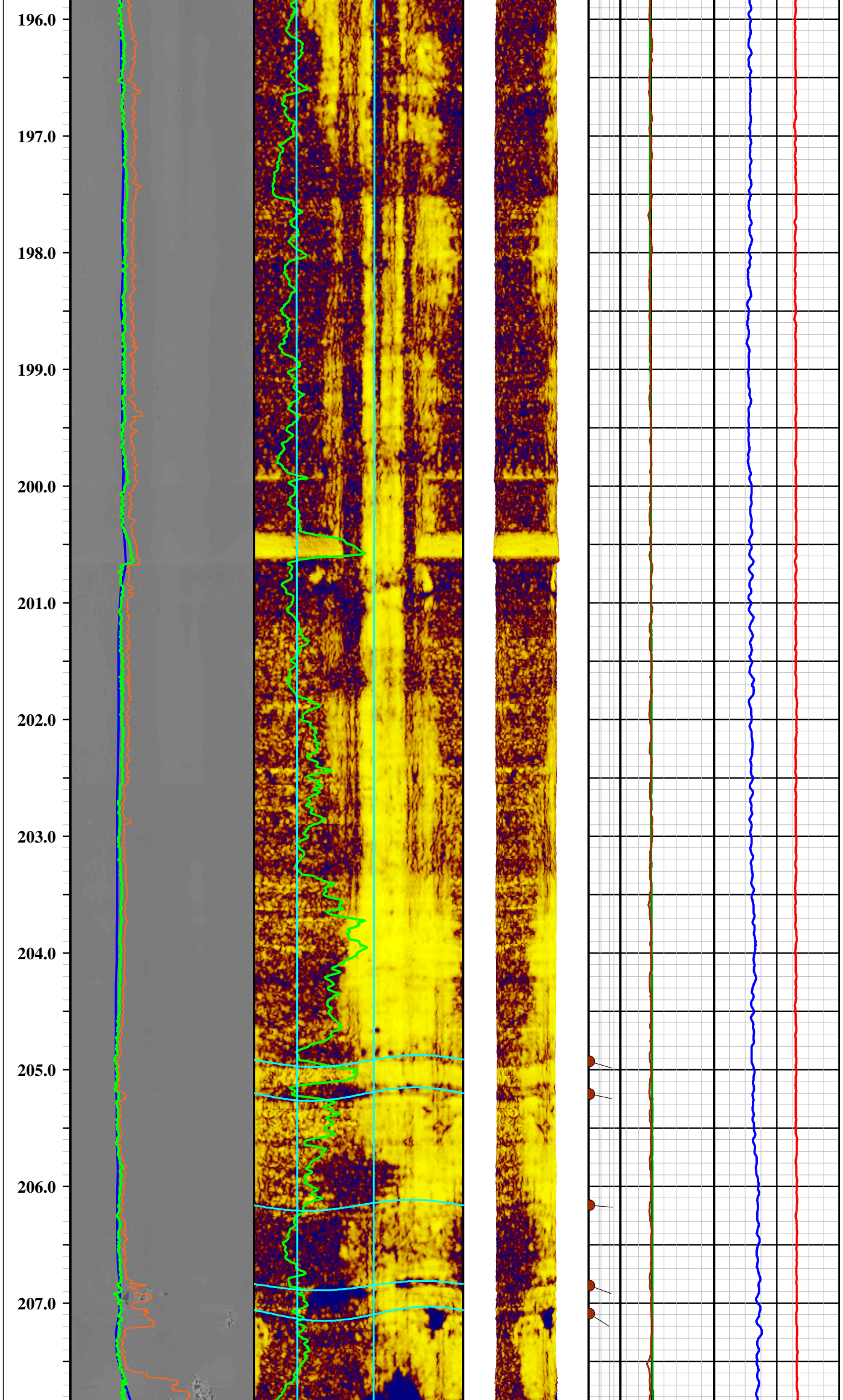
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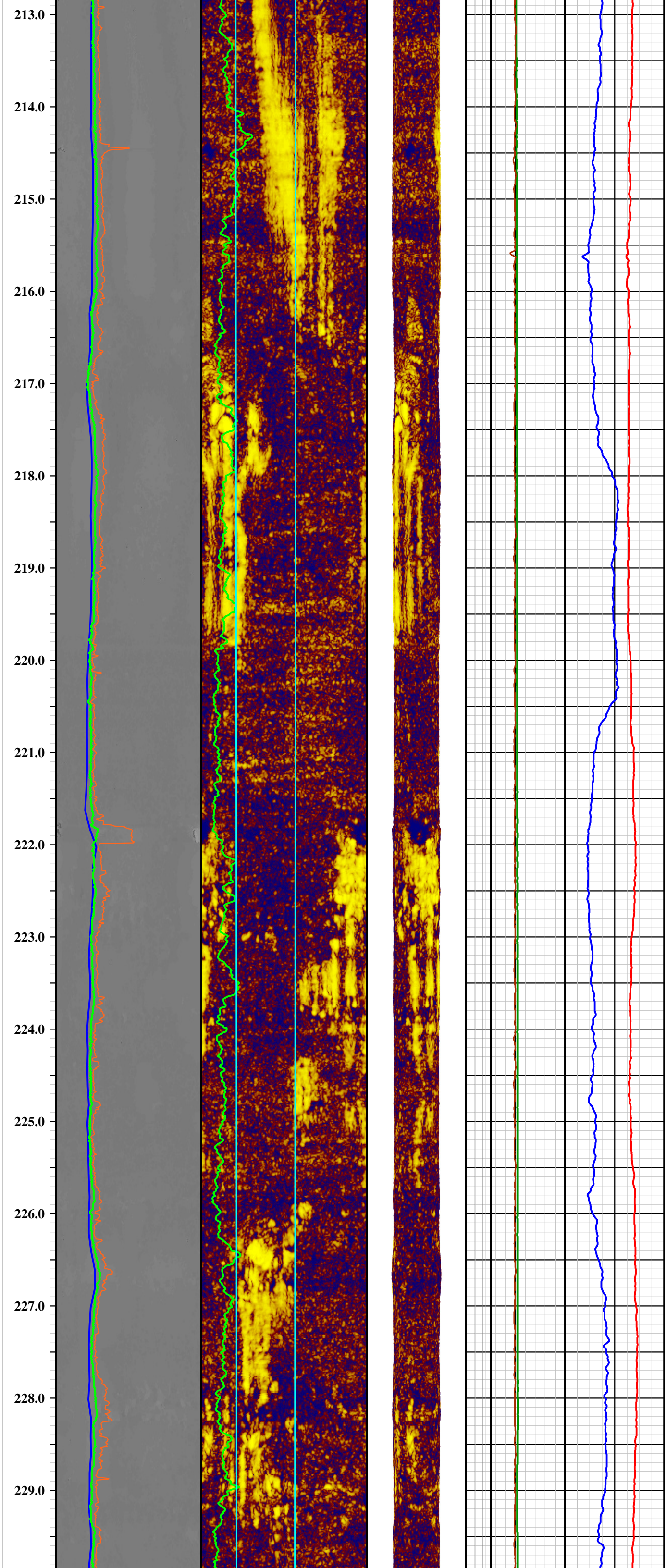

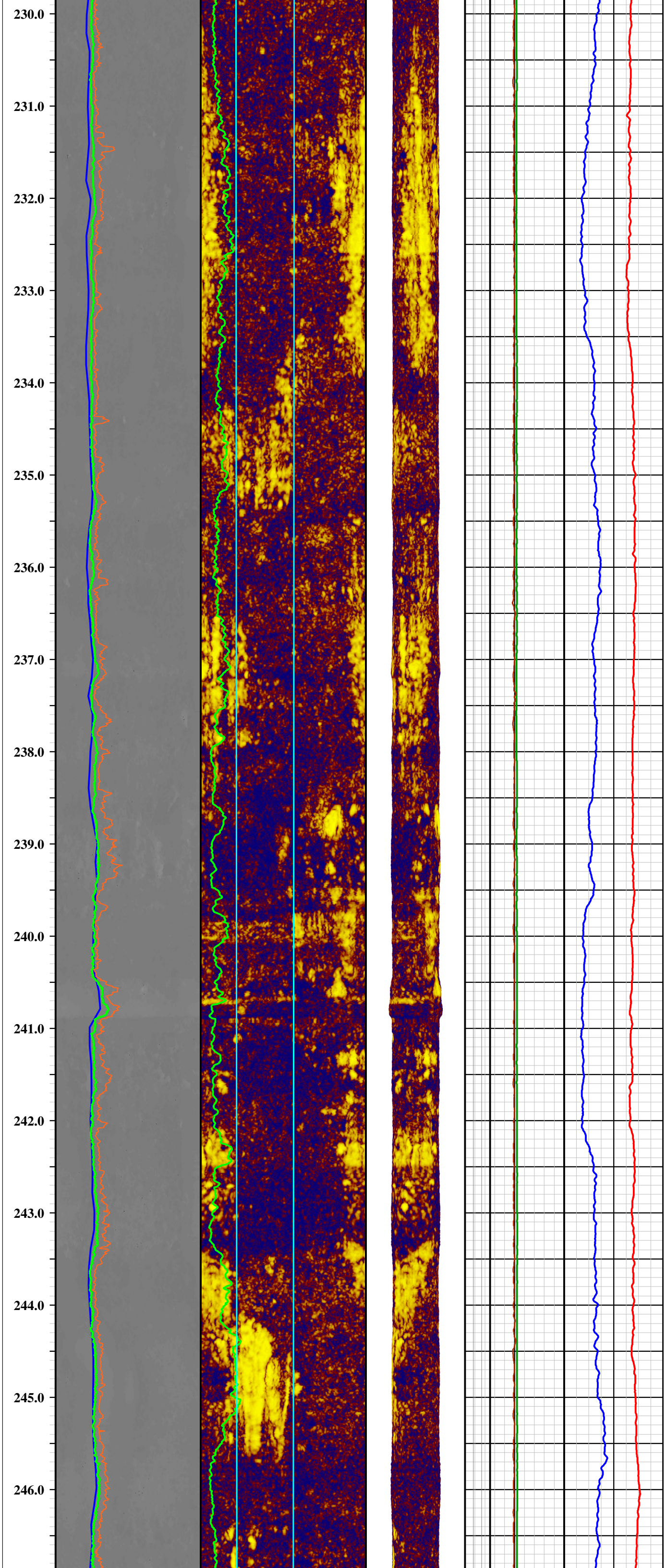
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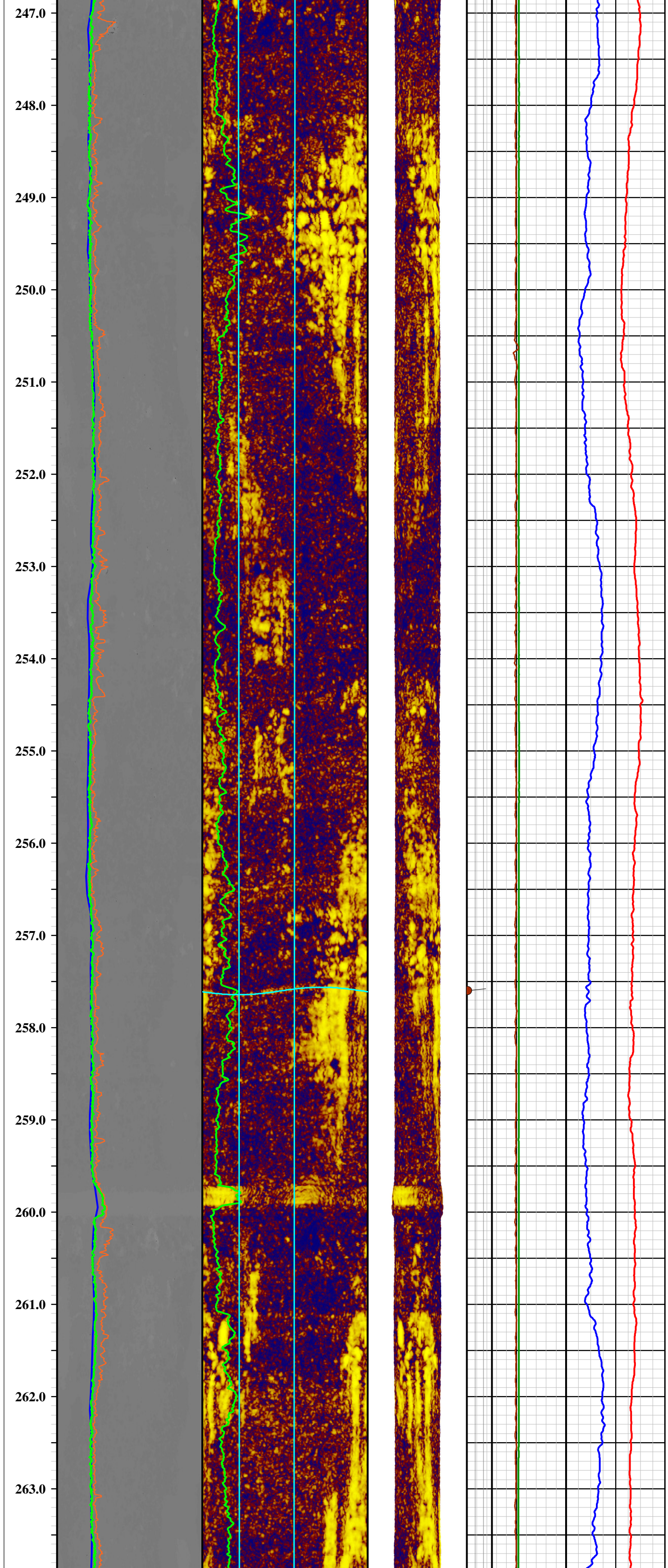

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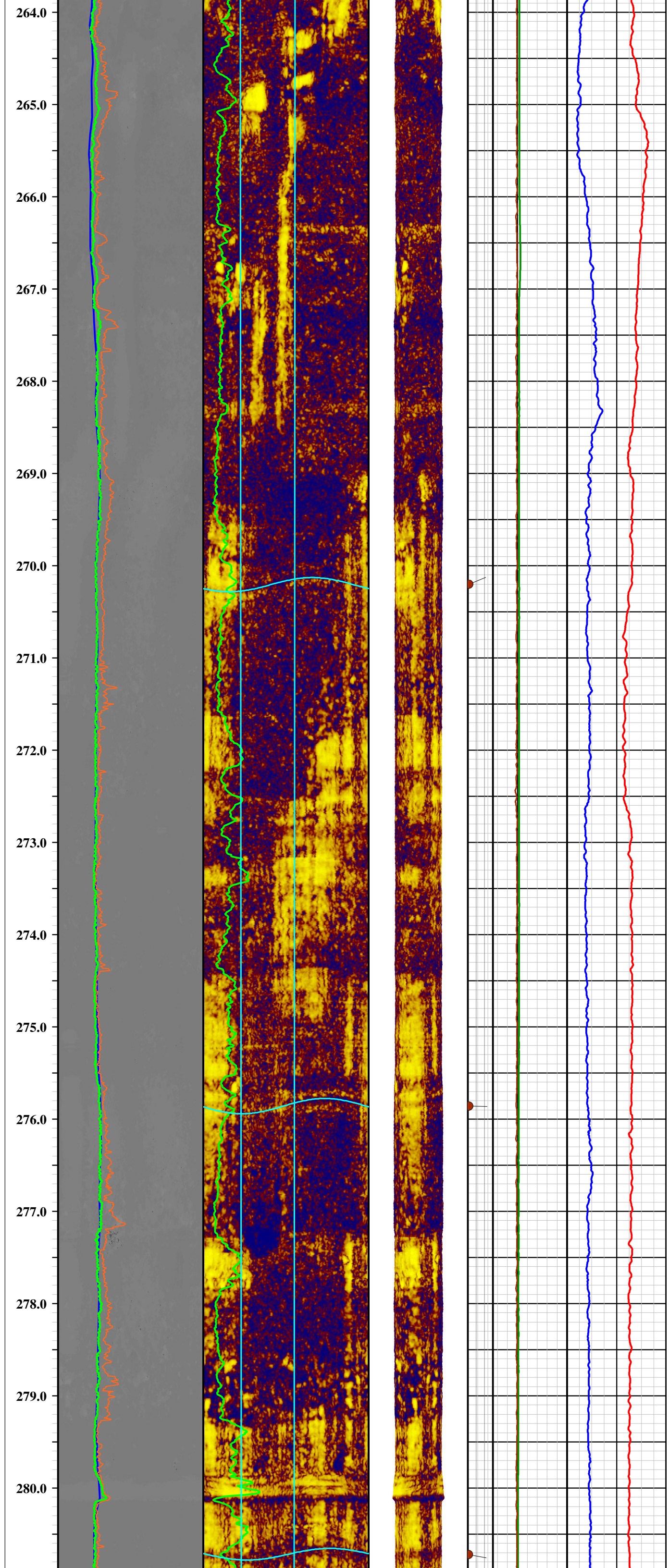

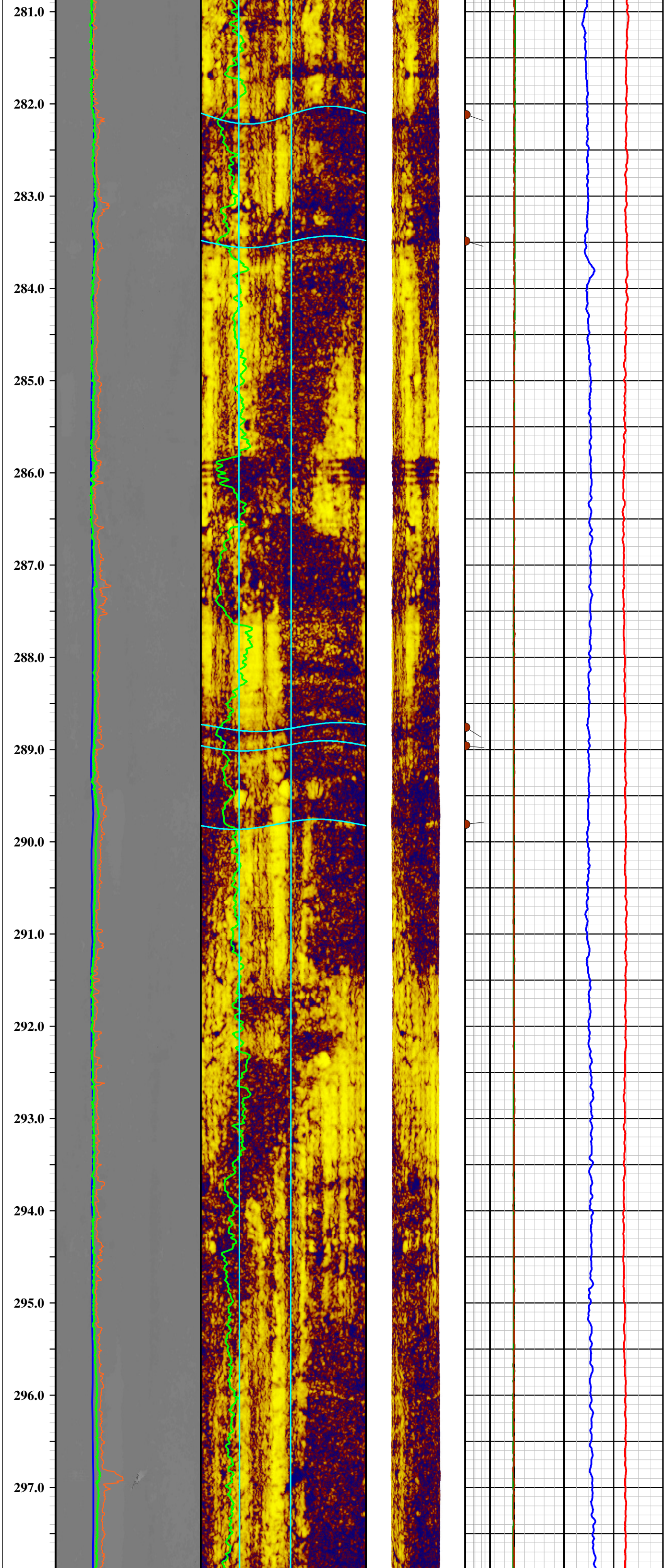
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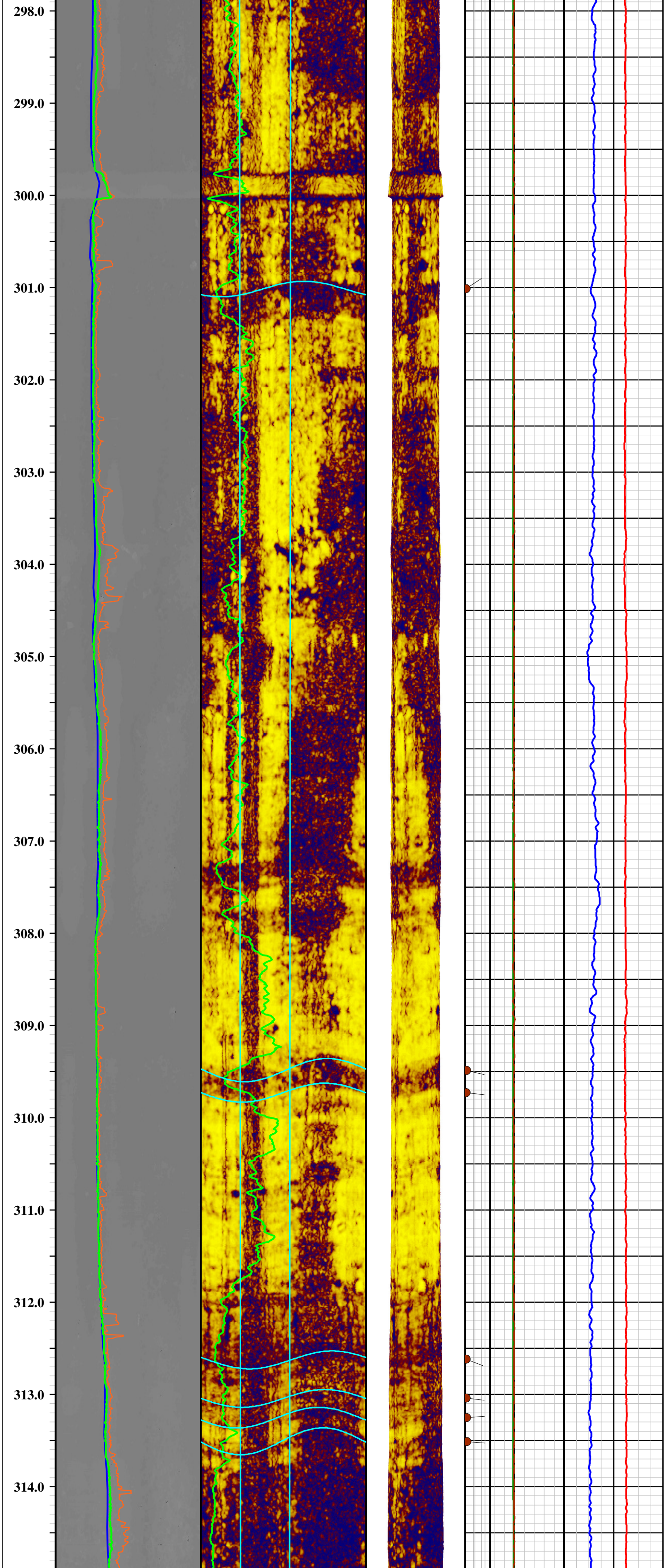
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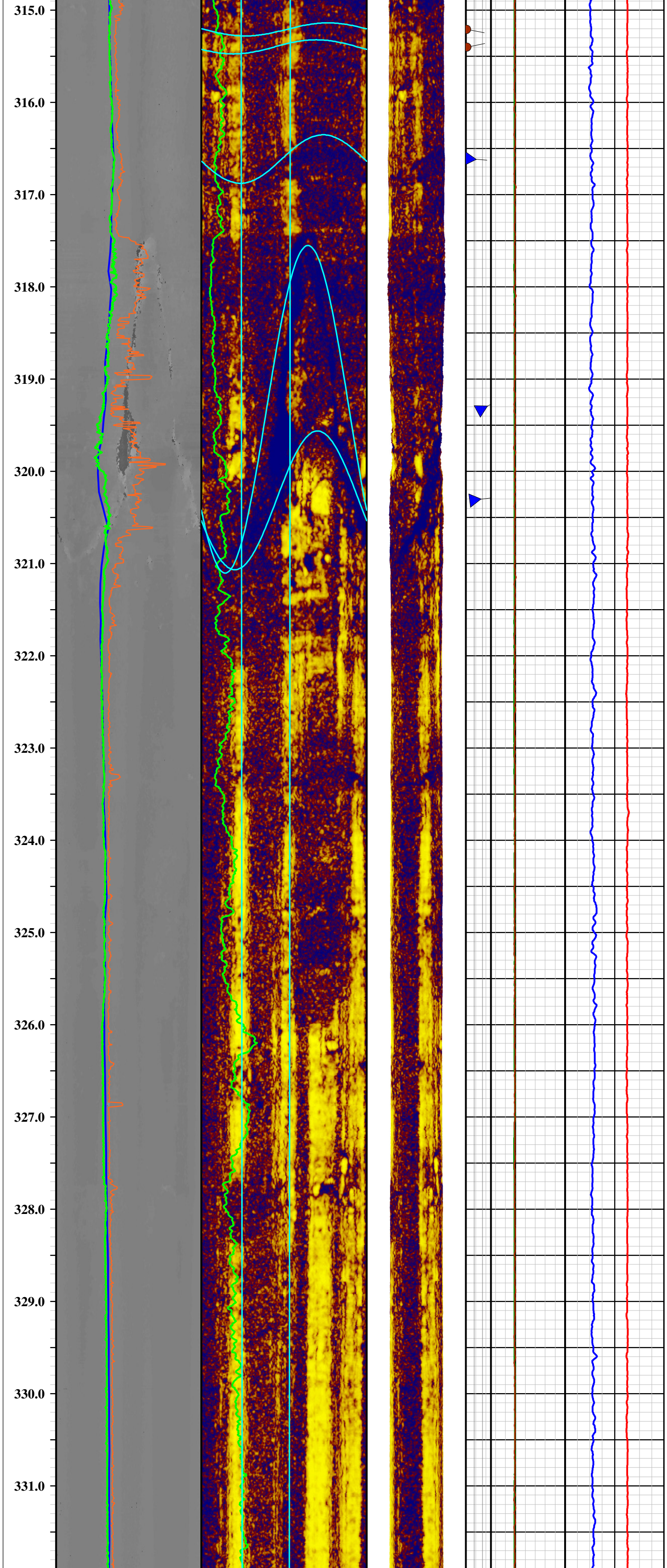

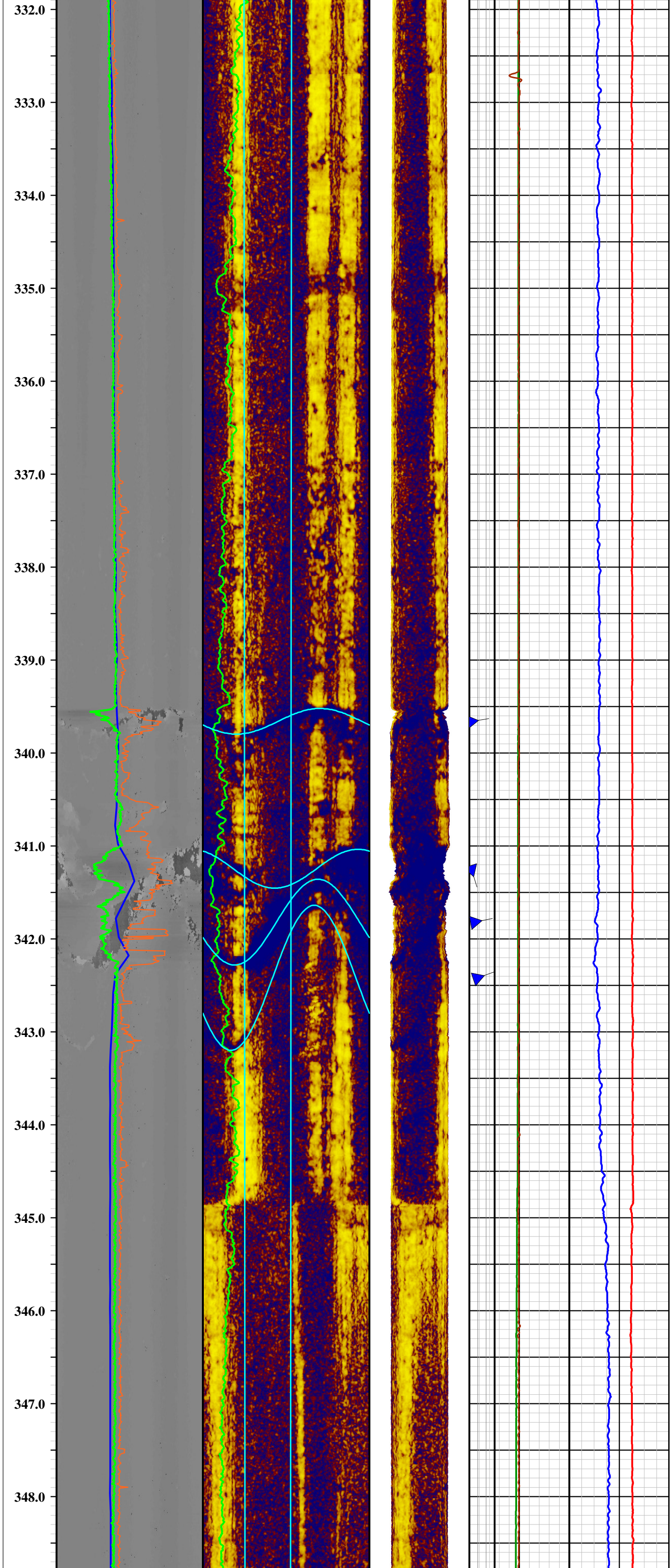
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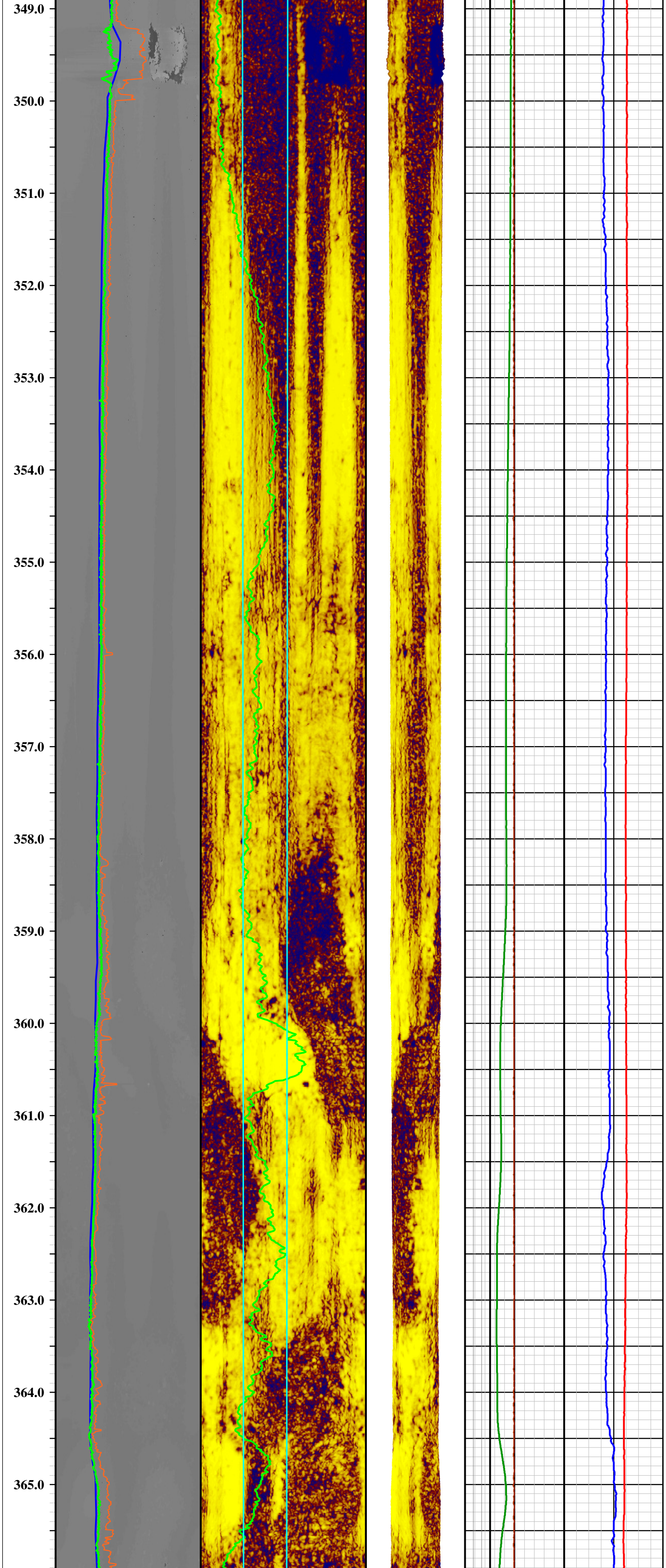
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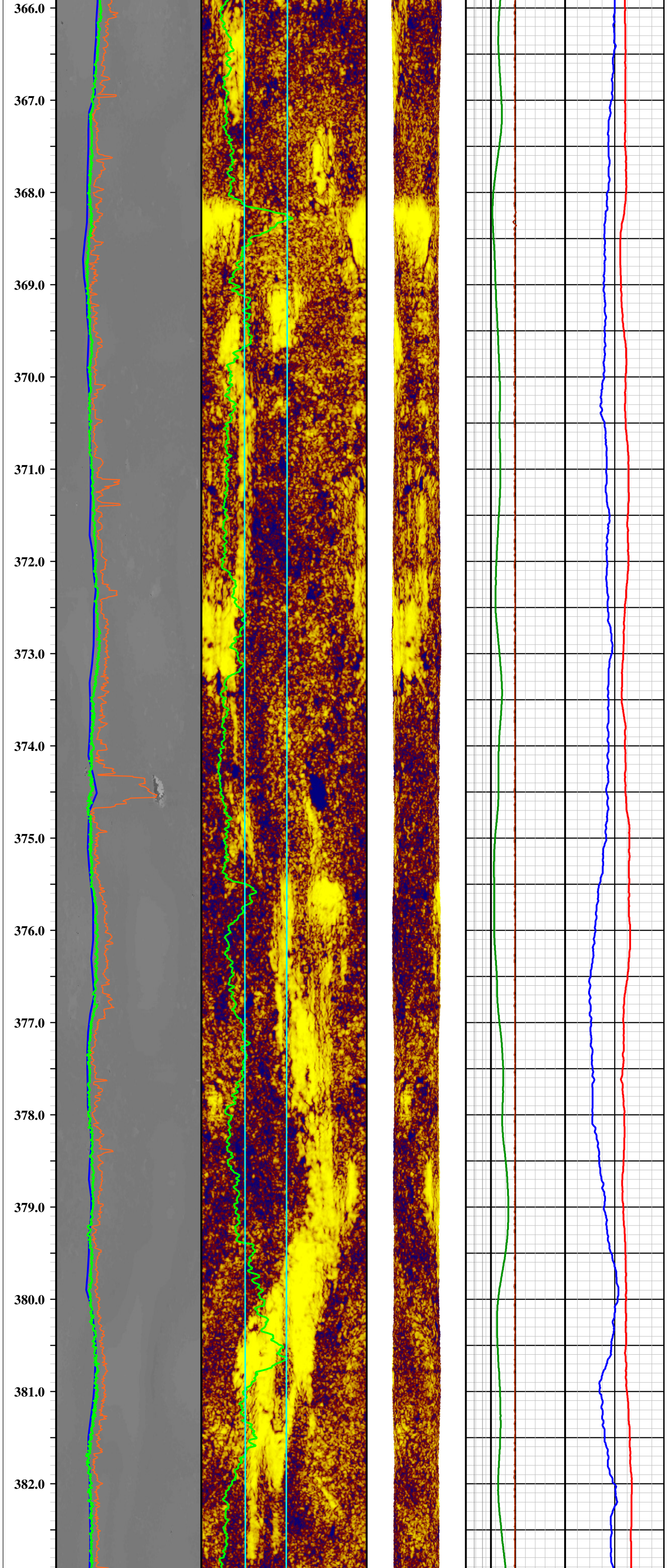

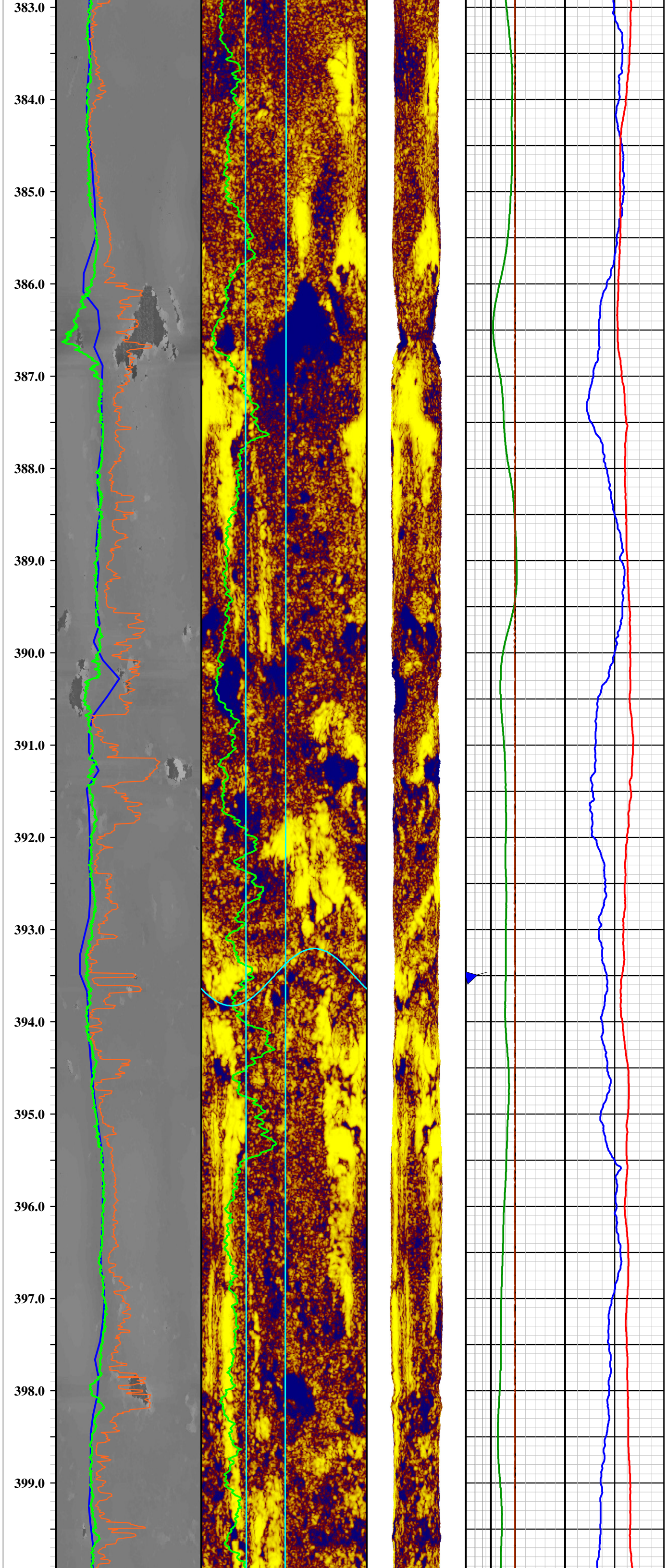
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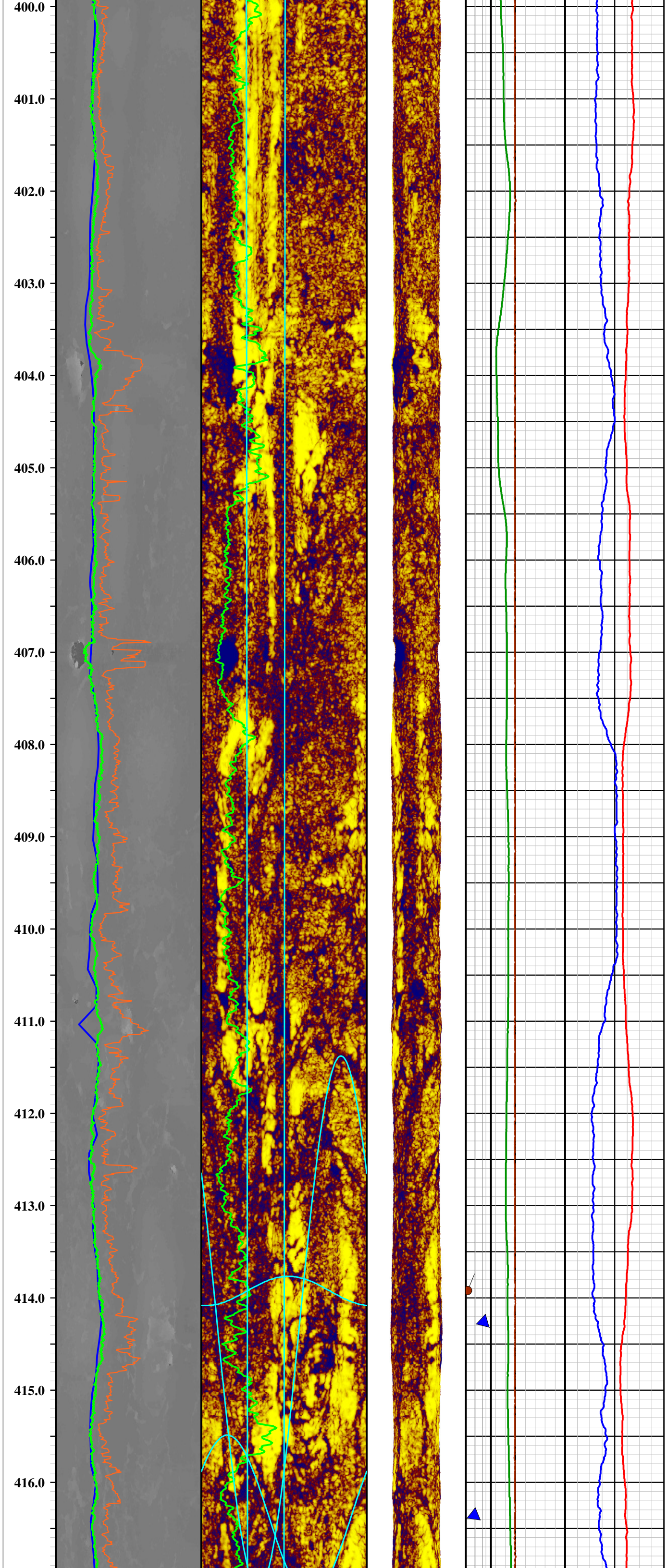

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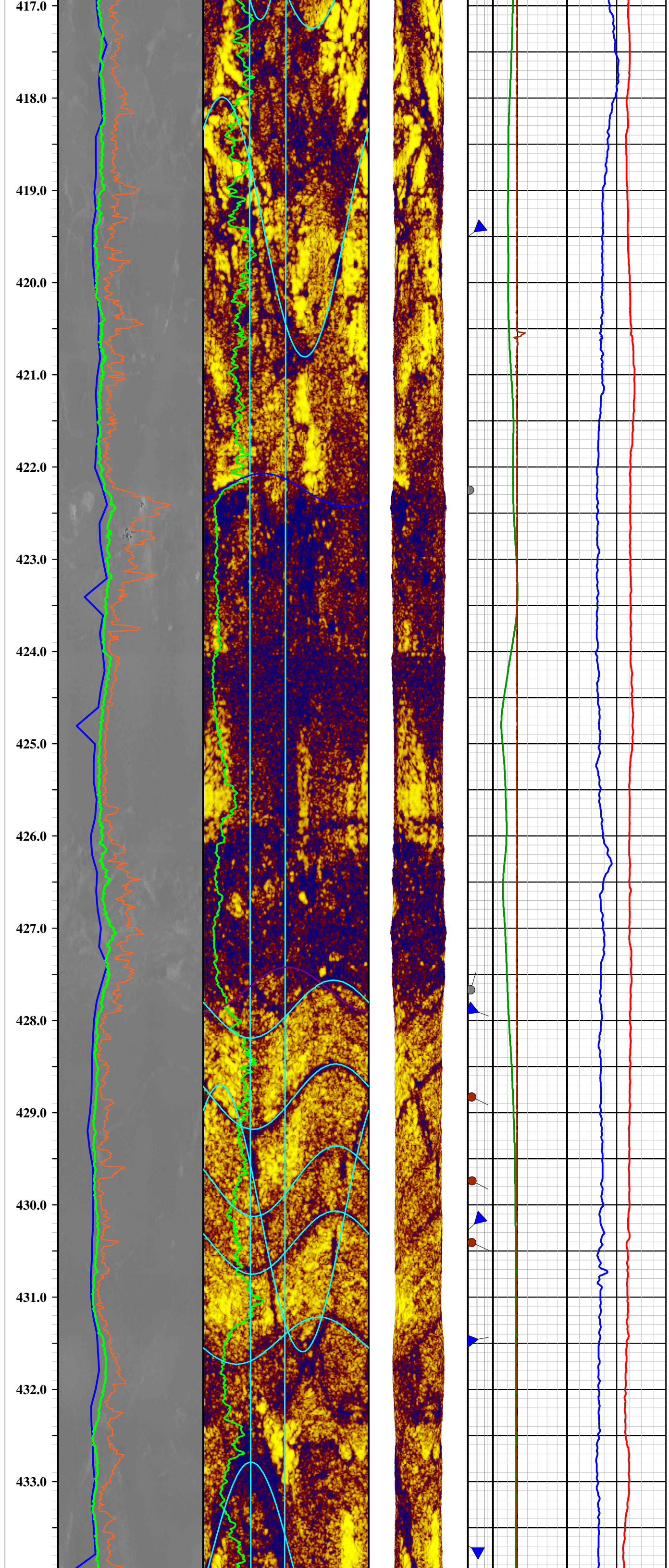

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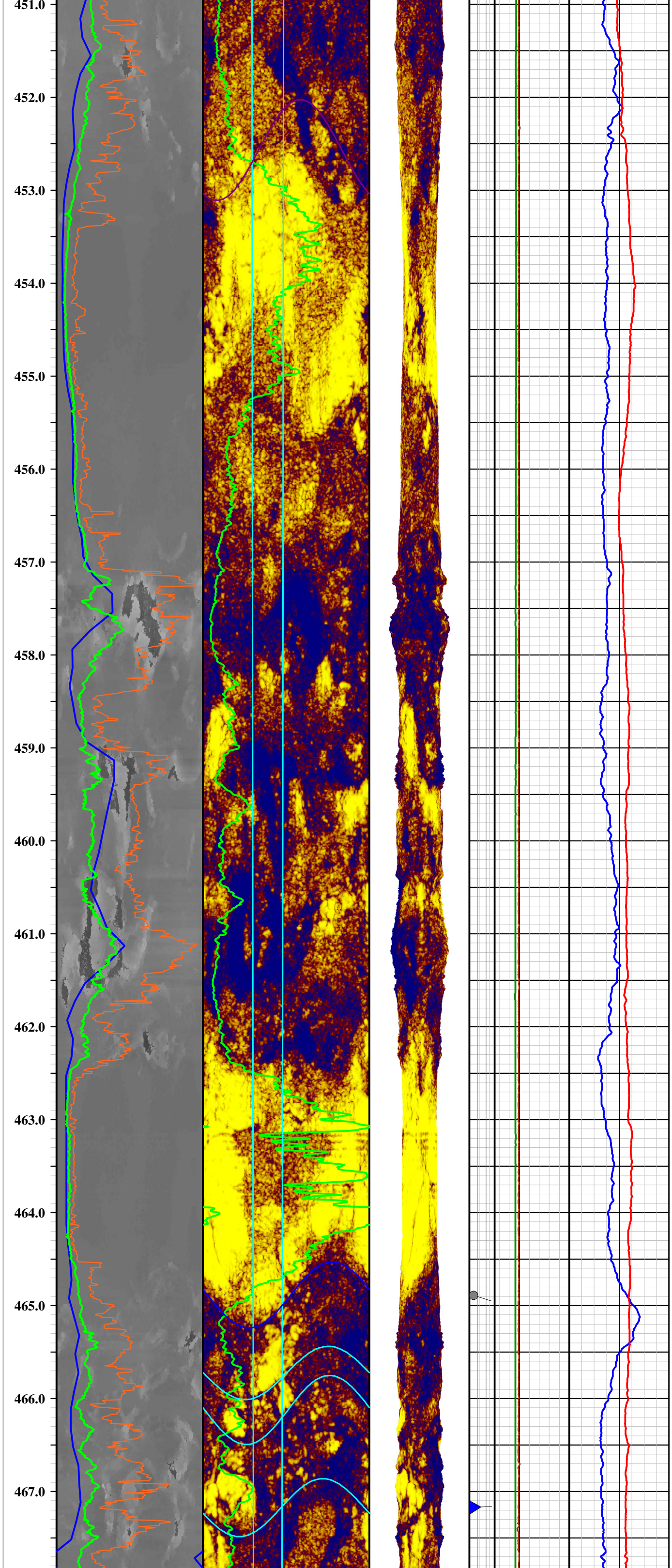
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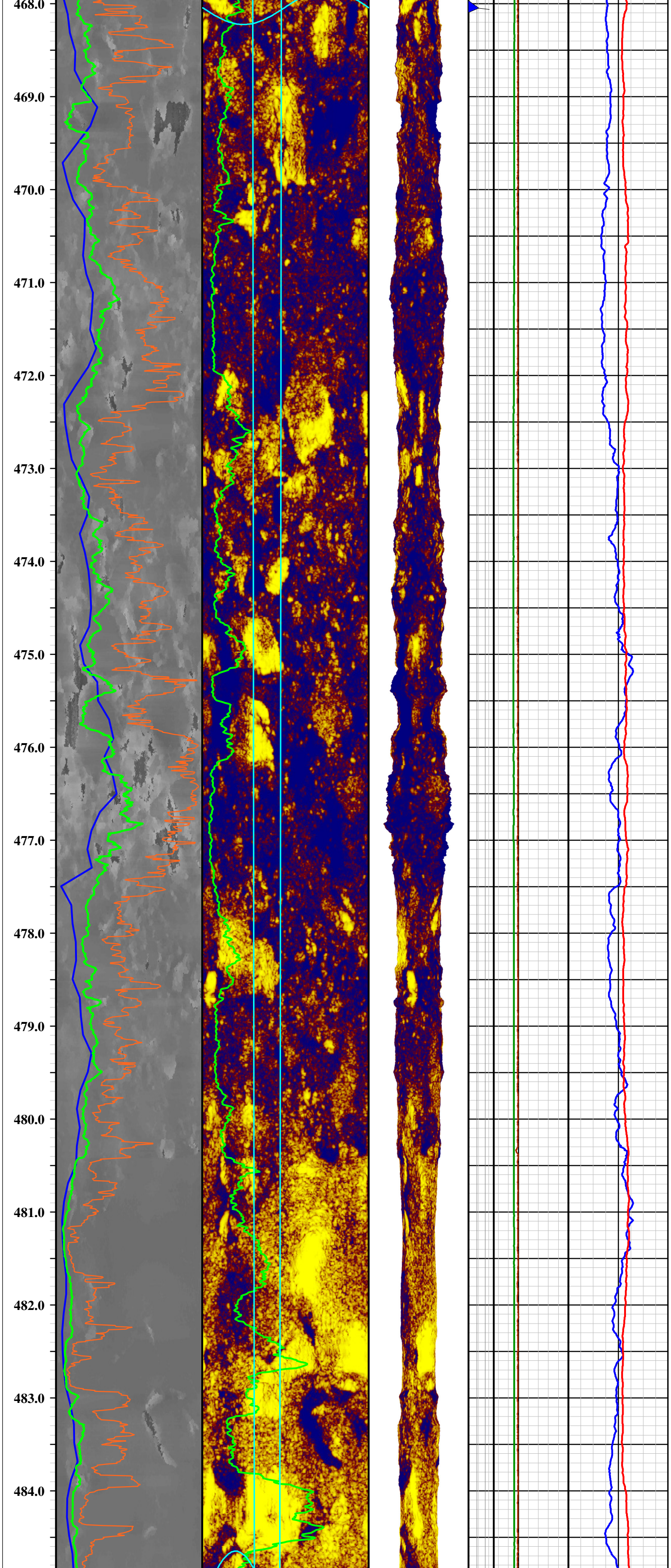
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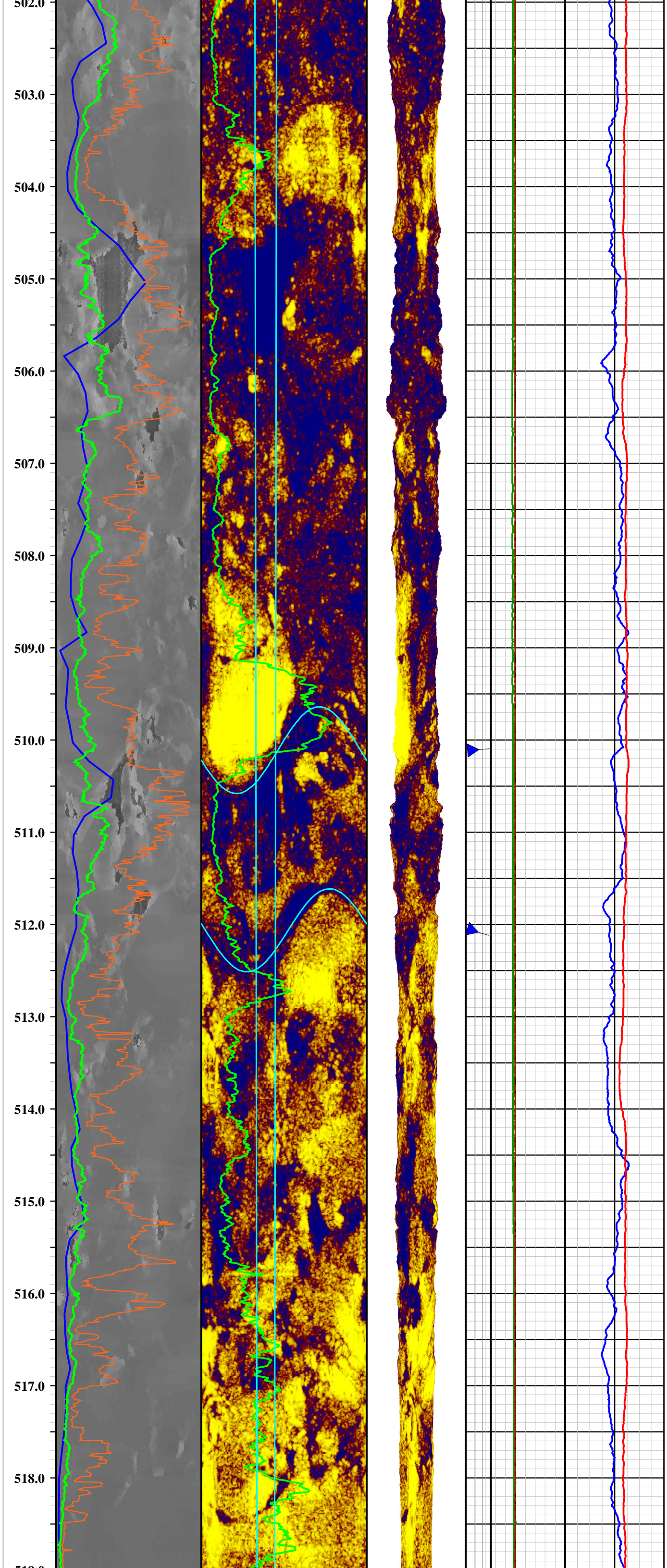
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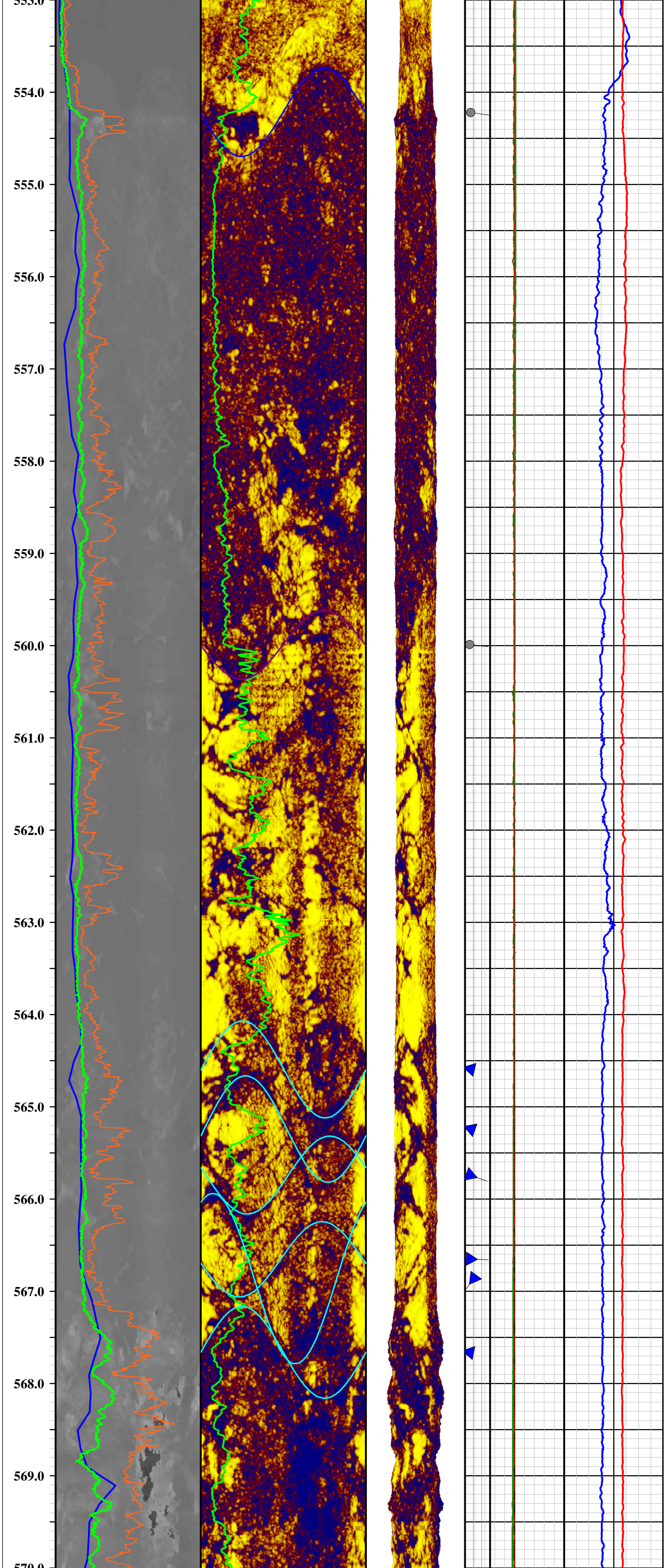
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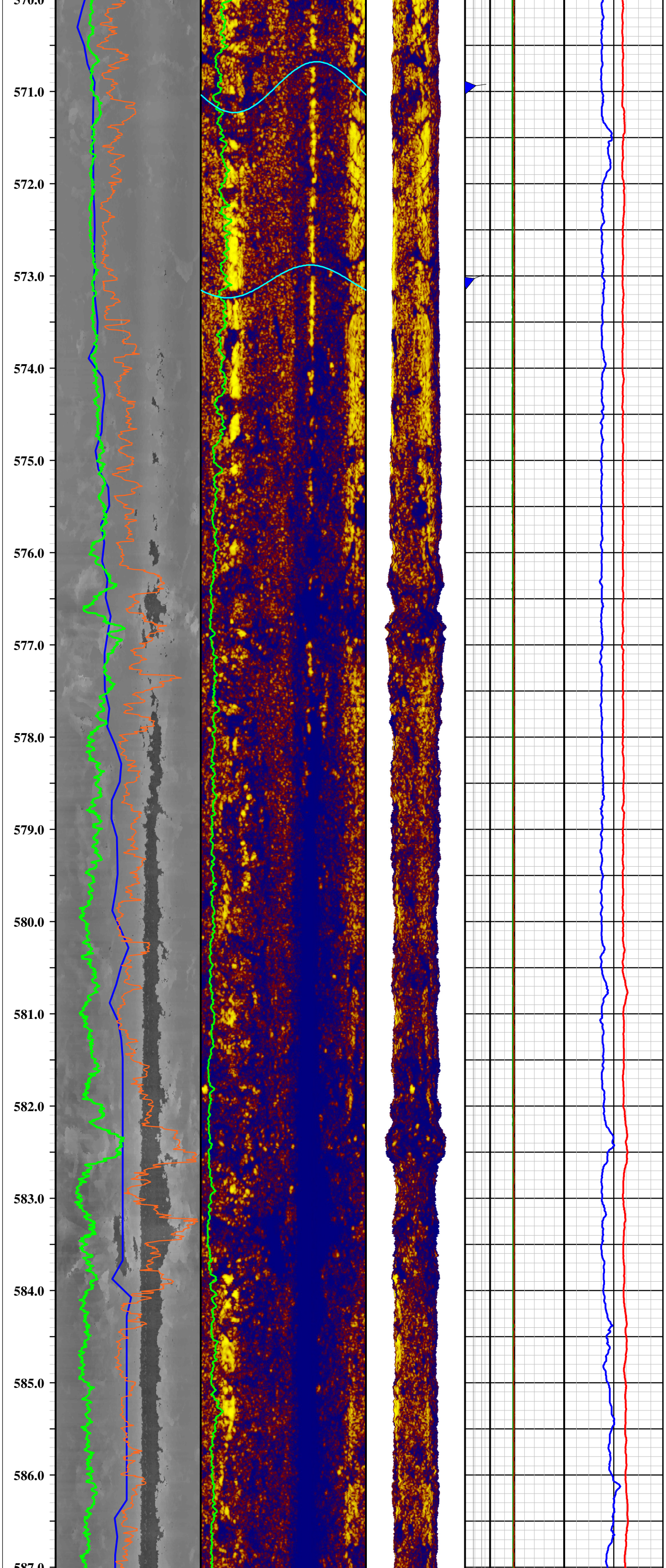
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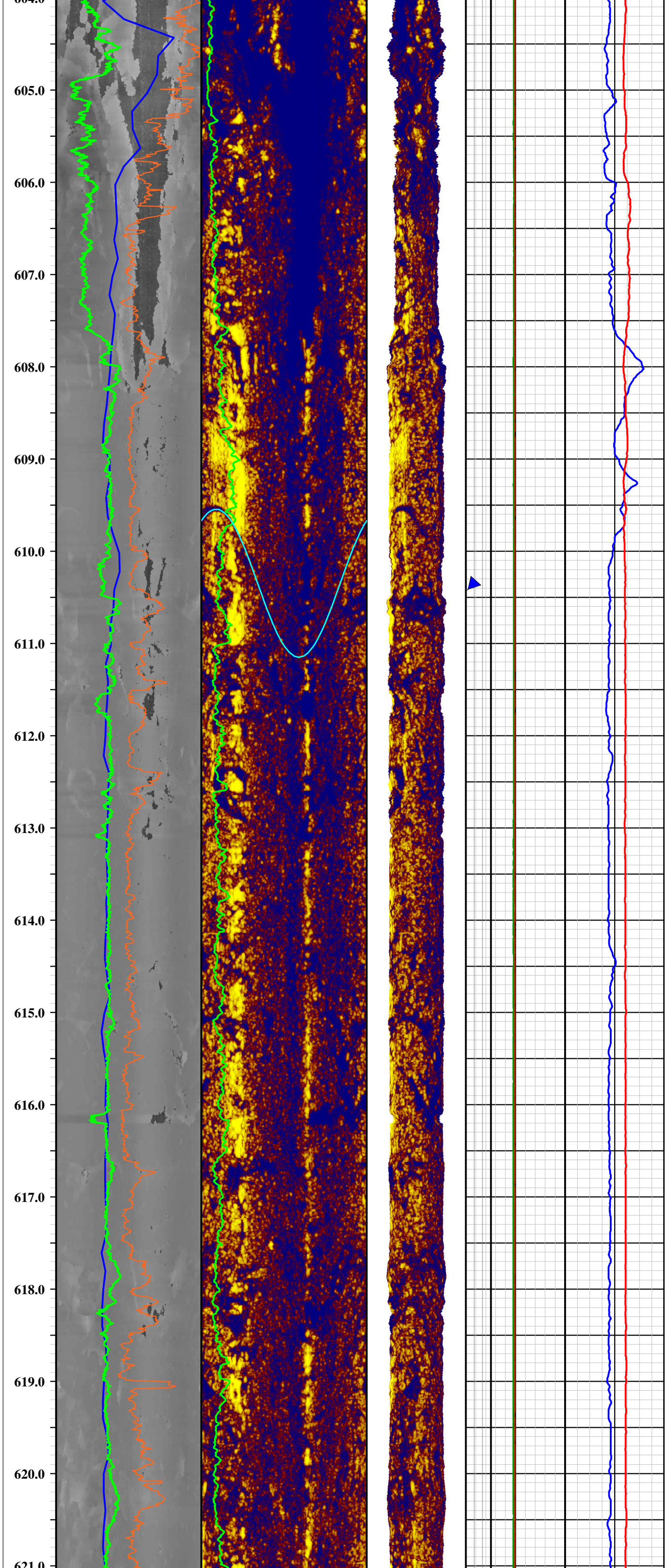
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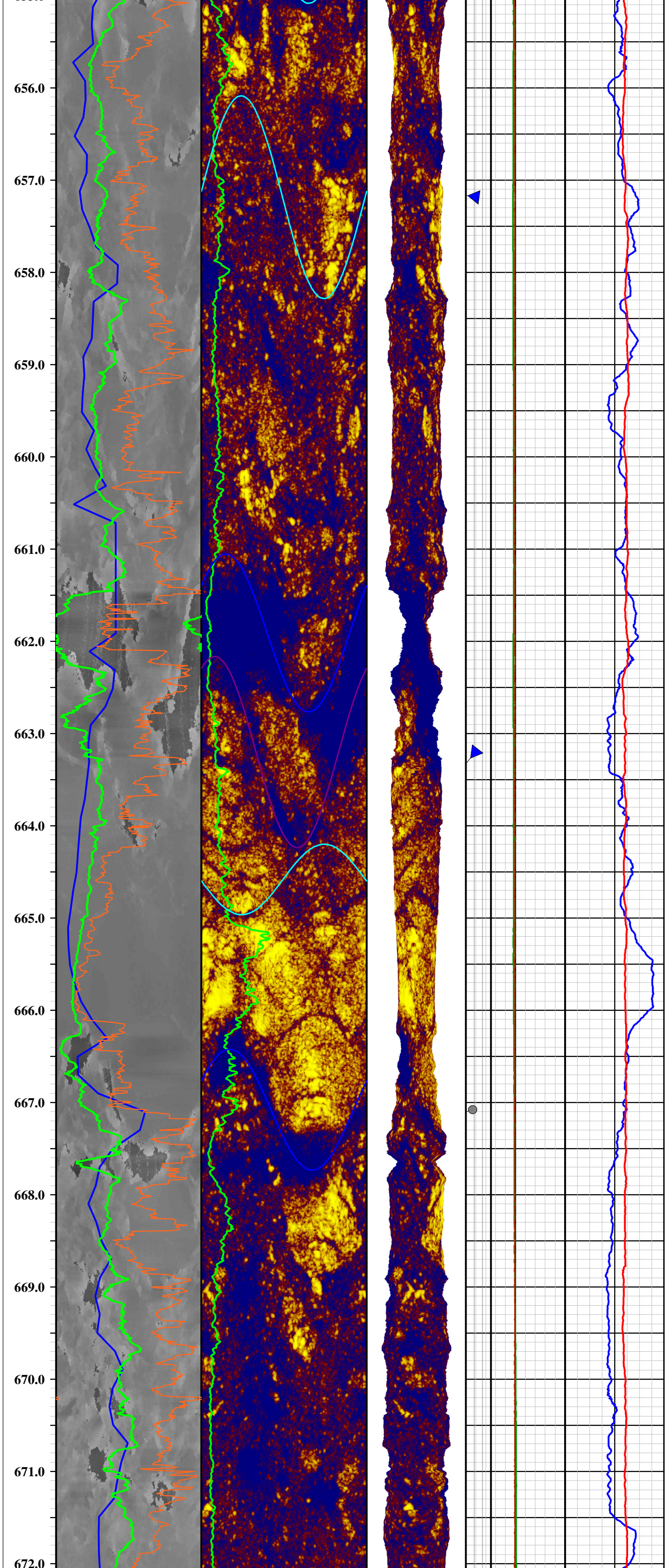
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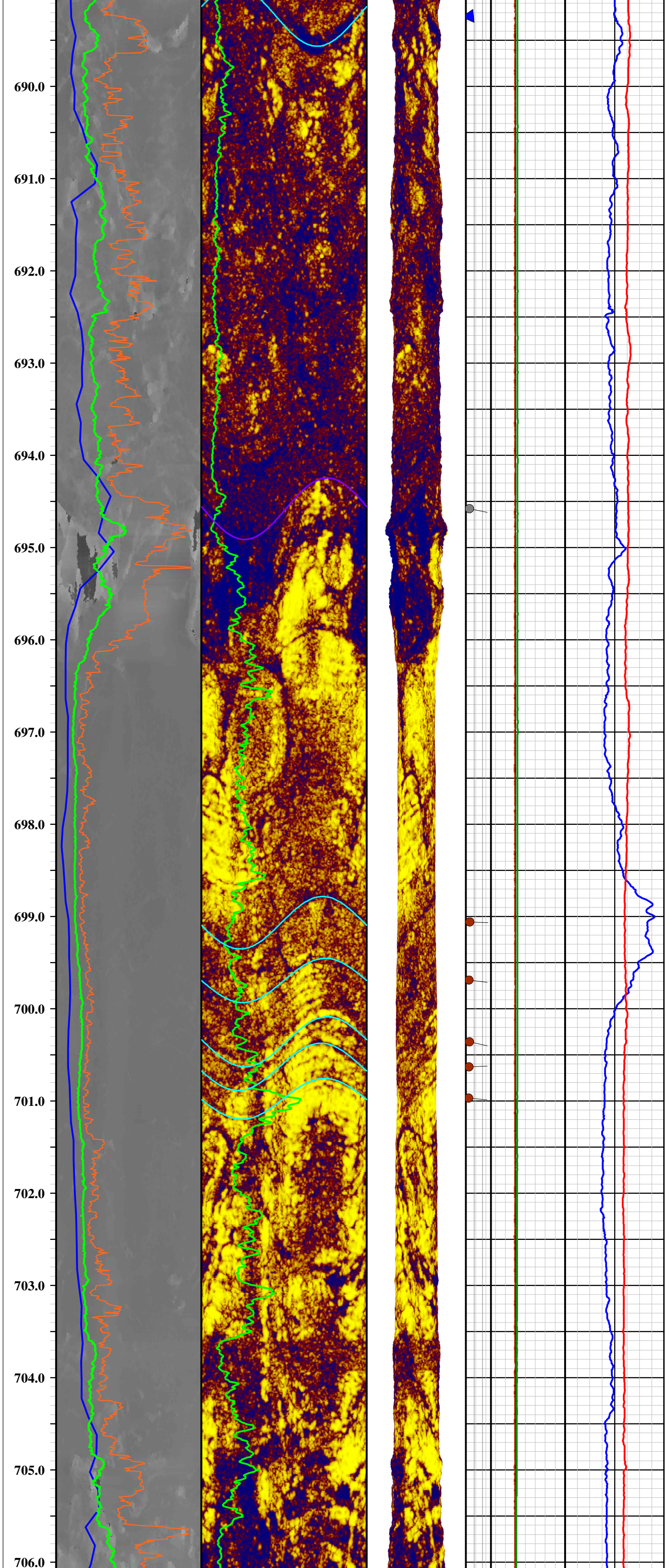
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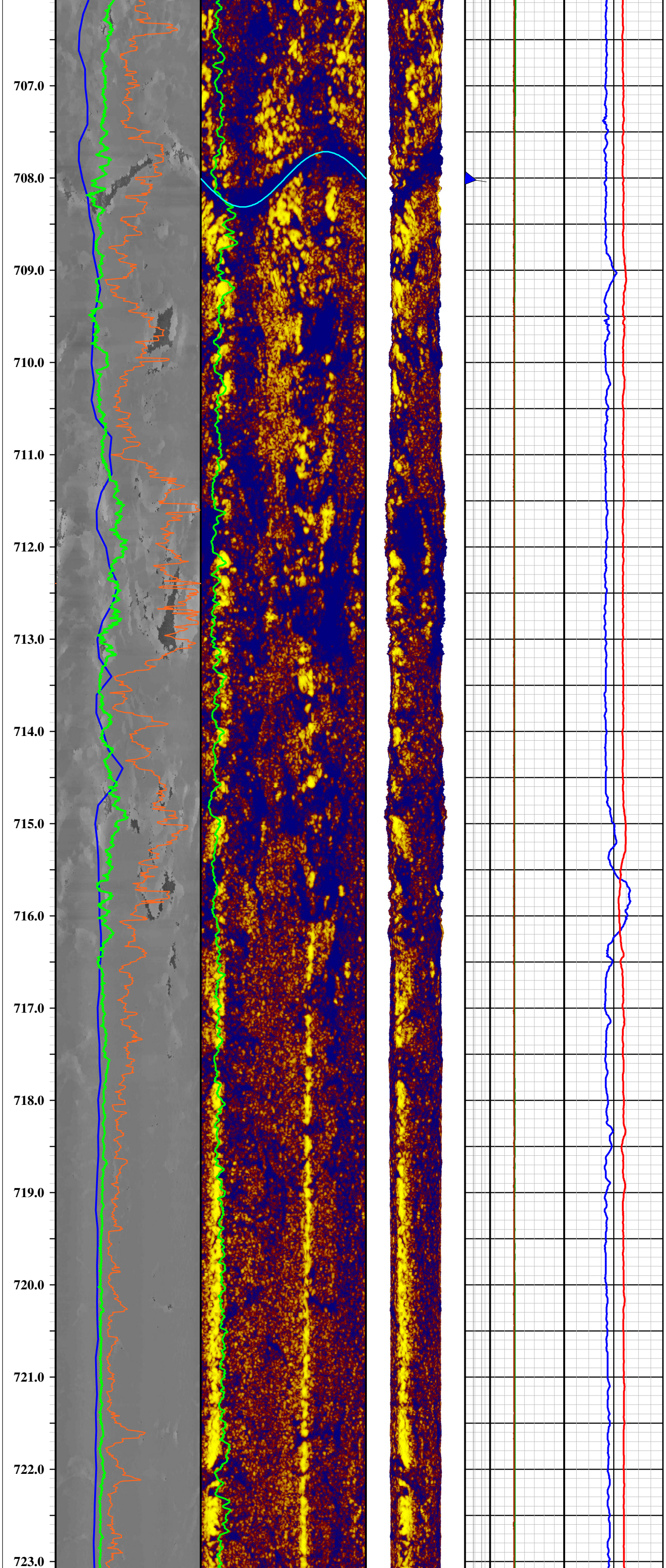
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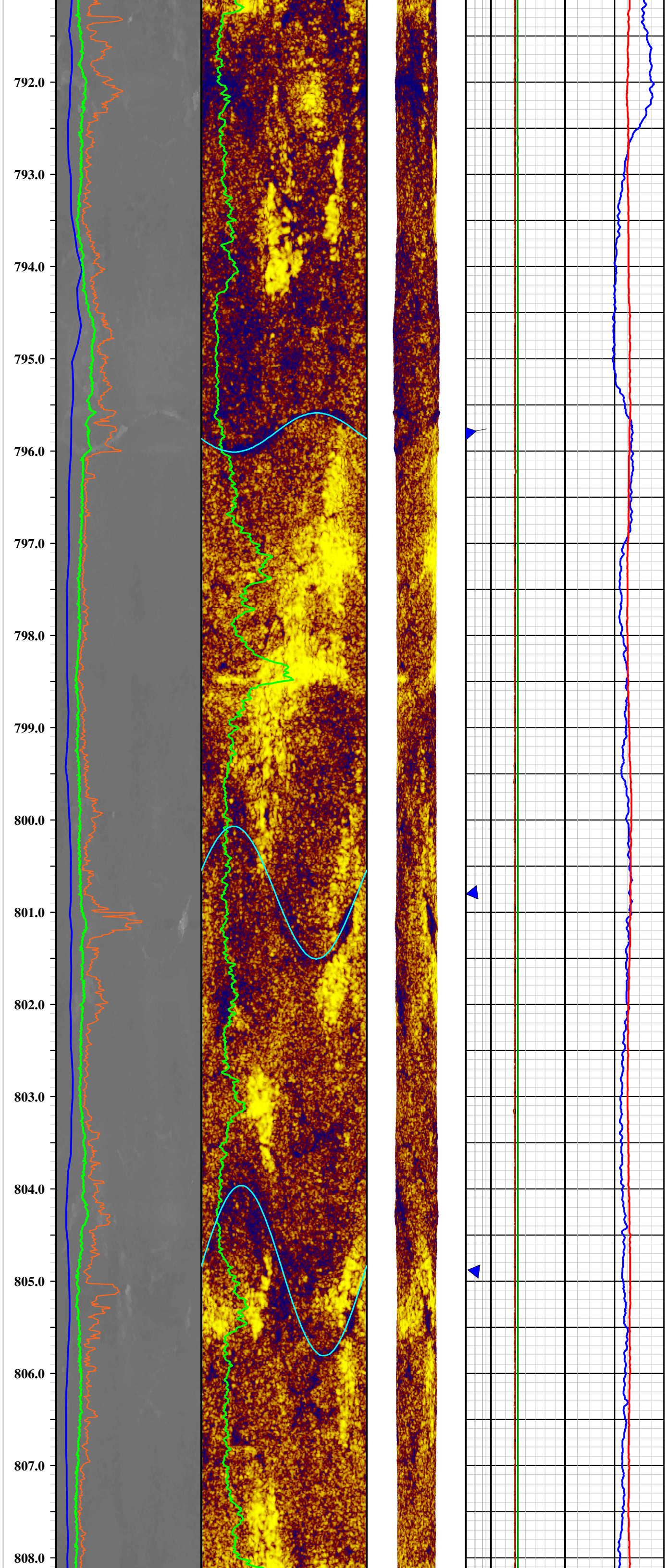
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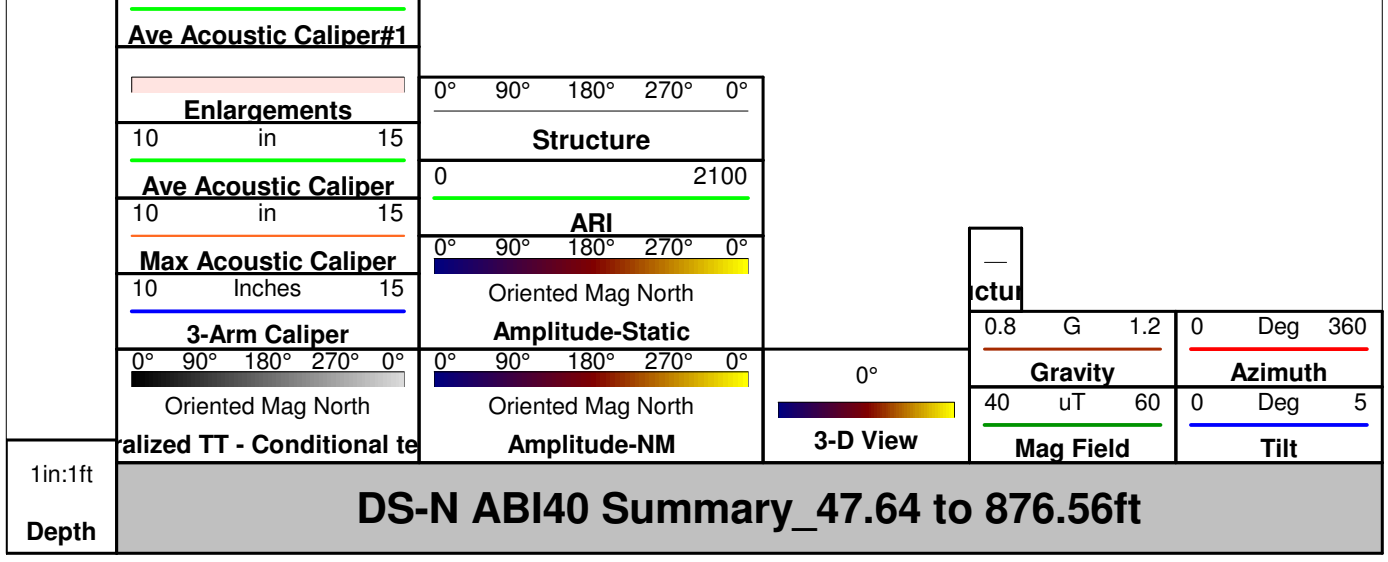


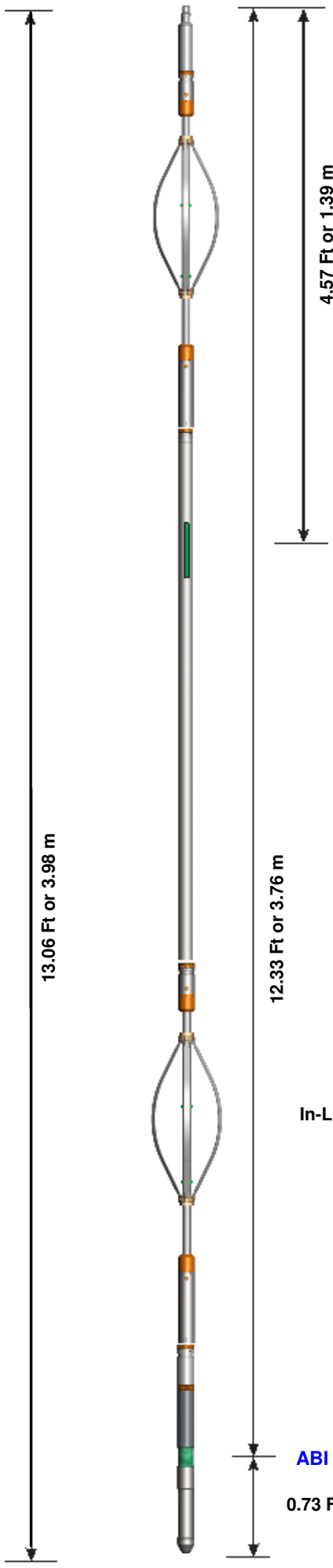
ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

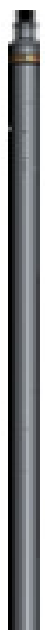
Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

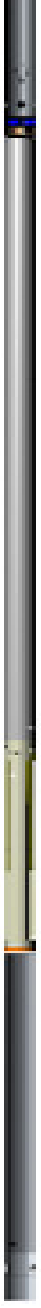
Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)



NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS-16-01
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final Acoustic Televiewer Summary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	DS-16-02		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

OTHER SERVICES
E-LOGS
DUAL INDUCTION
SONIC
GAMMA
TEMP/FLUID RES
OPTICAL TELEVIEWER

LOCATION	SEC	TWP	RGE		
PERMANENT DATUM			ELEVATION	K.B.	
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM	D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

DATE	9-21-16		TYPE FLUID IN HOLE	FORMATION WATER	
RUN No	6		MUD WEIGHT	N/A	
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY	N/A	
DEPTH-DRILLER	500.0 FT		LEVEL	~ 220 FT.	
DEPTH-LOGGER	500.0 FT		MAX. REC. TEMP.	29.1 DEG. C	
BTM LOGGED INTERVAL	497.0 FT		IMAGE ORIENTED TO:	MAGNETIC NORTH	
TOP LOGGED INTERVAL	208.0 FT		SAMPLE INTERVAL	0.010 FT	
DRILLER / RIG#	NATIONAL		LOGGING TRUCK	TRUCK #310	
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL		TOOL STRING/SN	ALT QL ABI40 2G SN 143003	
WITNESSED BY	MATT - M & A		LOG TIME:ON SITE/OFF SITE	7:00 A.M.	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 3/4	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	9-20-16	**Date**	9-21-16	**Date**	9-21-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	SPT CONT. GYRO	**Tool Model**	MSI COMBO TOOL	**Tool Model**	E-LOG 40GRP
Tool SN	1413	**Tool SN**	4953	**Tool SN**	5019
From	SURFACE	**From**	SURFACE	**From**	200.0 FT
To	400.0 FT	**To**	500.0 FT	**To**	500.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	9-19-16	**Operation Check**	9-19-16	**Operation Check**	9-19-16
Calibration Check	9-19-16	**Calibration Check**	9-19-16	**Calibration Check**	9-19-16
Time Logged	10:00 PM	**Time Logged**	7:30 AM	**Time Logged**	8:00 AM

Date	9-21-16	**Date**	9-21-16	**Date**	9-21-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	W&R DIL	**Tool Model**	ALT 4 RX SONIC	**Tool Model**	ALT ABI40 2G
Tool SN	3777	**Tool SN**	4572	**Tool SN**	143003
From	SURFACE	**From**	200.0 FT	**From**	208.0 FT
To	500.0 FT	**To**	500.0 FT	**To**	497.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	9-19-16	**Operation Check**	9-19-16	**Operation Check**	9-19-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	8:45 AM	**Time Logged**	9:15 AM	**Time Logged**	9:45 AM

Additional Comments:

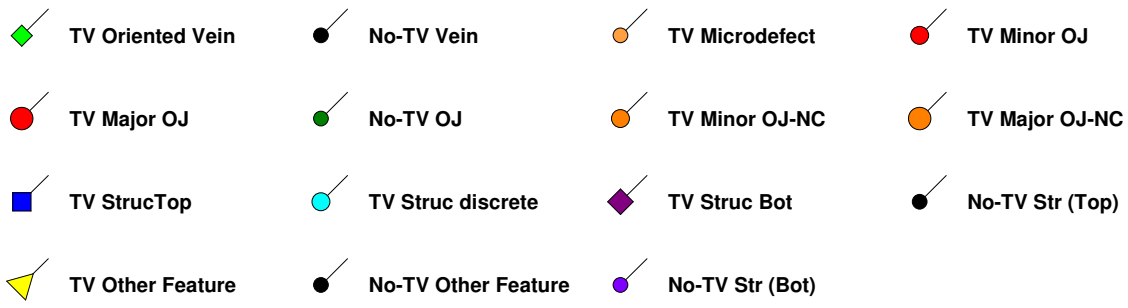
Caliper Arms Used: 9 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend



Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS-16-02 (DS-M) ABI43 Summary 208.38 to 496.55ft

Depth 1in:2ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

3-D View — 0°

WndTime — 0 us 50

Tilt — 0 Deg 16

Mag Field — 40 uT 60

Azimuth — 0 Deg 360

Gravity — 0.8 G 1.2

RBR — -90 Deg 270

3-Arm Caliper — 0 Inches 15

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

Max Acoustic Caliper — 0 in 15

ARI — 0 2100

Ave Acoustic Caliper — 0 in 15

Structure — 0° 90° 180° 270° 0°

Enlargements

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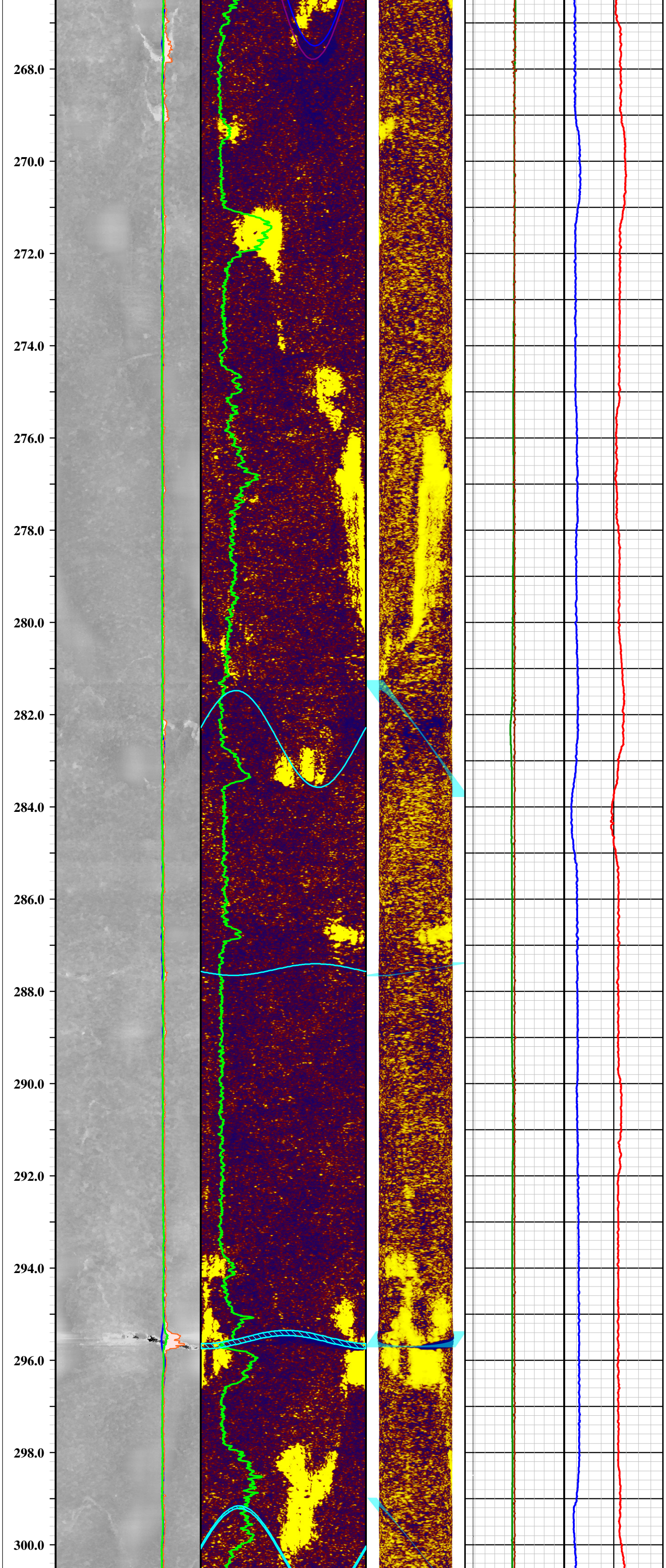
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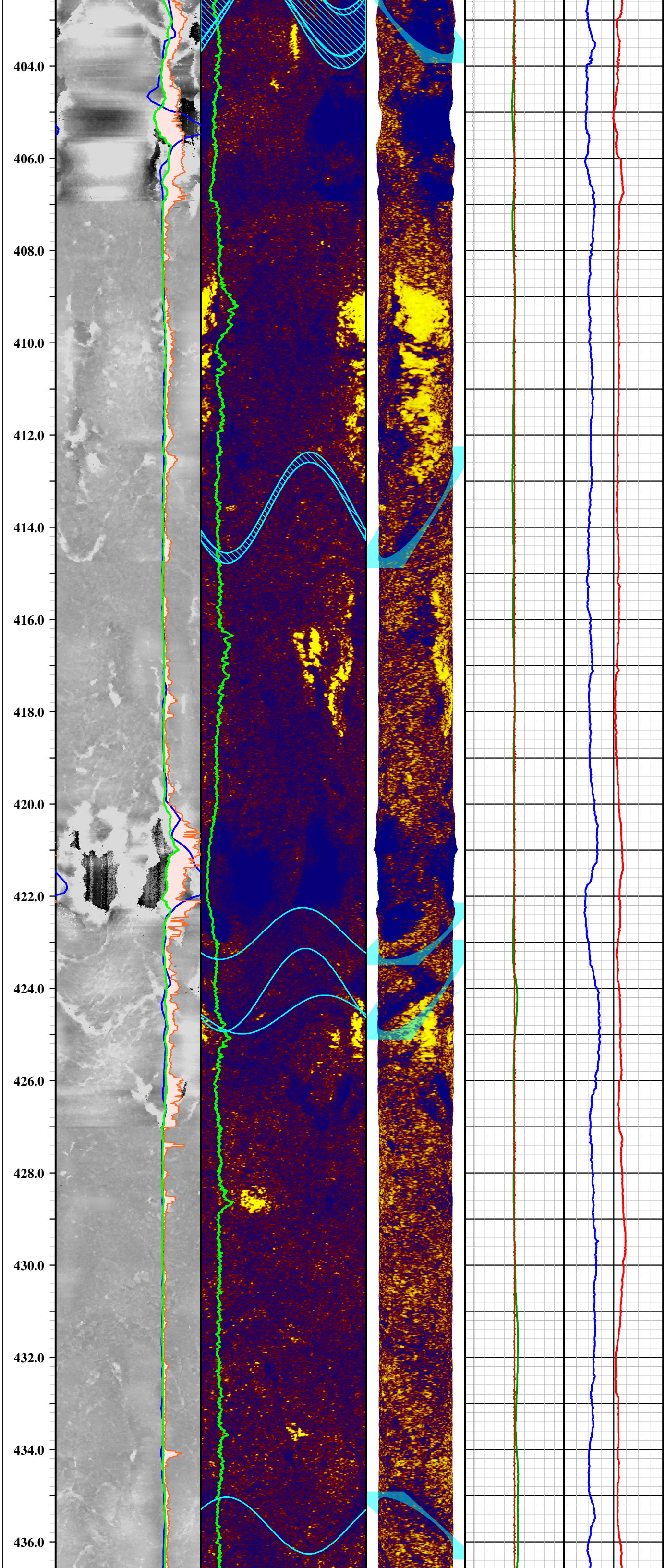
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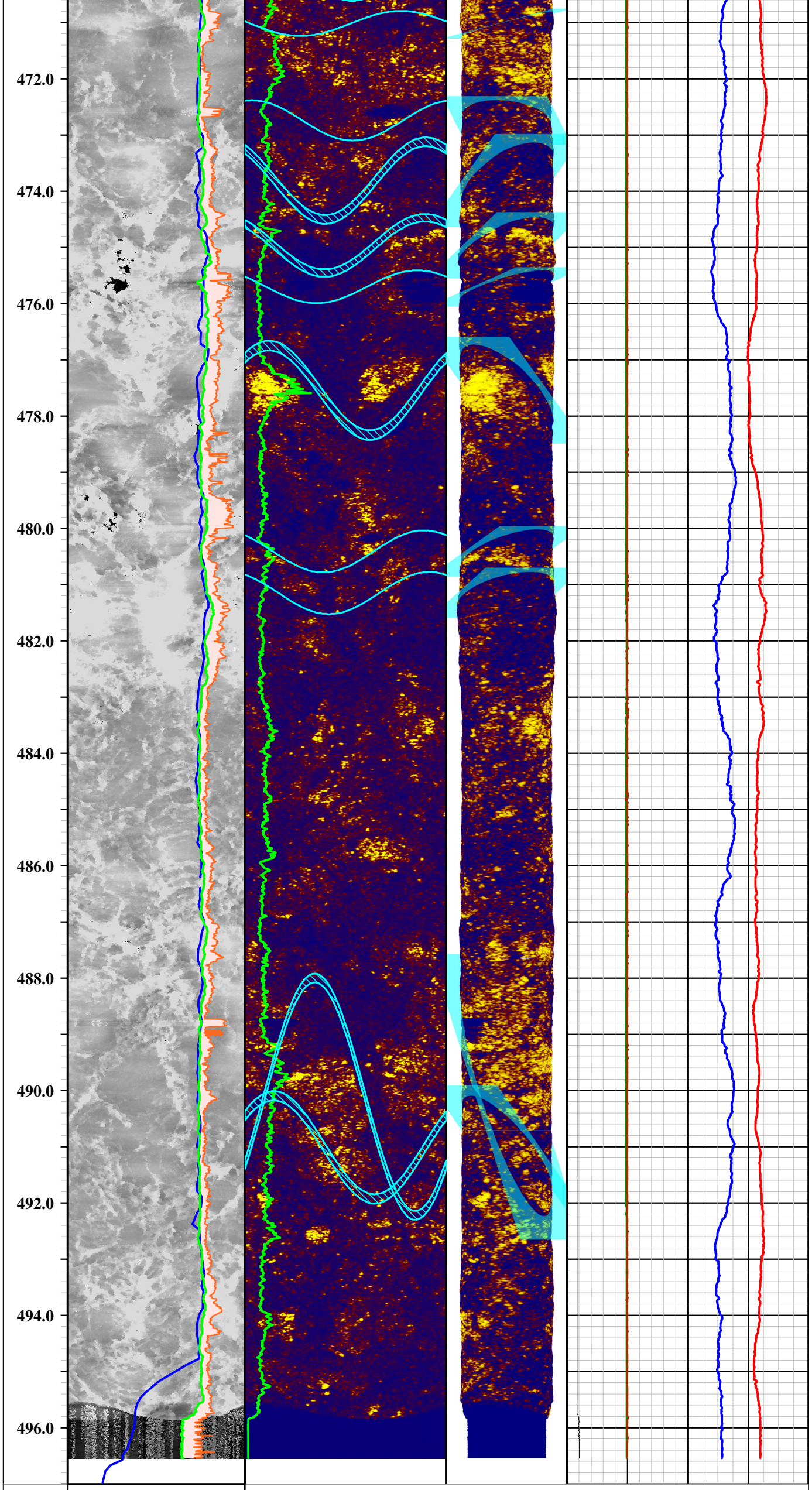


DS-16-02 (DS-M) ABI43 Summary 208.38 to 496.55ft

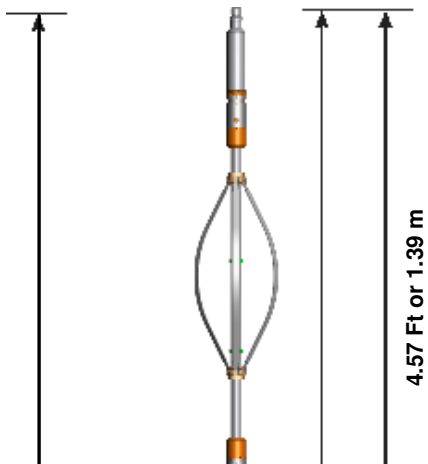
ABI Legend

Mnemonics	Description

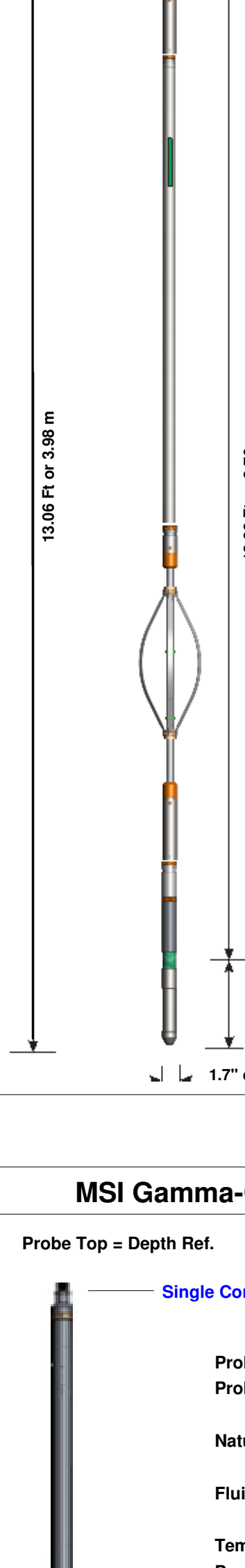
ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers



Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

ABI Imaging Window

0.73 Ft or 0.22 m

1.7" or 43 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

Available Arm Sizes: 3", 9", and 15



TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS-16-02
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	DS16-03 (DS-F)		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: GAMMA - CALIPER
MORE: TEMP. / FLUID RES.

LOCATION
D(1-12)30abc

SEC 1 S TWP 12 E RGE 30

OTHER SERVICES
E-LOGS
SONIC
GAMMA
TEMP/FLUID RES
GYRO

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	10-02-16	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	5	MUD WEIGHT	N/A
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	715.0 FT	LEVEL	~ 32 FT.
DEPTH-LOGGER	171.0 FT	MAX. REC. TEMP.	31.2 DEG. C
BTM LOGGED INTERVAL	717.0 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	30.0 FT	SAMPLE INTERVAL	0.010 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM / K. MITCHELL	TOOL STRING/SN	ALT QL ABI40 2G SN 143003
WITNESSED BY	MELISSA - M & A	LOG TIME:ON SITE/OFF SITE	3:00 PM

RUN	BOREHOLE RECORD		CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 3/4	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	10-02-16	**Date**	10-02-16	**Date**	10-02-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	SPT CONT. GYRO	**Tool Model**	MSI COMBO TOOL	**Tool Model**	E-LOG 40GRP
Tool SN	1413	**Tool SN**	4953	**Tool SN**	5514
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	650.0 FT	**To**	717.0 FT	**To**	717.0 FT
Recorded By	E. BEAM	**Recorded By**	M. QUINONES	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	9-19-16	**Operation Check**	9-19-16	**Operation Check**	9-19-16
Calibration Check	9-19-16	**Calibration Check**	9-19-16	**Calibration Check**	9-19-16
Time Logged	4:00 PM	**Time Logged**	10:00 PM	**Time Logged**	10:45 PM

Date	10-02-16	**Date**	10-02-16	**Date**	
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT 4 RX SONIC	**Tool Model**	ALT QL ABI40 2G	**Tool Model**	
Tool SN	4572	**Tool SN**	143003	**Tool SN**	
From	SURFACE	**From**	30.0 FT	**From**	
To	717.0 FT	**To**	717.0 FT	**To**	
Recorded By	E. BEAM	**Recorded By**	M. QUINONES	**Recorded By**	
Truck No	310	**Truck No**	310	**Truck No**	
Operation Check	9-19-16	**Operation Check**	9-19-16	**Operation Check**	
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	
Time Logged	11:30 PM	**Time Logged**	12:15 AM	**Time Logged**	

Additional Comments:

Caliper Arms Used: 9 IN. **Calibration Points:** 6 IN. & 12 IN.

E-Log Calibration Range: 1-1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

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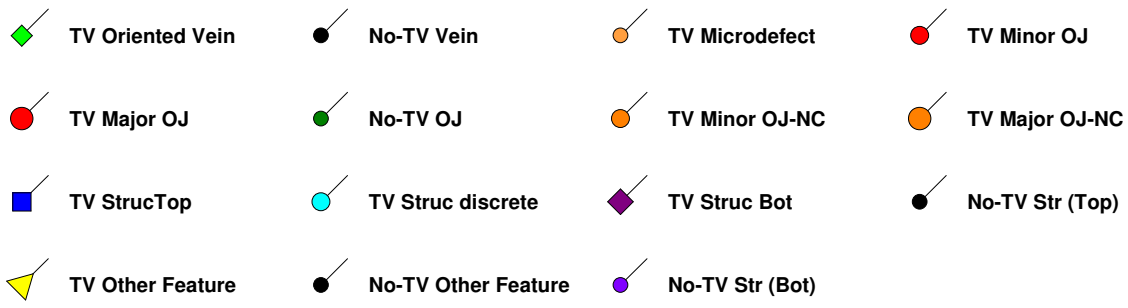
Acoustic Image Features Legend



Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS-16-03 (DS-F) ABI40 Summary 29.67 to 718.27ft

Depth
1in:1ft

Centralized TT
Oriented Mag North
0° 90° 180° 270° 0°

3-Arm Caliper
3 Inches 8

Amplitude-NM
Oriented Mag North
0° 90° 180° 270° 0°

Amplitude-Static
Oriented Mag North
0° 90° 180° 270° 0°

ARI
0 2100

Structure
0° 90° 180° 270° 0°

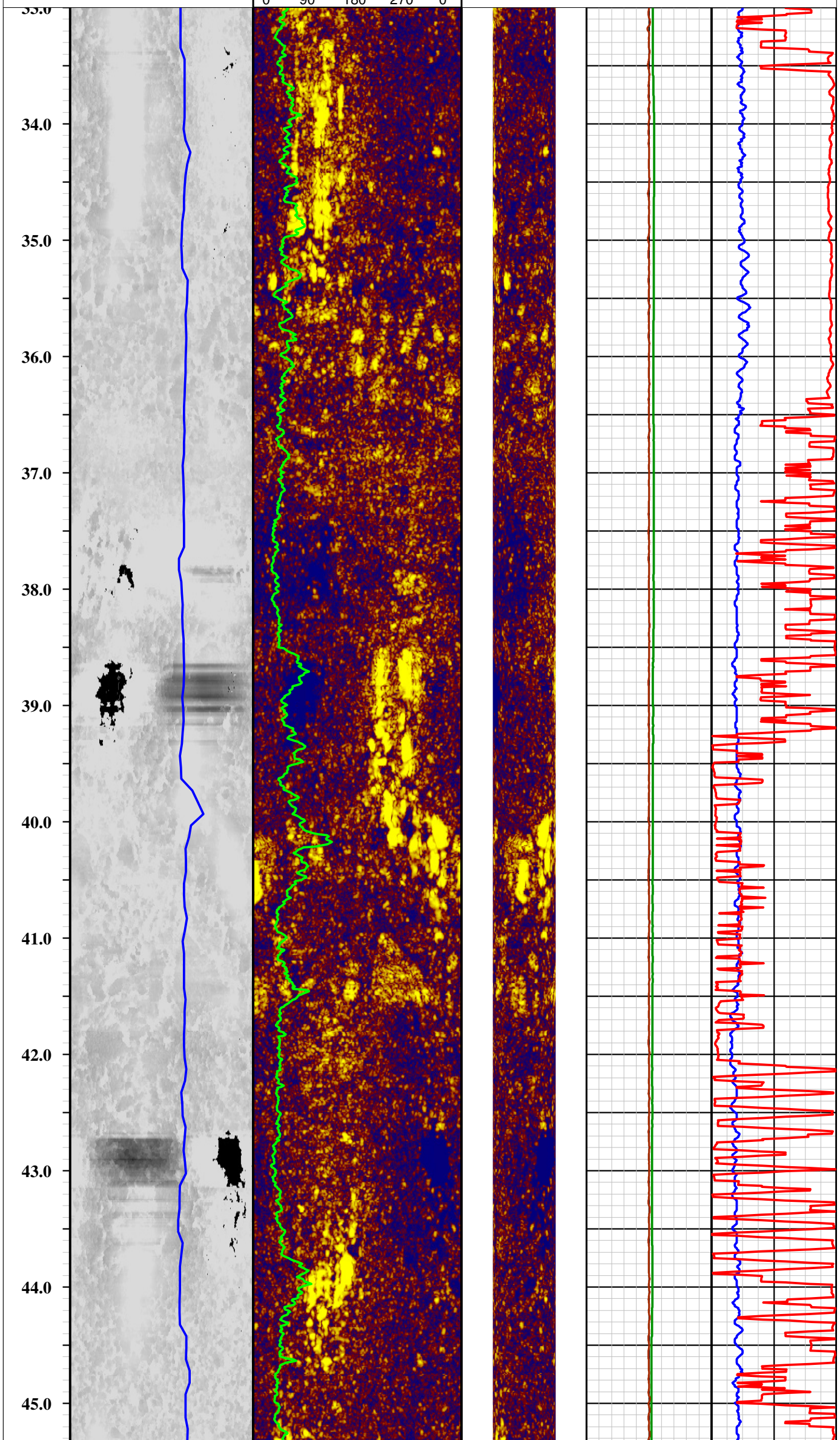
3-D View
0°

Mag Field
40 uT 60

Gravity
0.8 G 1.2

Tilt
0 Deg 2

Azimuth
0 Deg 360



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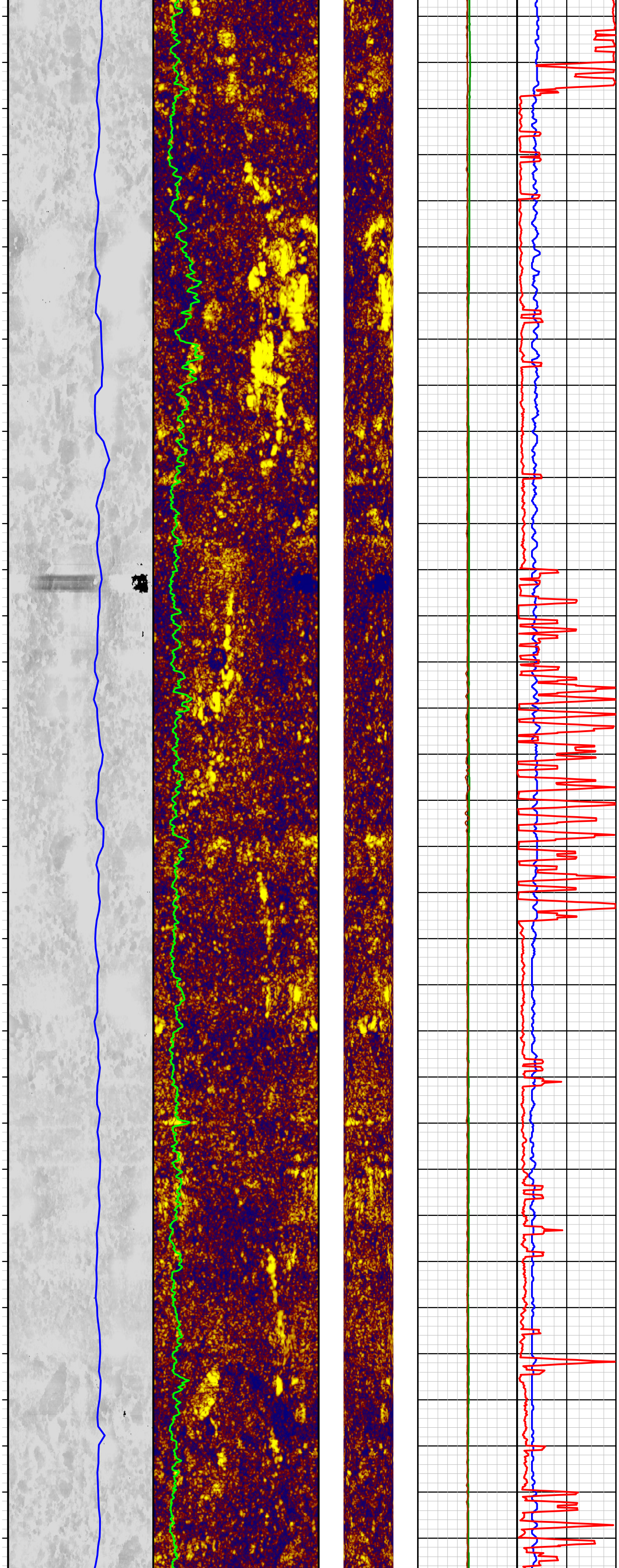

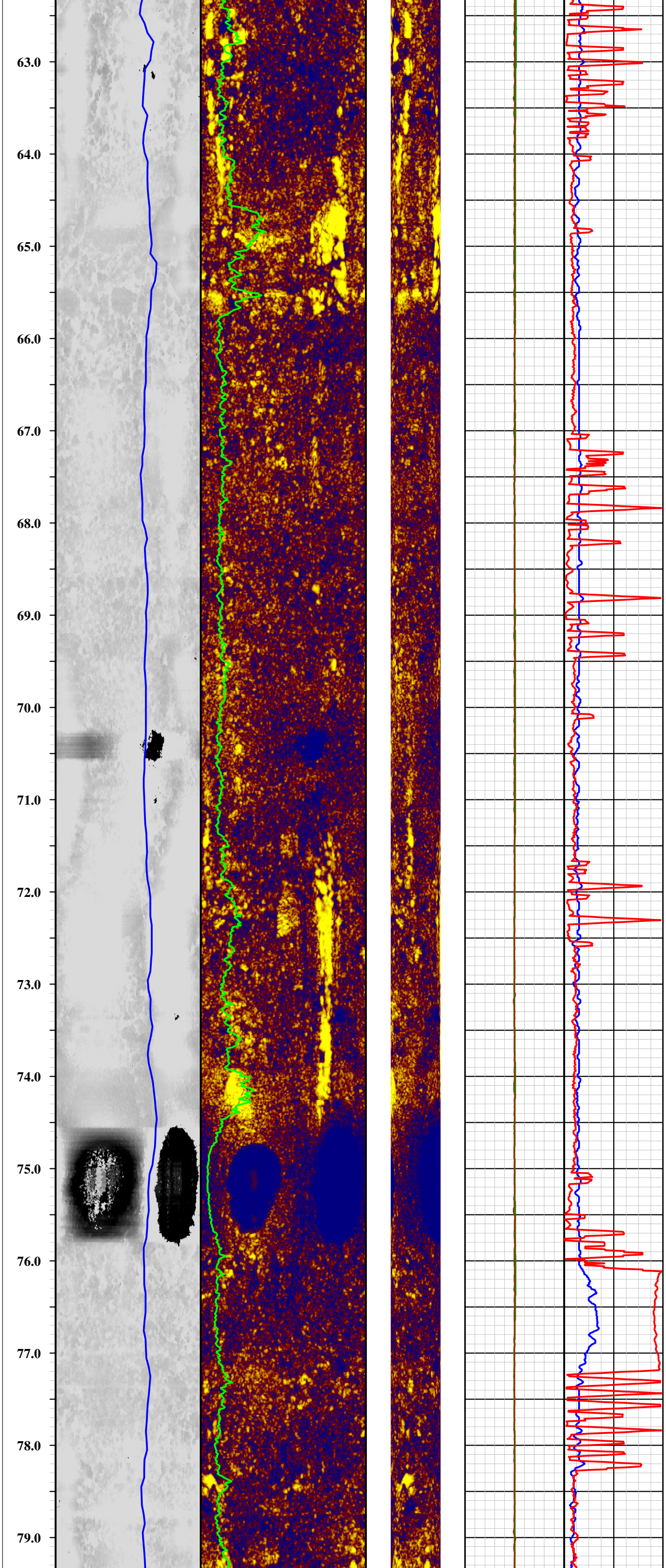
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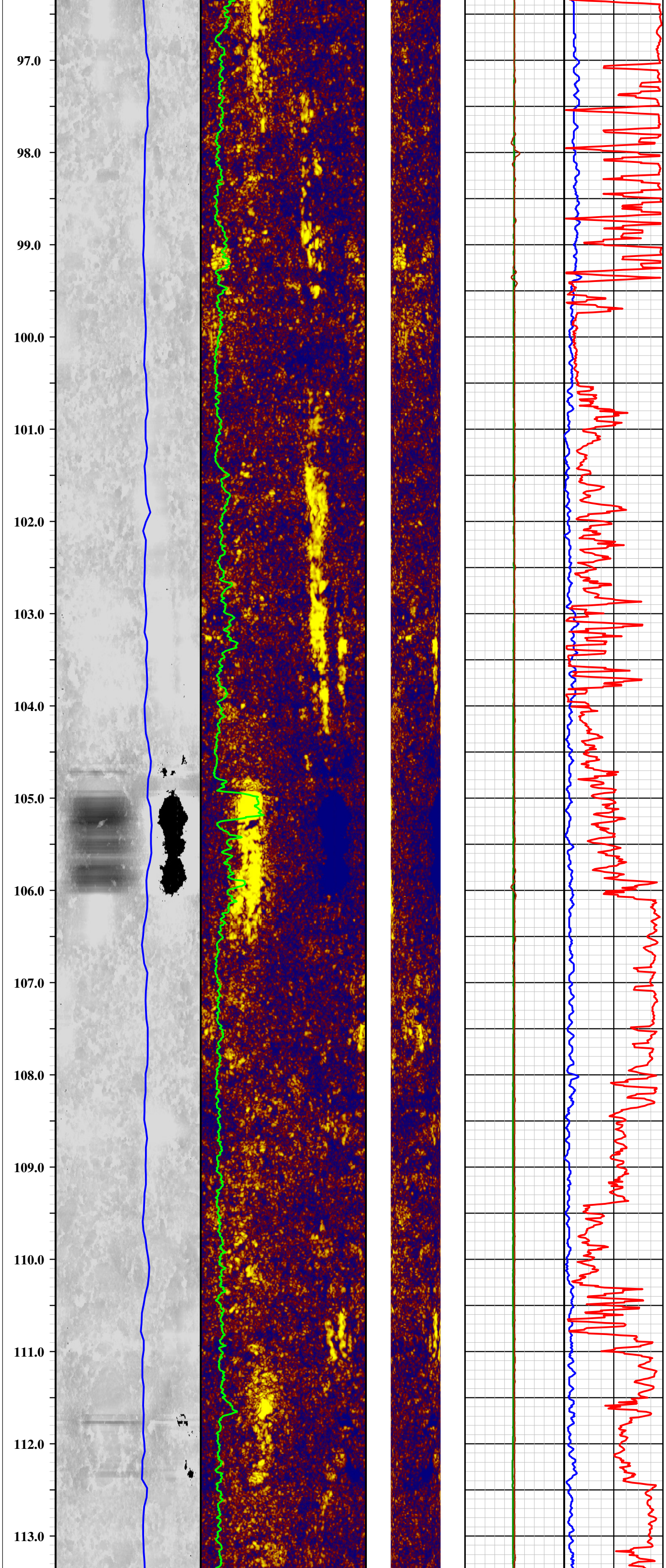
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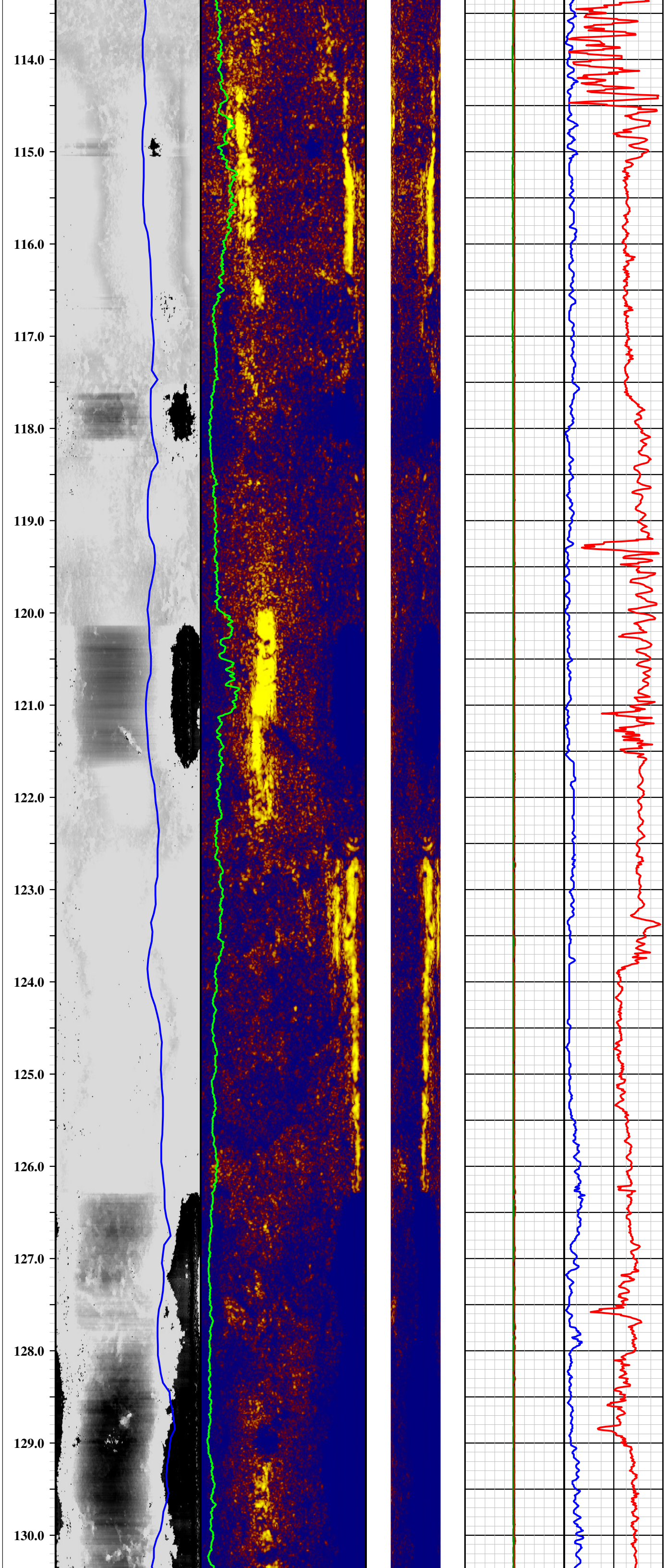
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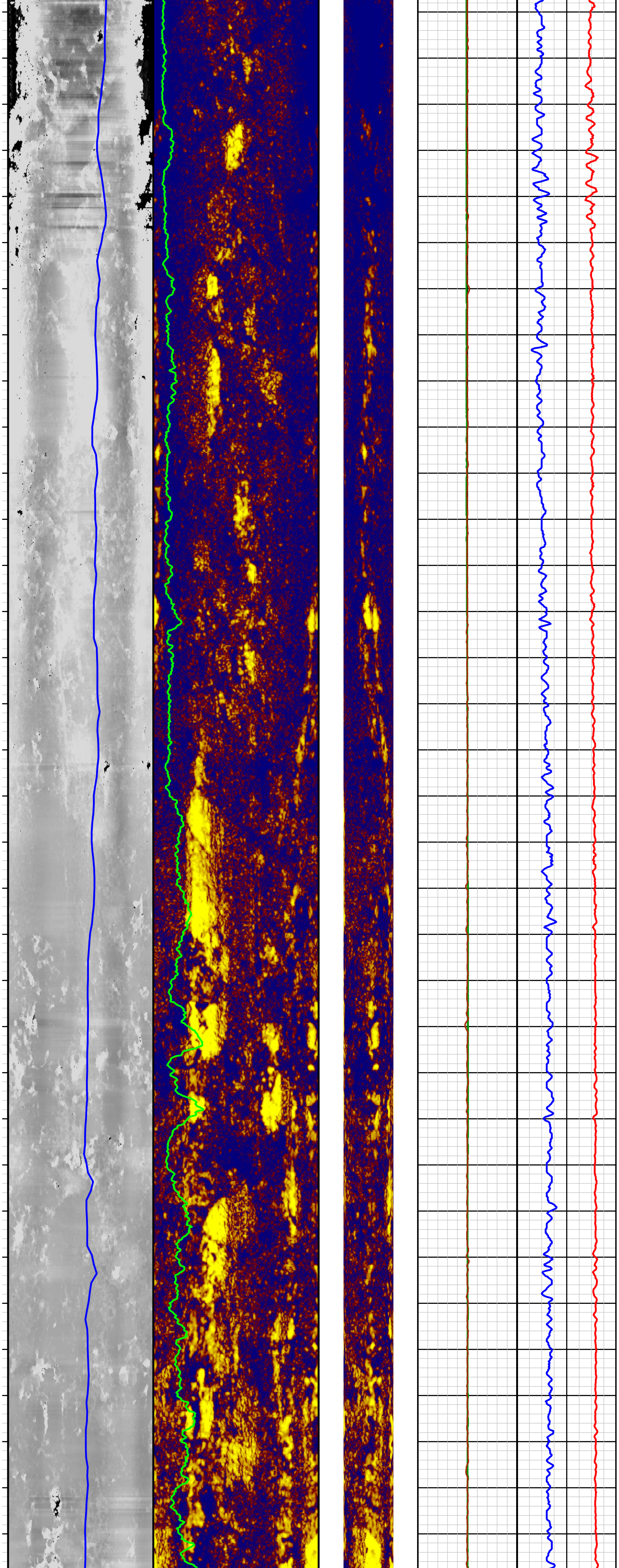

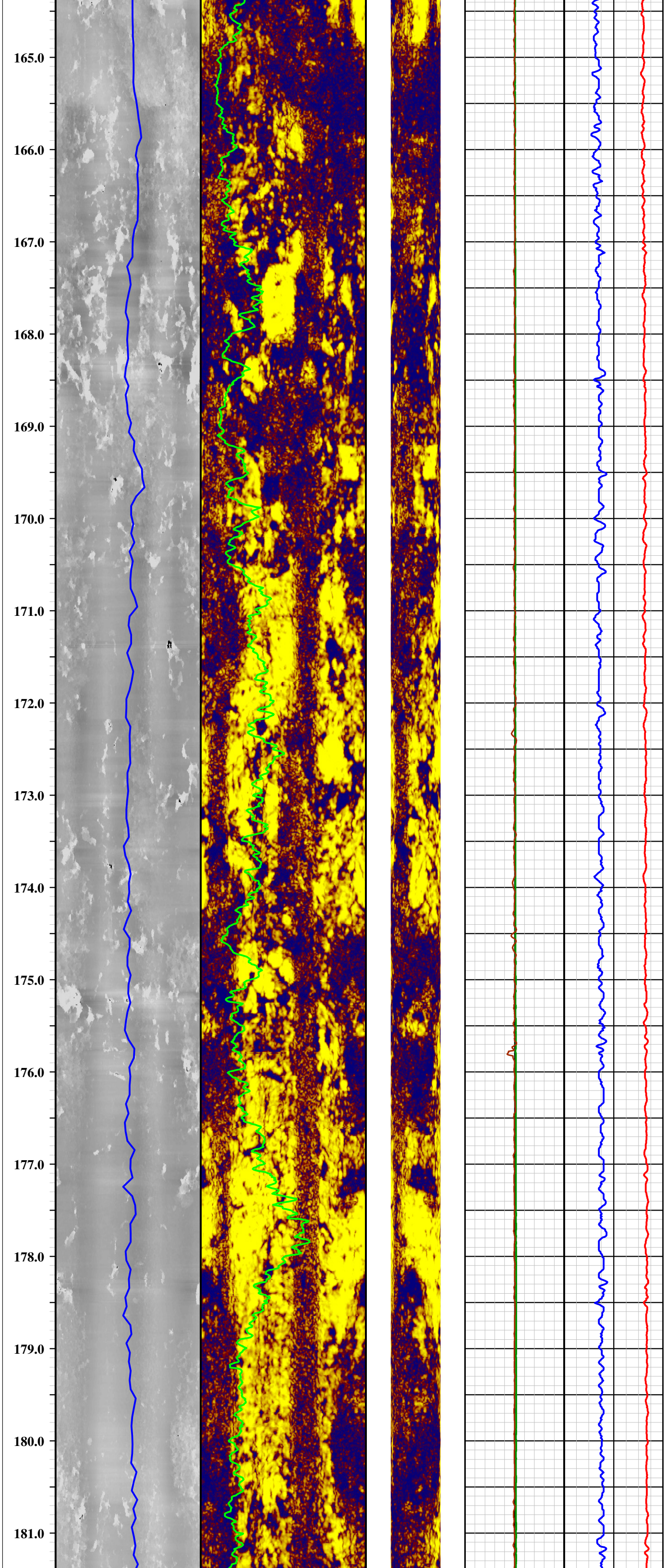
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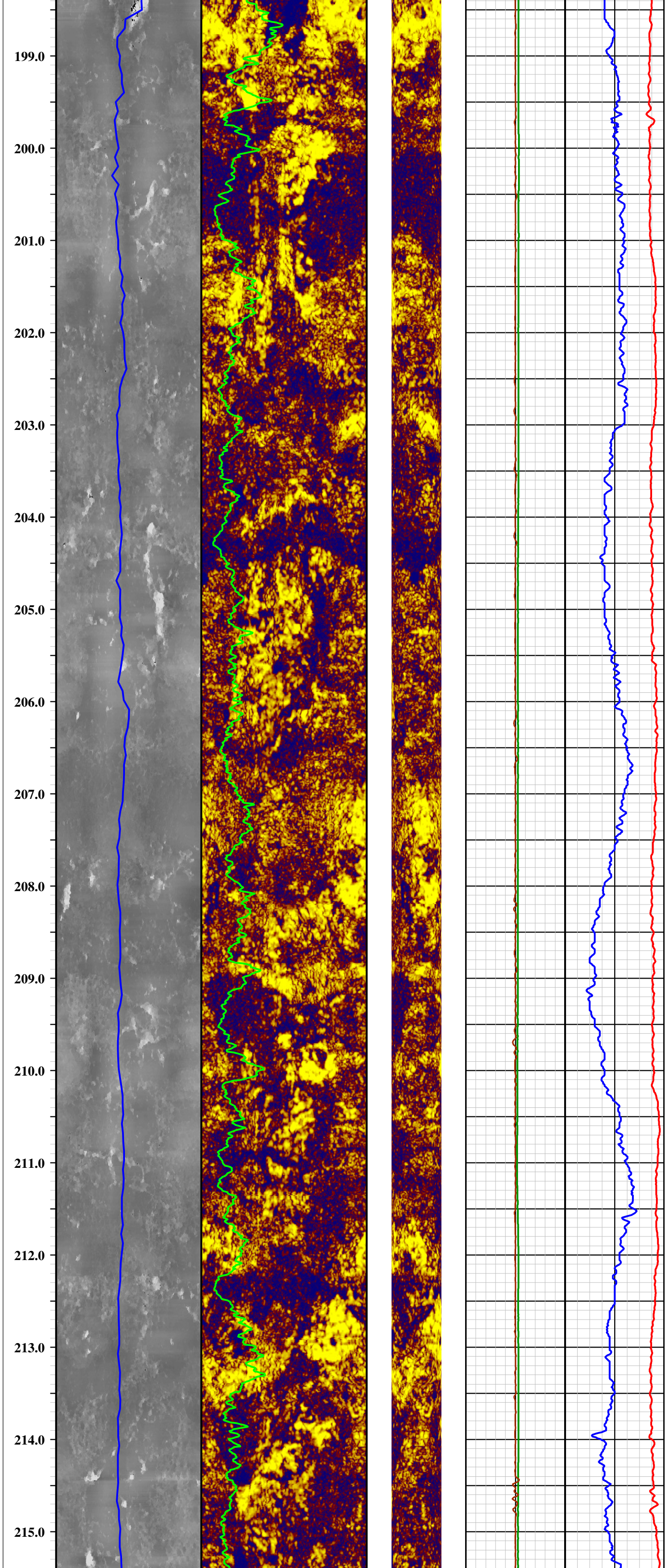

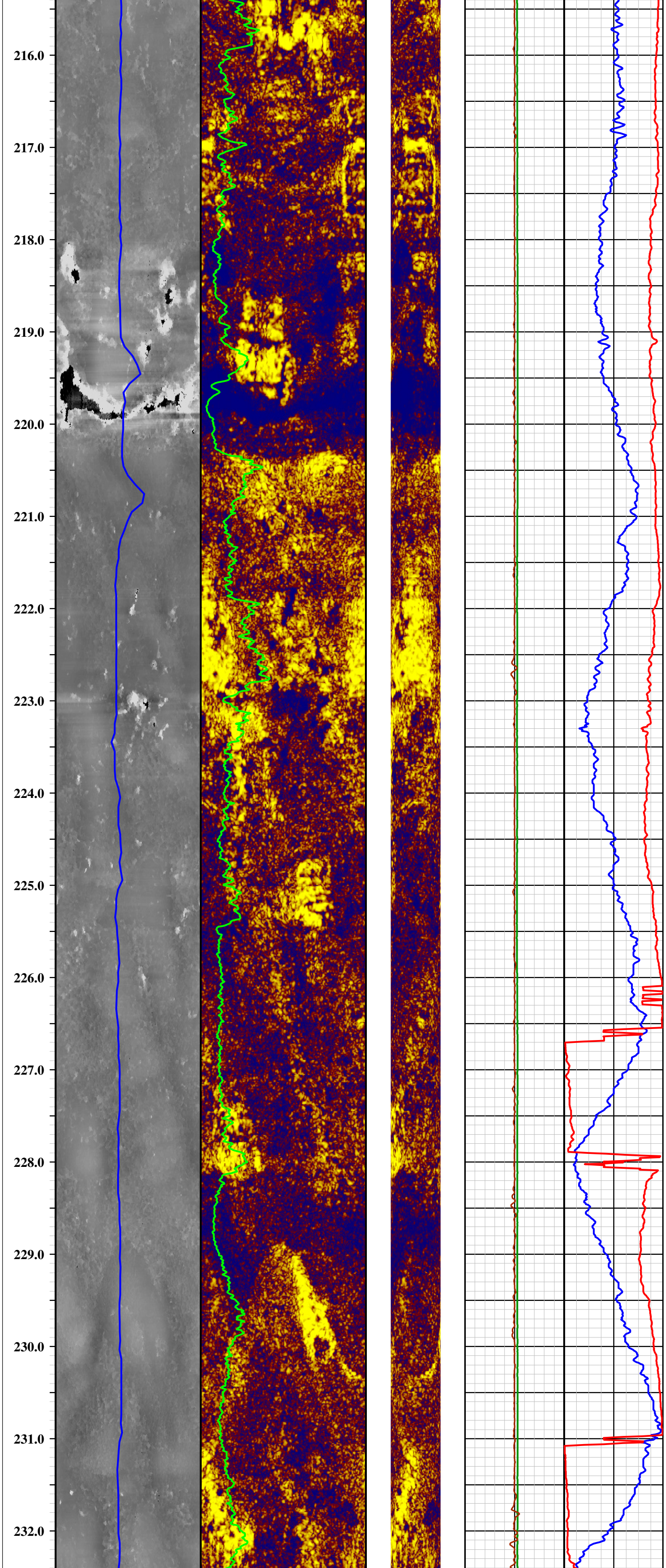
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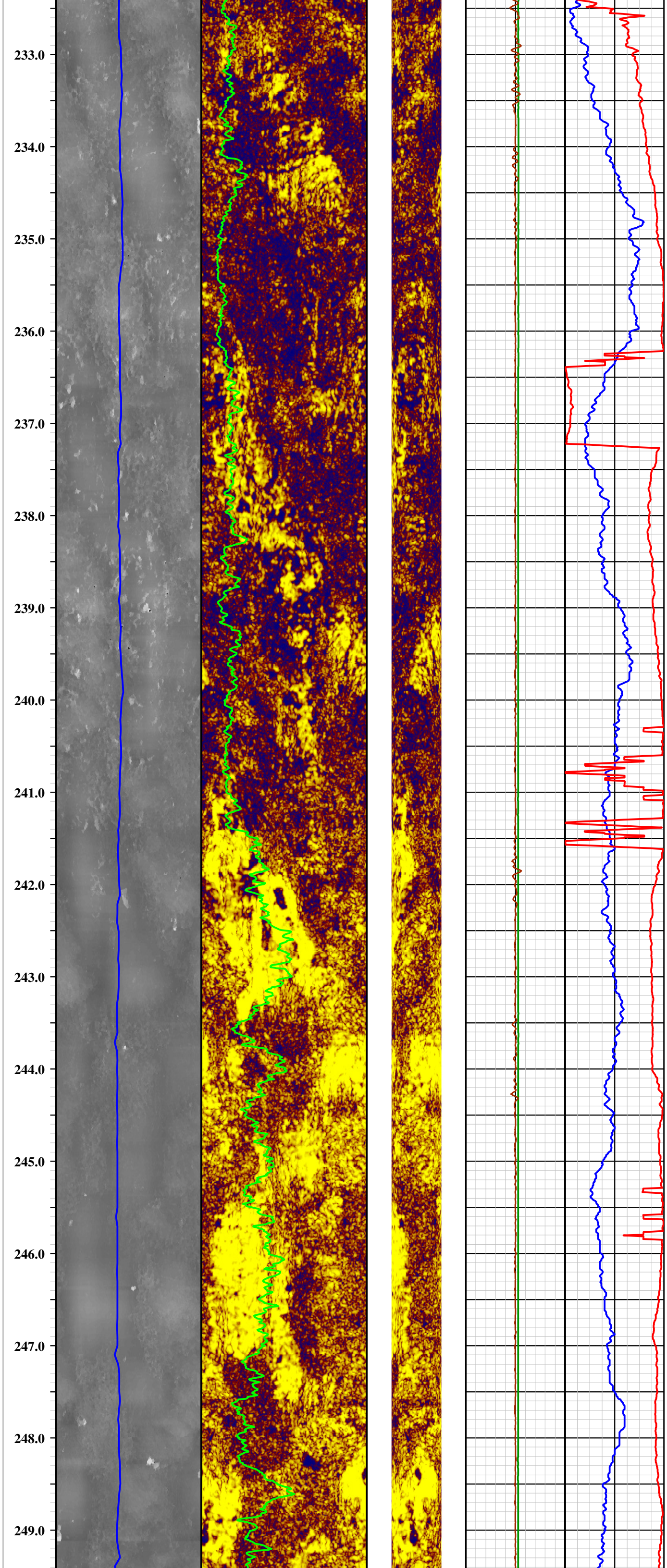
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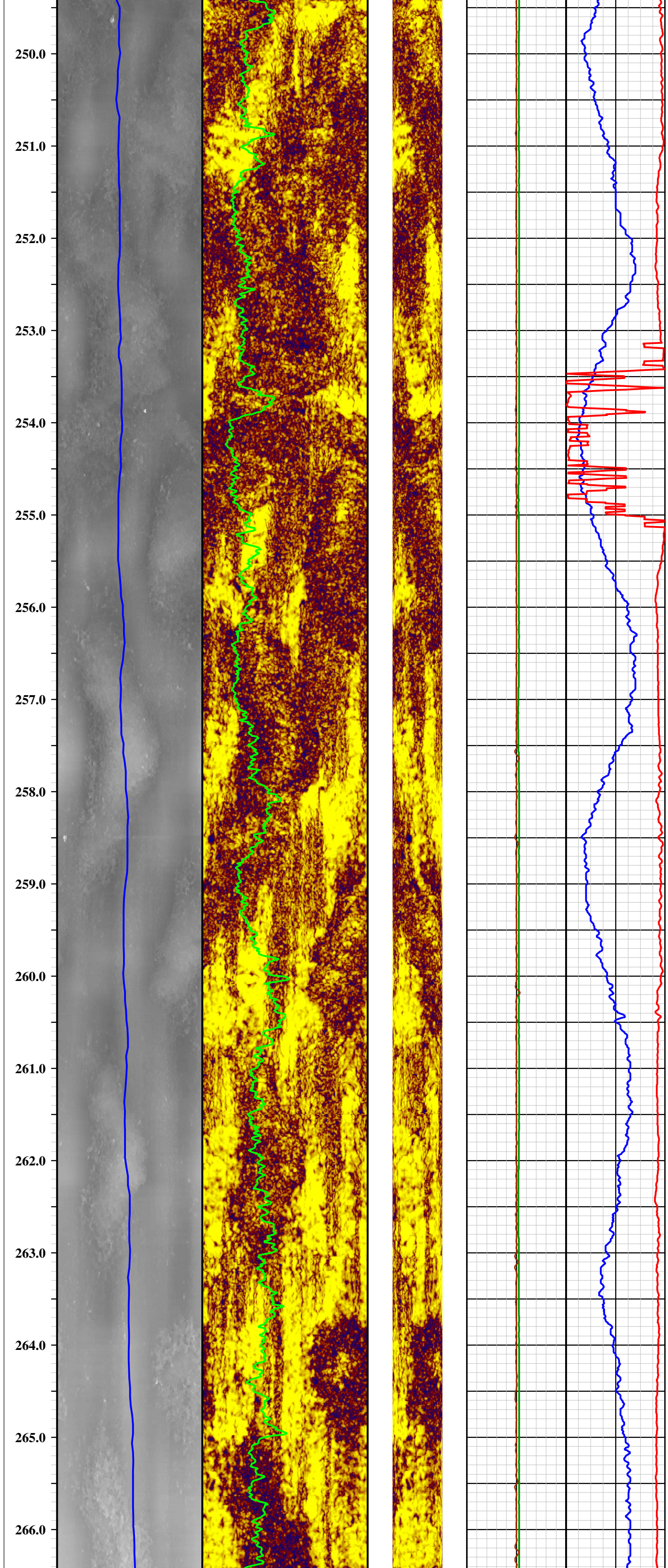

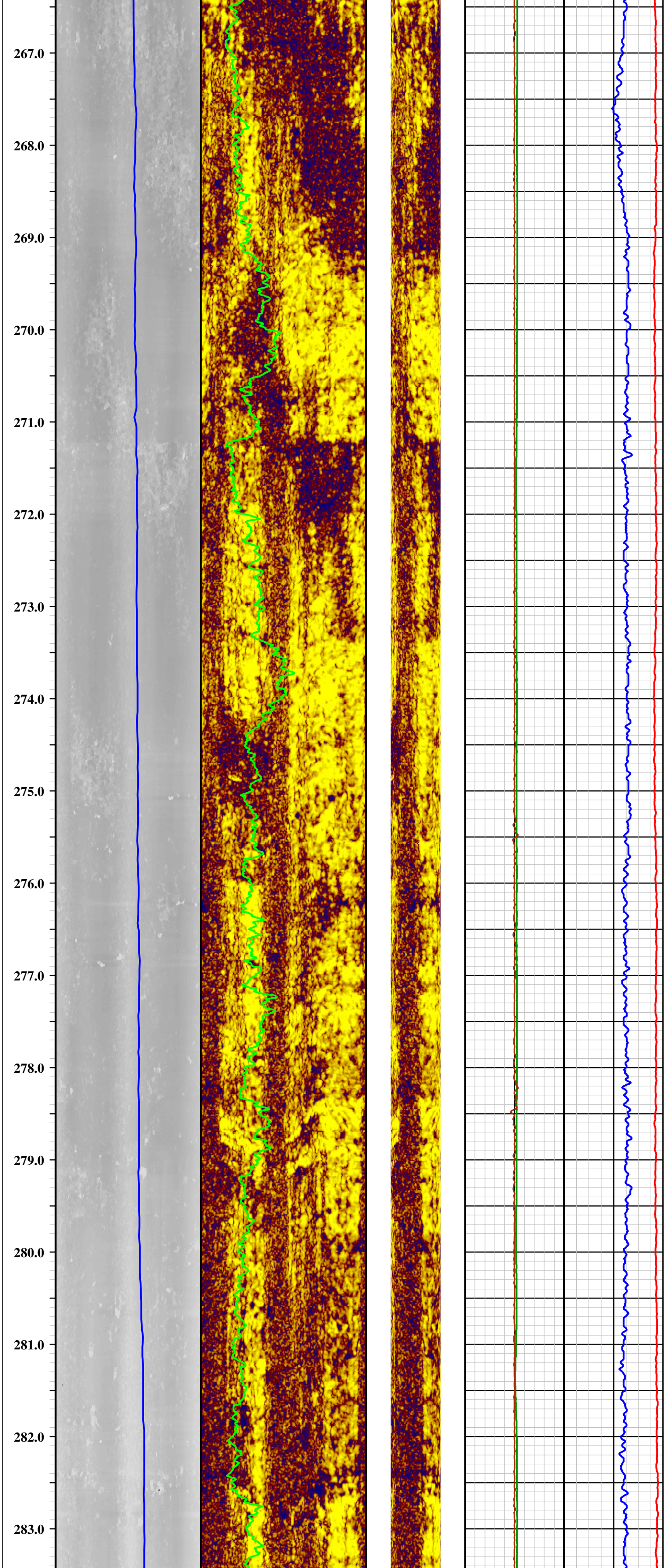
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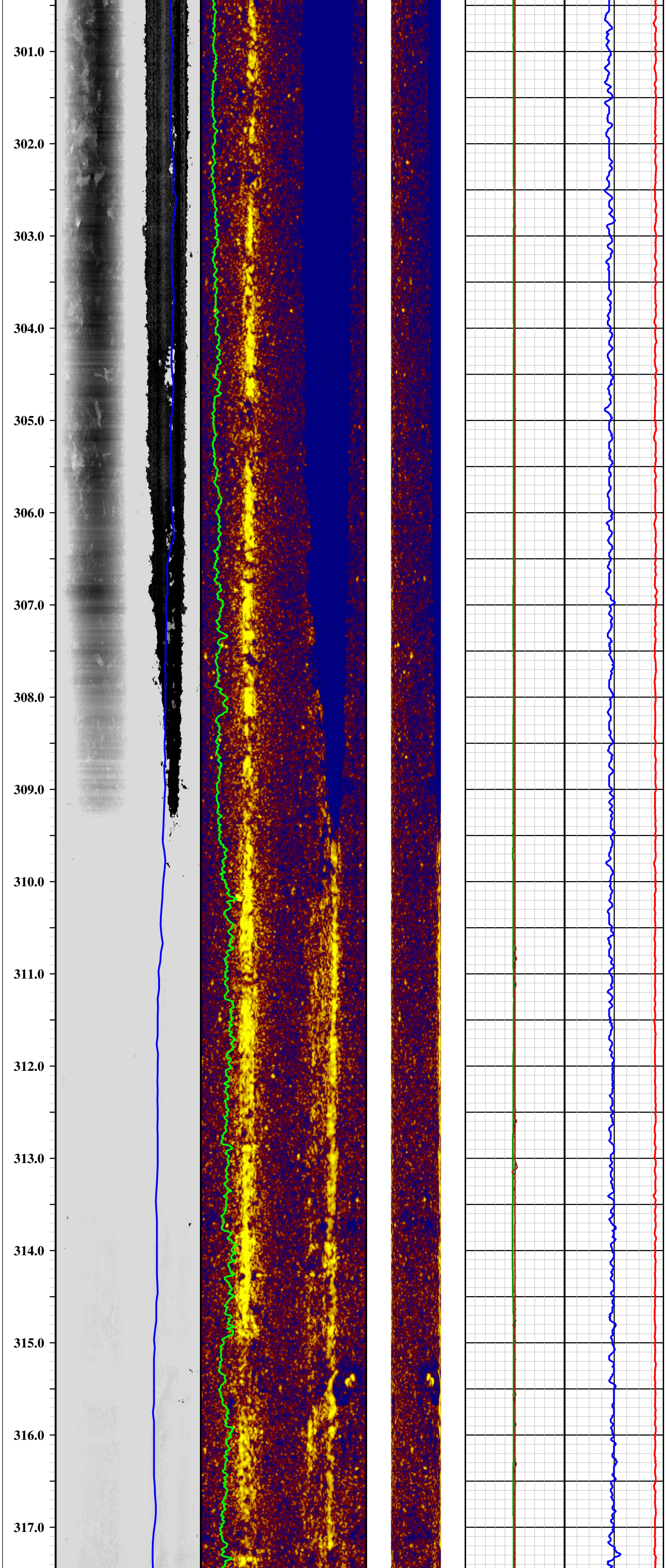
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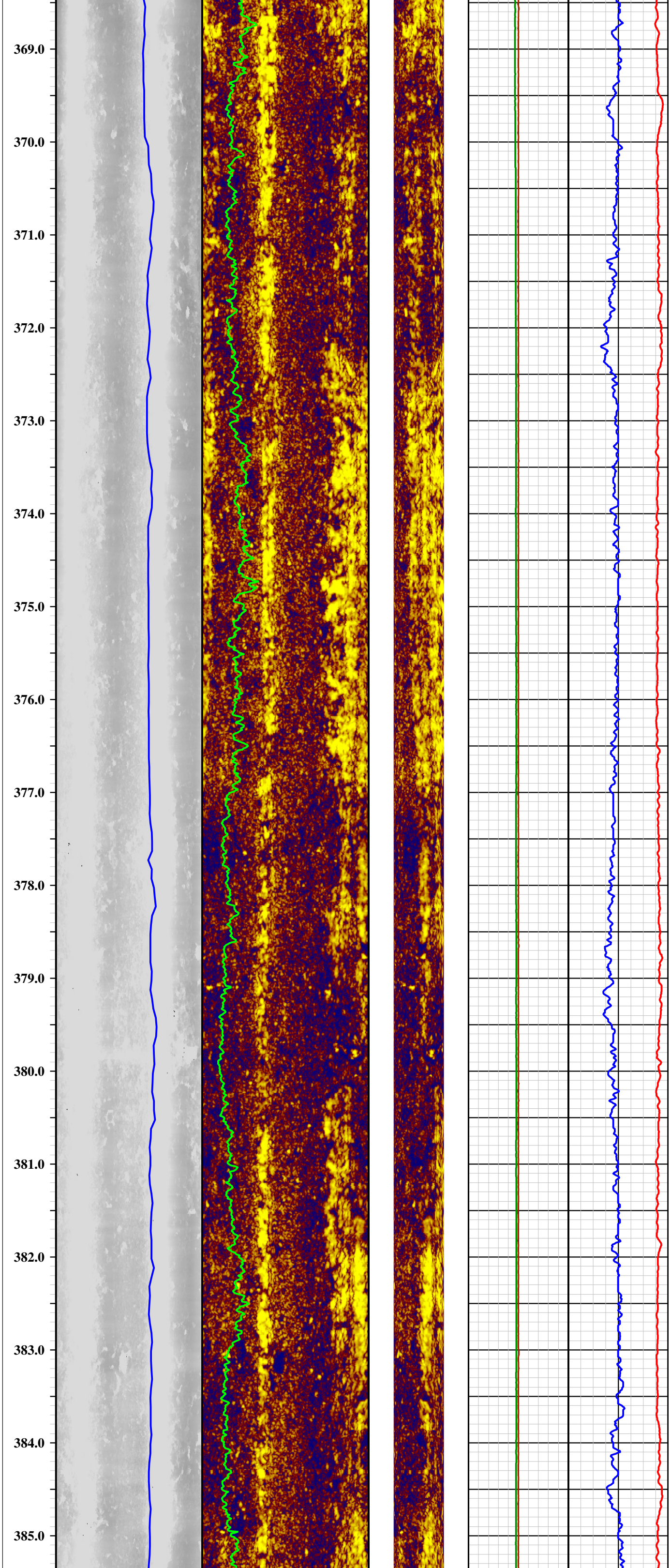
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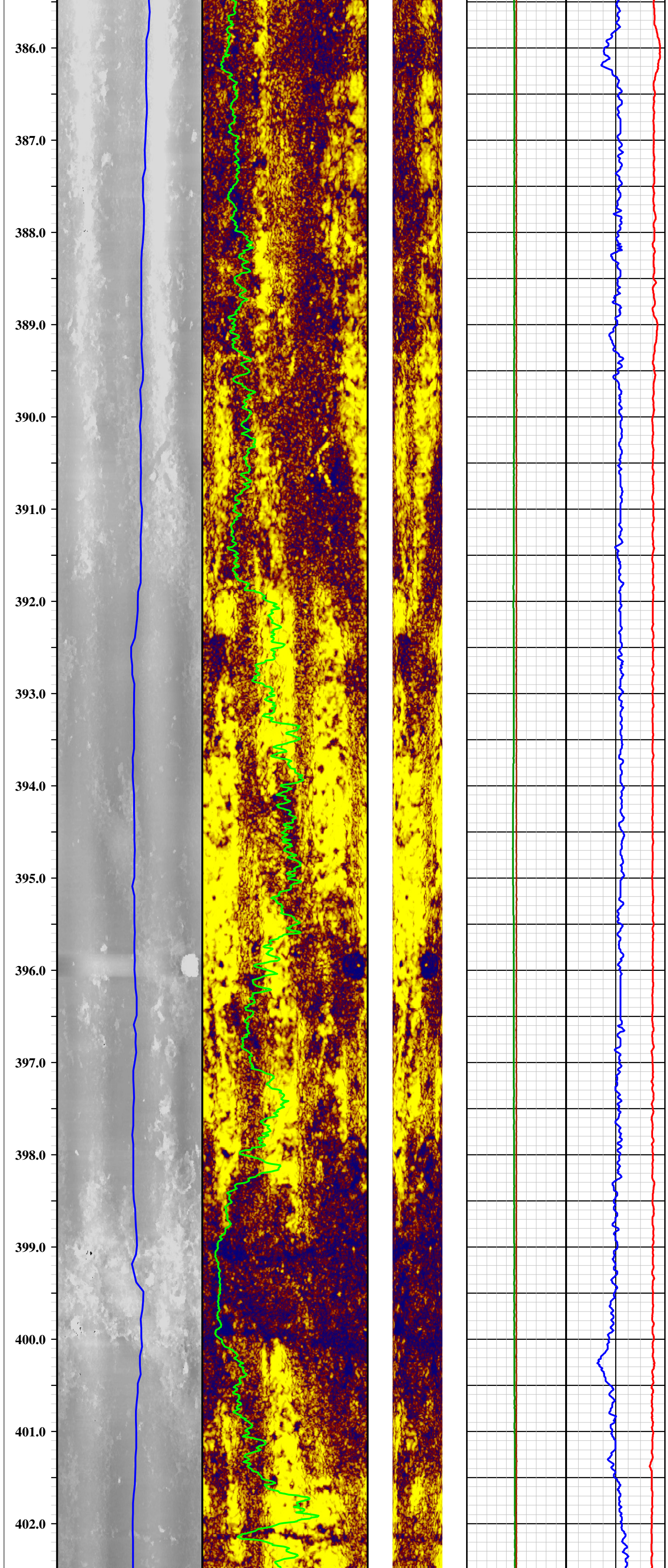

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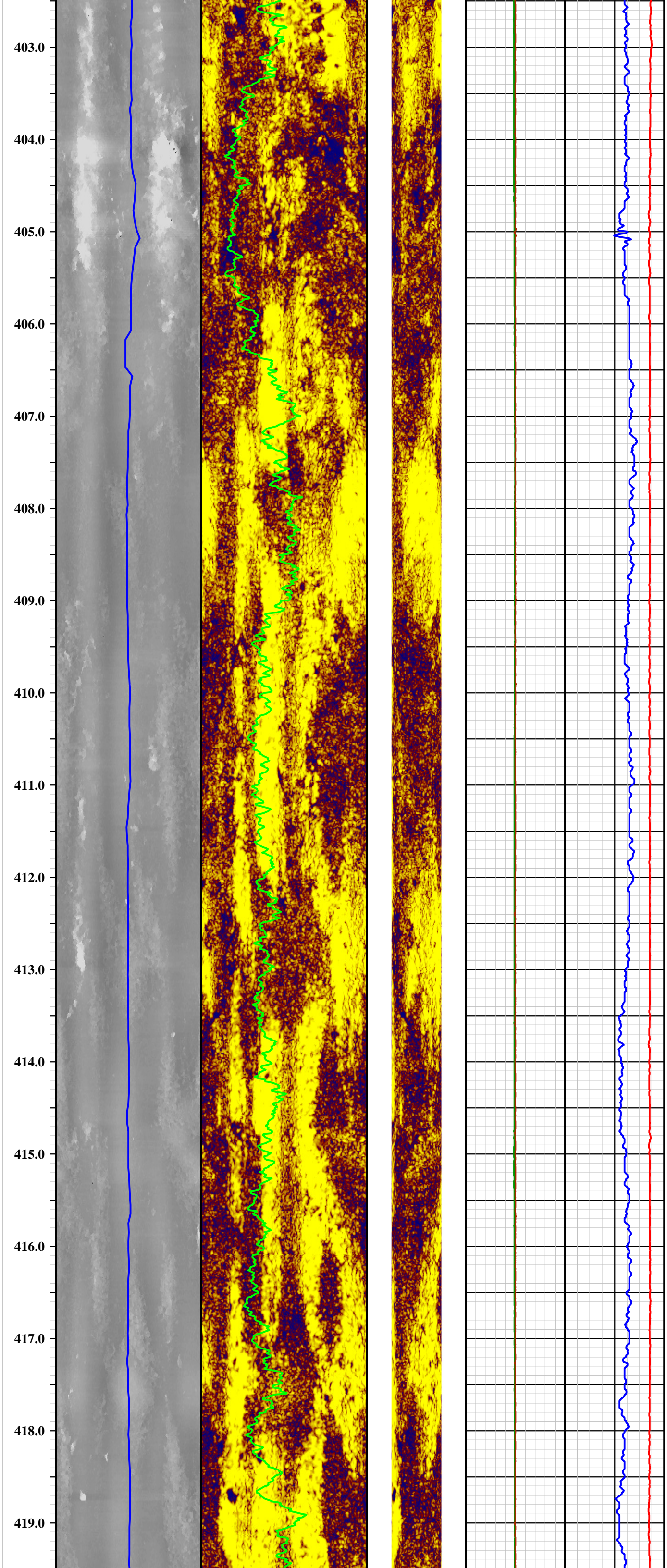

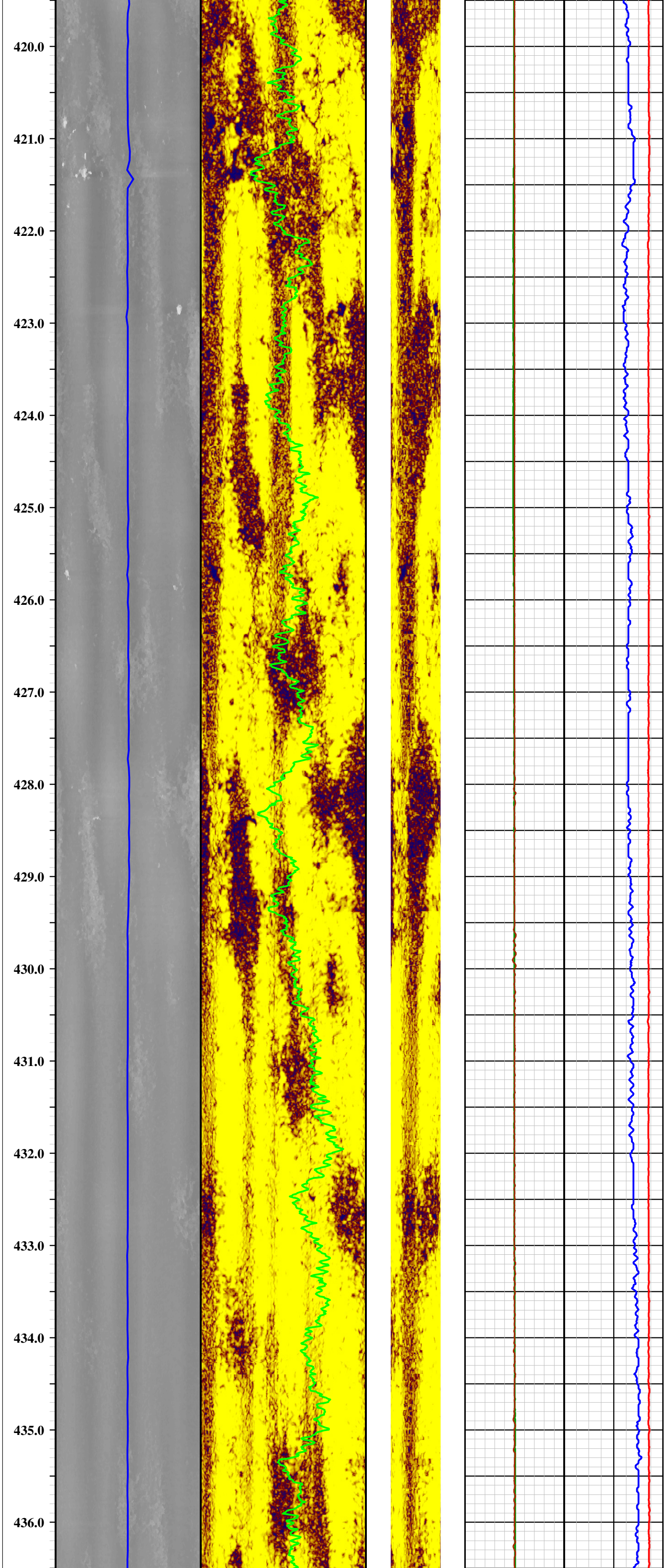
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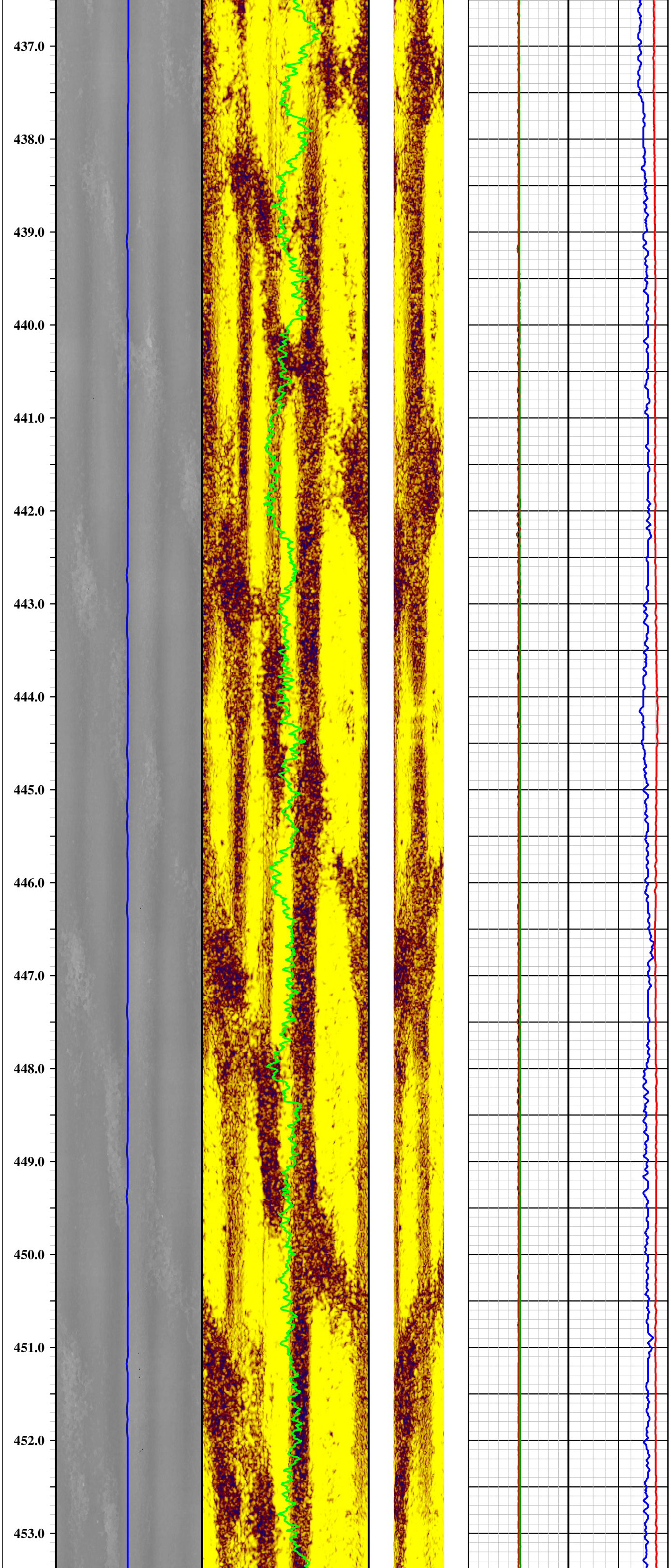
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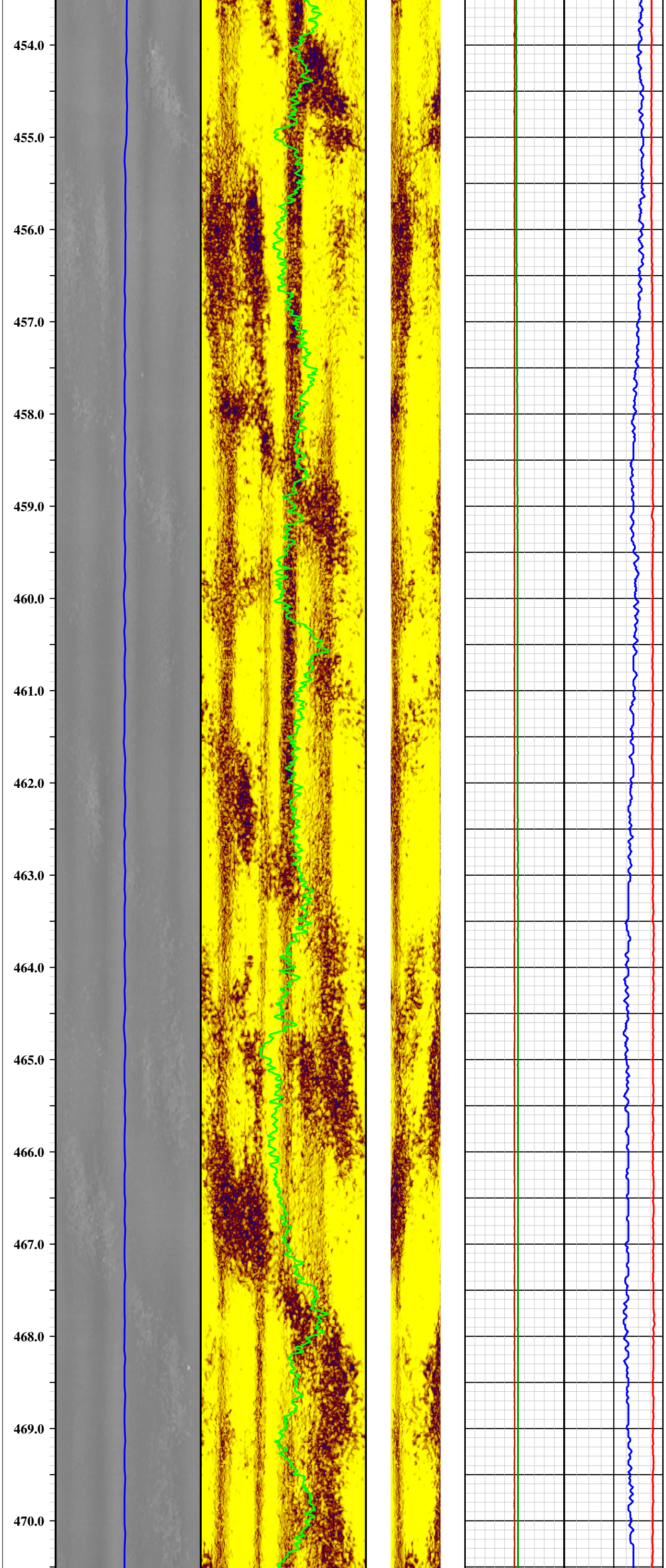
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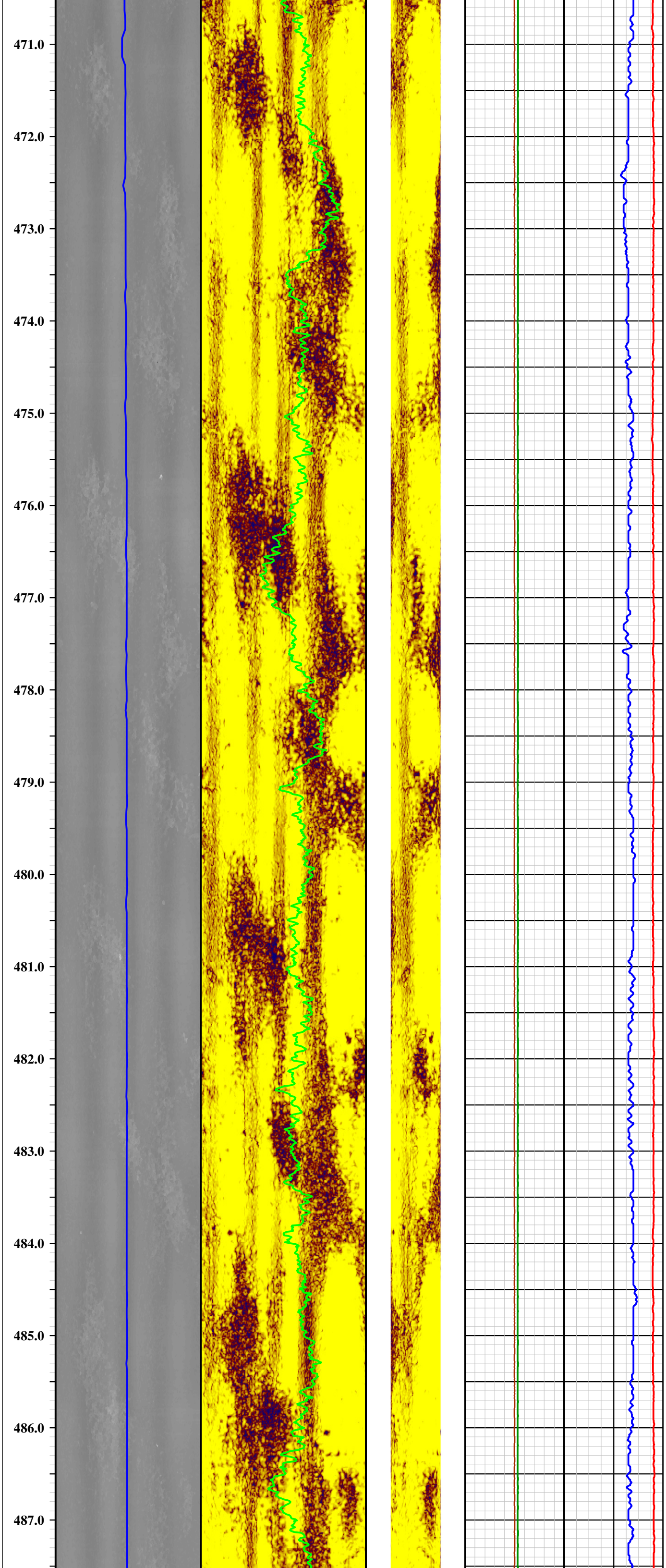
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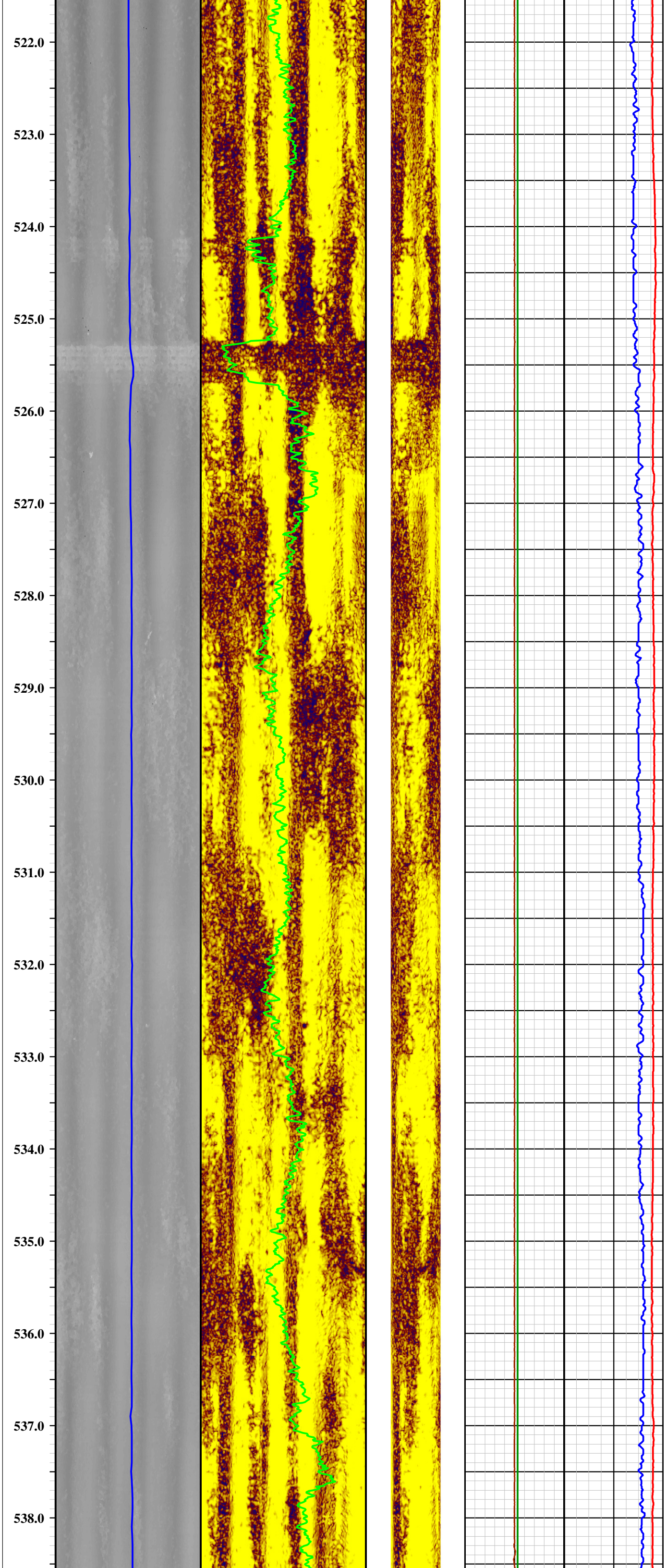
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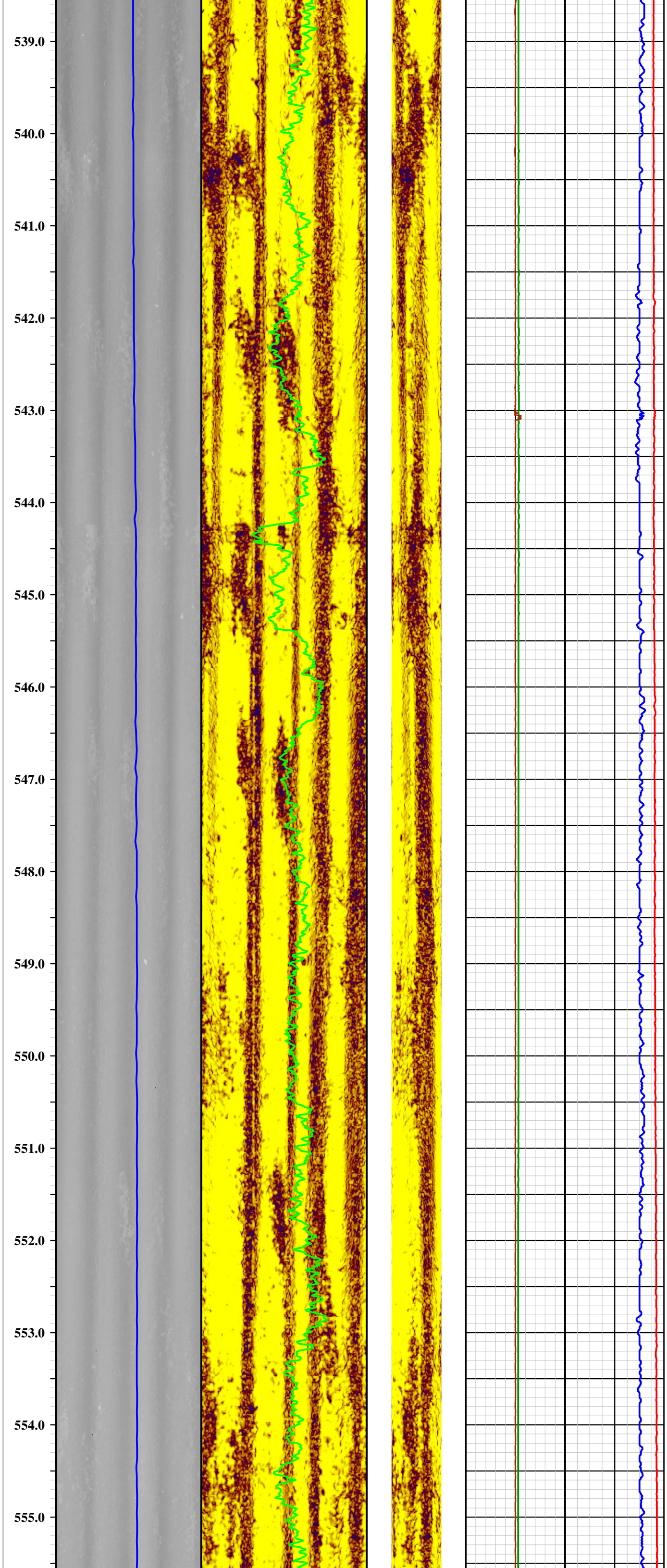
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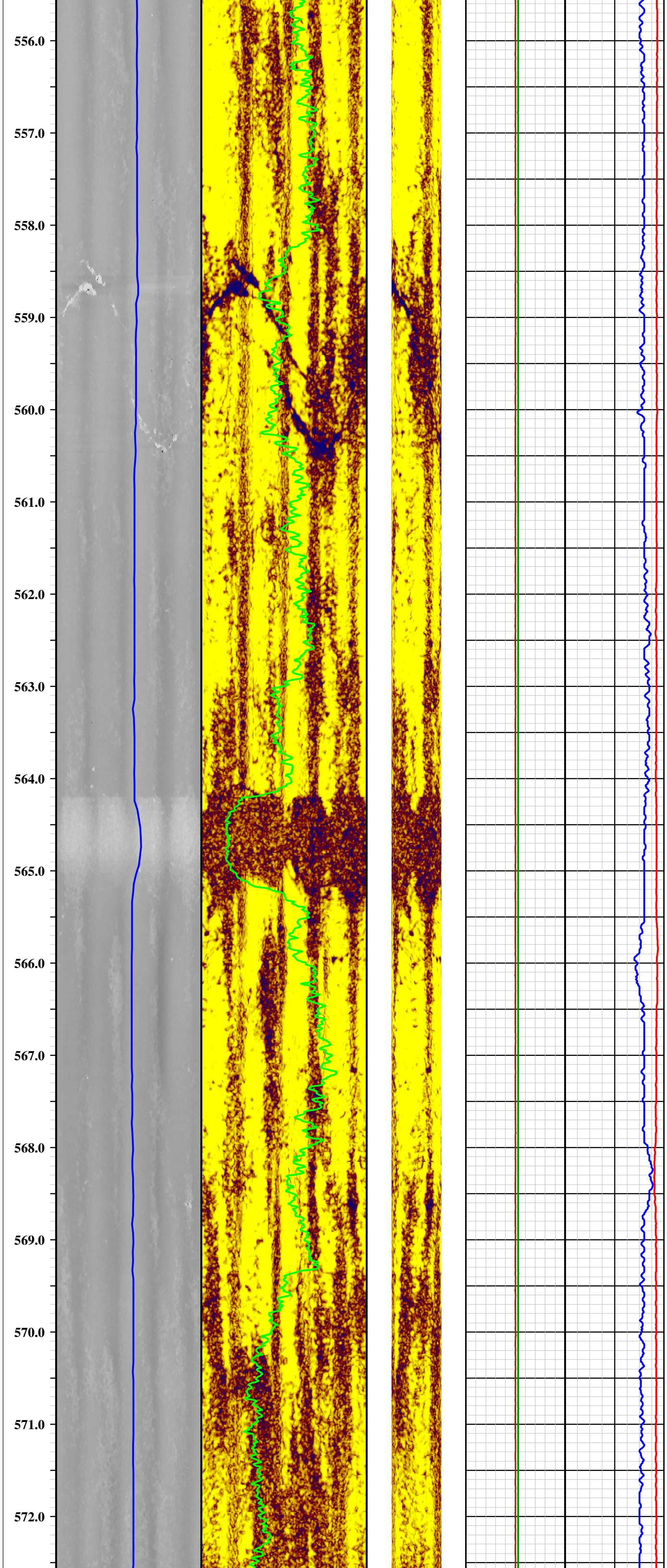
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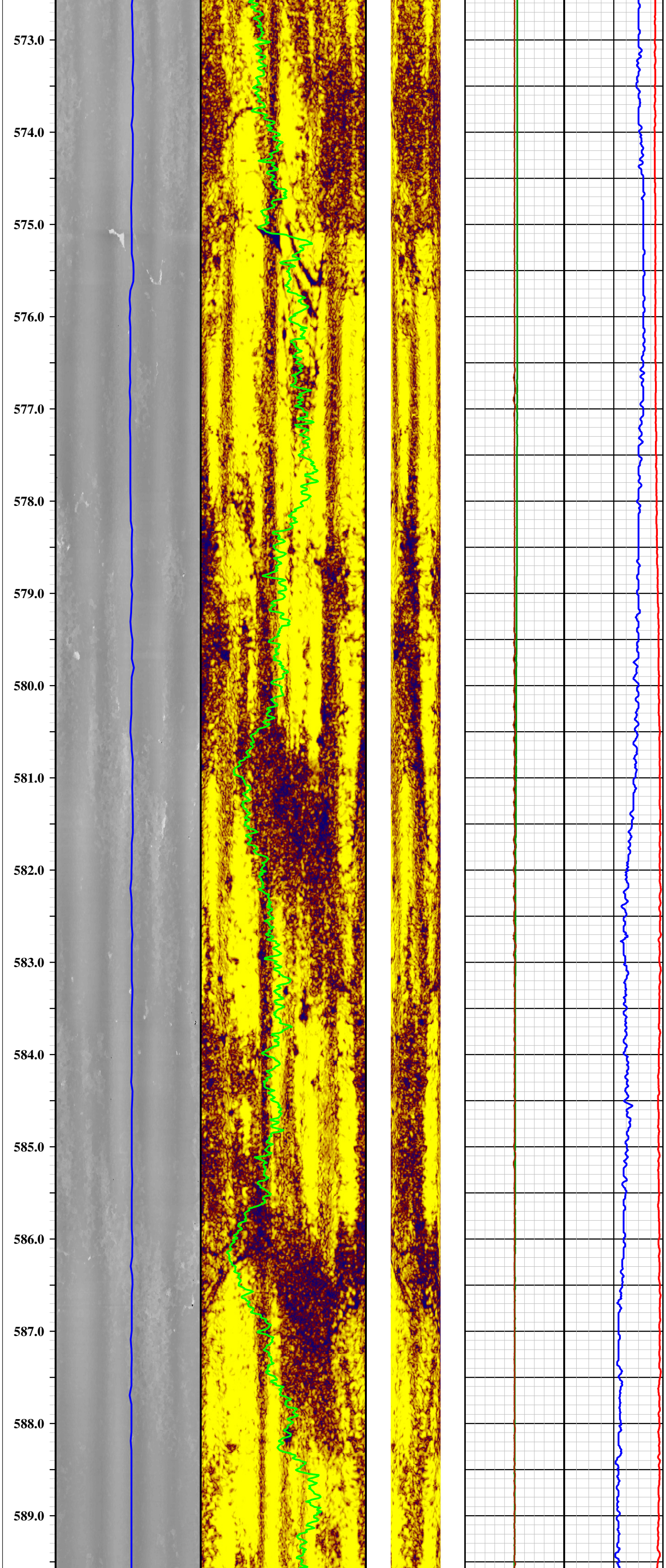
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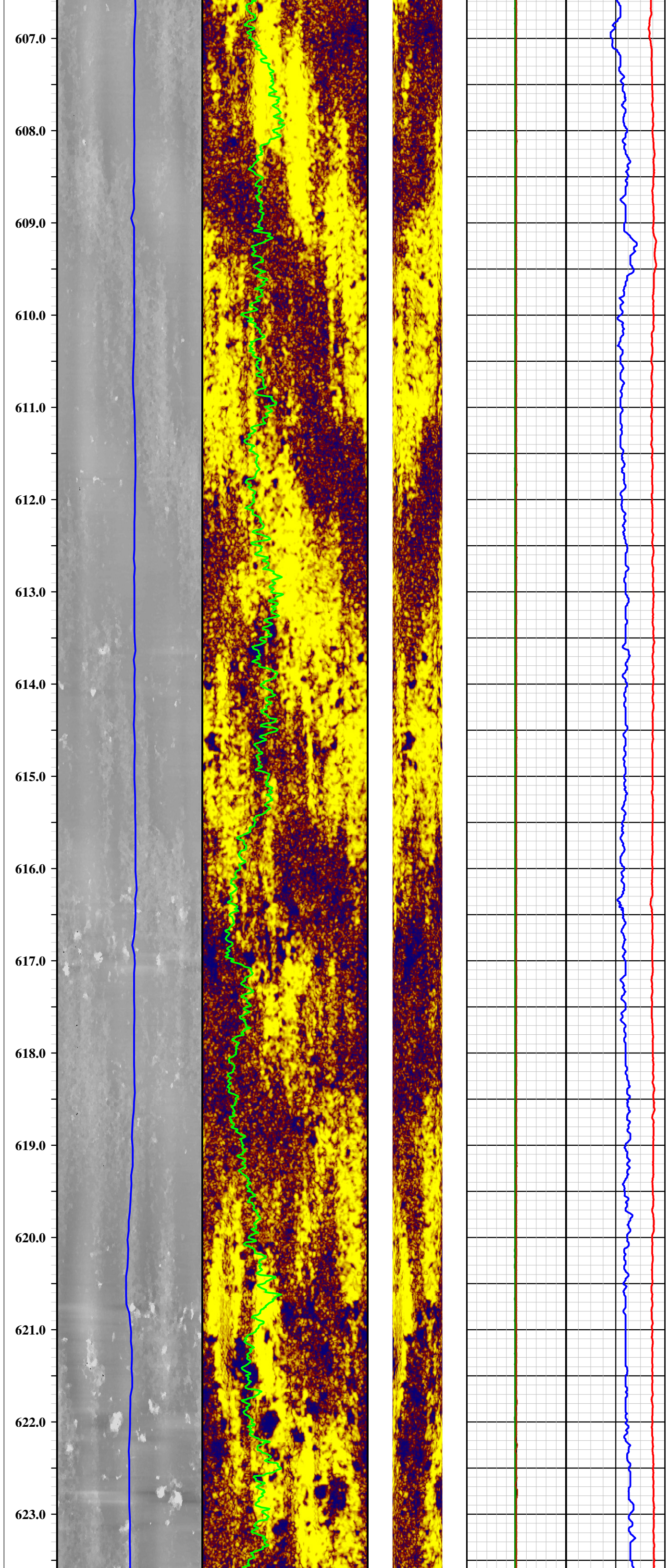

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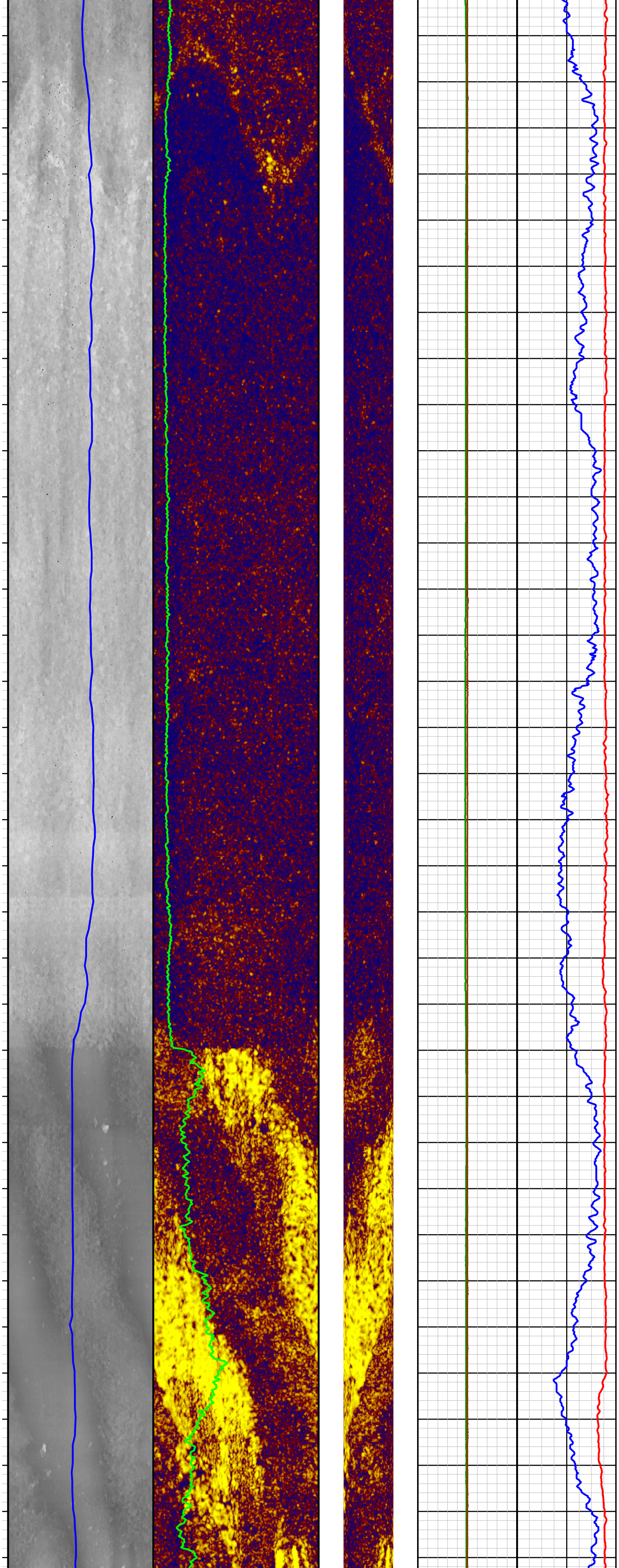

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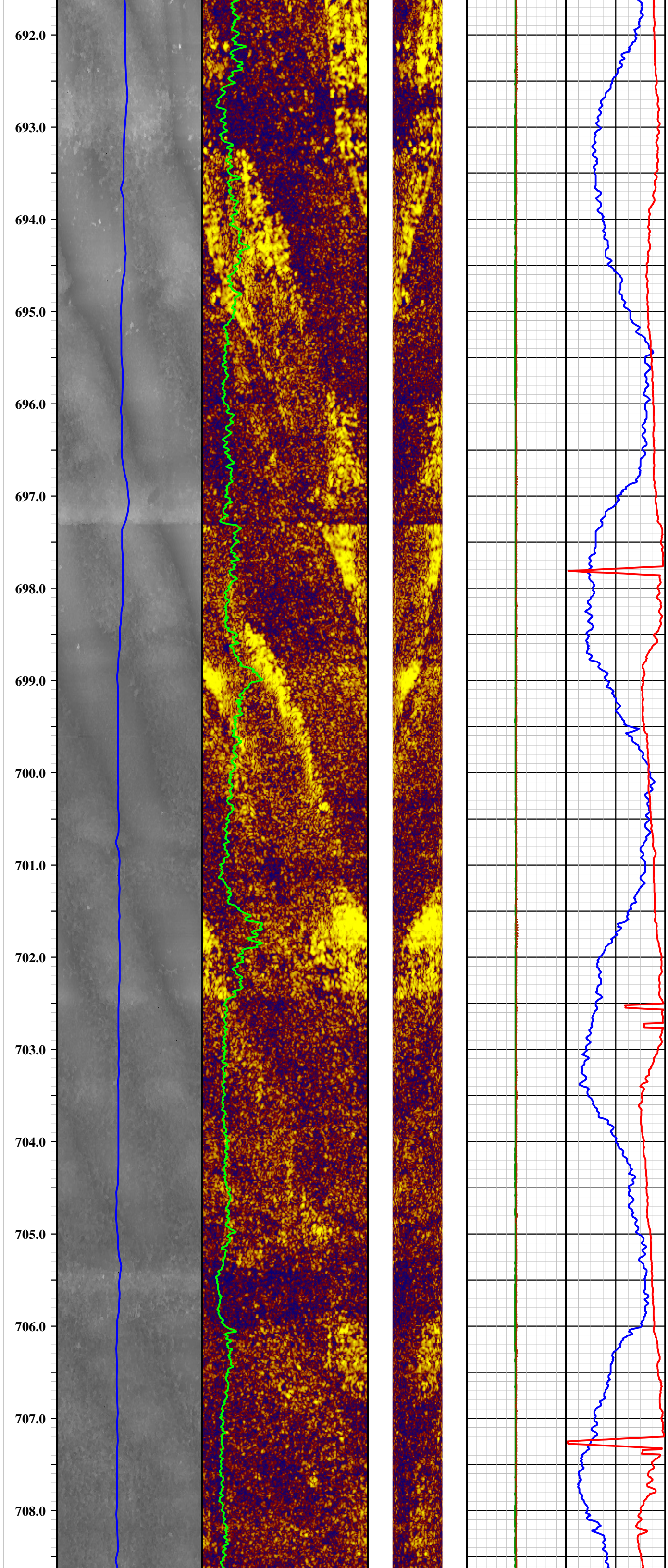

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Processed by C. Schultz 10/10/16

0° 90° 180° 270° 0°
Structure

0 2100
ARI

0° 90° 180° 270° 0°
Oriented Mag North
Amplitude-Static

3 Inches 8
3-Arm Caliper

0° 90° 180° 270° 0°
Oriented Mag North
Centralized TT

0° 90° 180° 270° 0°
Oriented Mag North
Amplitude-NM

0°
3-D View

0.8 G 1.2
Gravity

40 uT 60
Mag Field

0 Deg 360
Azimuth

0 Deg 2
Tilt

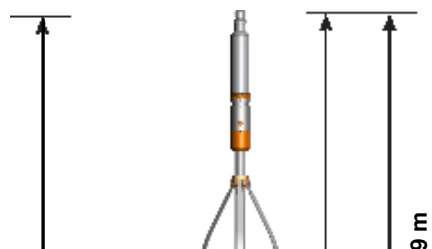
1in:1ft
Depth

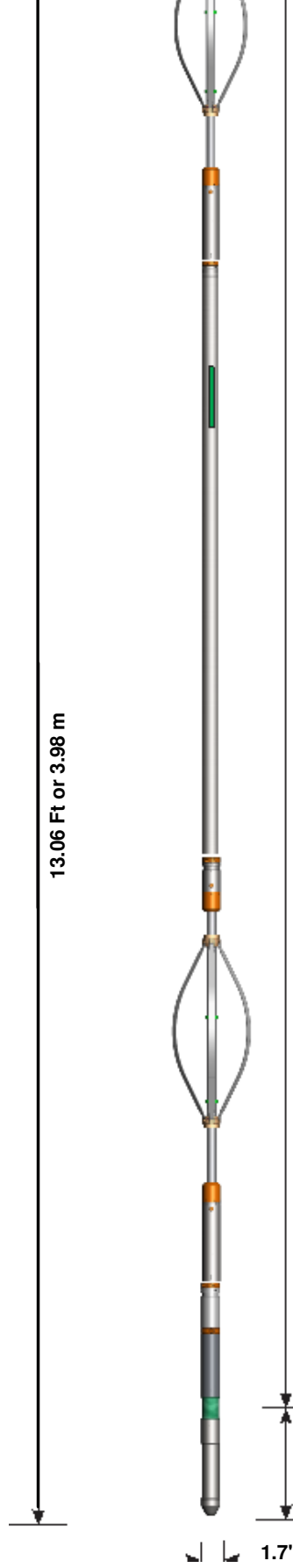
DS-16-03 (DS-F) ABI40 Summary 29.67 to 718.27ft

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601





MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)



Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-03
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final **ACOUSTIC TELEVIEWER SUMMARY**

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	DS16-04 (DS-G) 55-919895				
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER					OTHER SERVICES
MORE: CALIPER					E-LOGS
LOCATION					SONIC
D(1-11)25dbb					CALIPER
					TEMP/FLUID RES
					OPTICAL TELEVIEWER
					GYRO
SEC 1 S	TWP 11 E		RGE 25		DUAL INDUCTION
PERMANENT DATUM		ELEVATION	2497 FT		K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM			D.F.
DRILLING MEAS. FROM	GROUND LEVEL				G.L.

DATE	10-07-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	7		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	620.0 FT		LEVEL		~ 115 FT.
DEPTH-LOGGER	620.0 FT		MAX. REC. TEMP.		35.0 DEG. C
BTM LOGGED INTERVAL	620.0 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	48.0 FT		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	NATIONAL		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM / A. OLSON		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	MELISSA/CHRIS - M & A		LOG TIME:ON SITE/OFF SITE		11:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 3/4 IN	20 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	10-07-16	**Date**	10-07-16	**Date**	10-07-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	SPT CONT. GYRO	**Tool Model**	MSI COMBO TOOL	**Tool Model**	W&R DIL
Tool SN	1413	**Tool SN**	4953	**Tool SN**	3777
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	550.0 FT	**To**	620.0 FT	**To**	620.0 FT
Recorded By	E. BEAM	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-06-16	**Operation Check**	10-06-16	**Operation Check**	10-06-16
Calibration Check	10-06-16	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	12:30 PM	**Time Logged**	5:30 PM	**Time Logged**	6:05 PM

Date	10-07-16	**Date**	10-07-16	**Date**	10-07-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	E-LOG 40GRP	**Tool Model**	ALT 4 RX SONIC	**Tool Model**	ALT QL OBI40 2G
Tool SN	5514	**Tool SN**	4572	**Tool SN**	152511
From	SURFACE	**From**	80.0 FT	**From**	15.0 FT
To	620.0 FT	**To**	620.0 FT	**To**	75.0 FT
Recorded By	E. BEAM	**Recorded By**	A. OLOSN	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-06-16	**Operation Check**	10-06-16	**Operation Check**	10-06-16
Calibration Check	10-06-16	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	6:30 PM	**Time Logged**	6:50 PM	**Time Logged**	7:15 PM

Additional Comments:

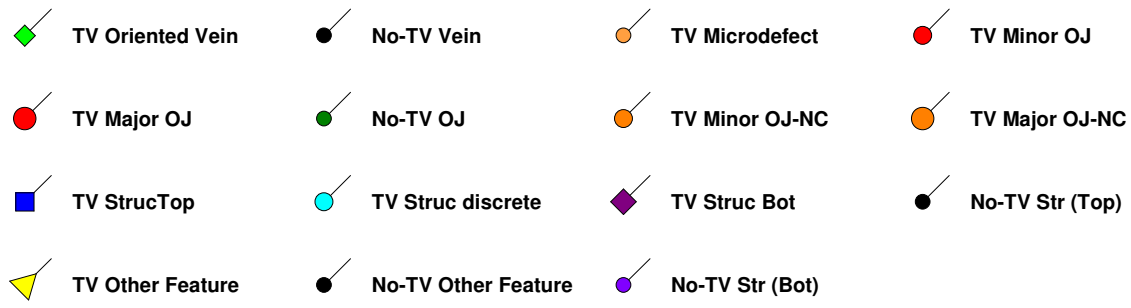
Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend



Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS-16-04 (DS-G) ABI40 & OBI Summary ~15 to 622.34ft

Depth
1in:1ft

Centralized TT
Oriented Mag North
0° 90° 180° 270° 0°

3-Arm Caliper
3 Inches 8

Amplitude-Static
Oriented Mag North
0° 90° 180° 270° 0°

ARI
0 2100

Breakout/Tensile
0° 90° 180° 270° 0°

Structure
0° 90° 180° 270° 0°

Image-NM
Oriented Mag North
0° 90° 180° 270° 0°

3-D View
0°

Mag Field
40 uT 60

Tilt
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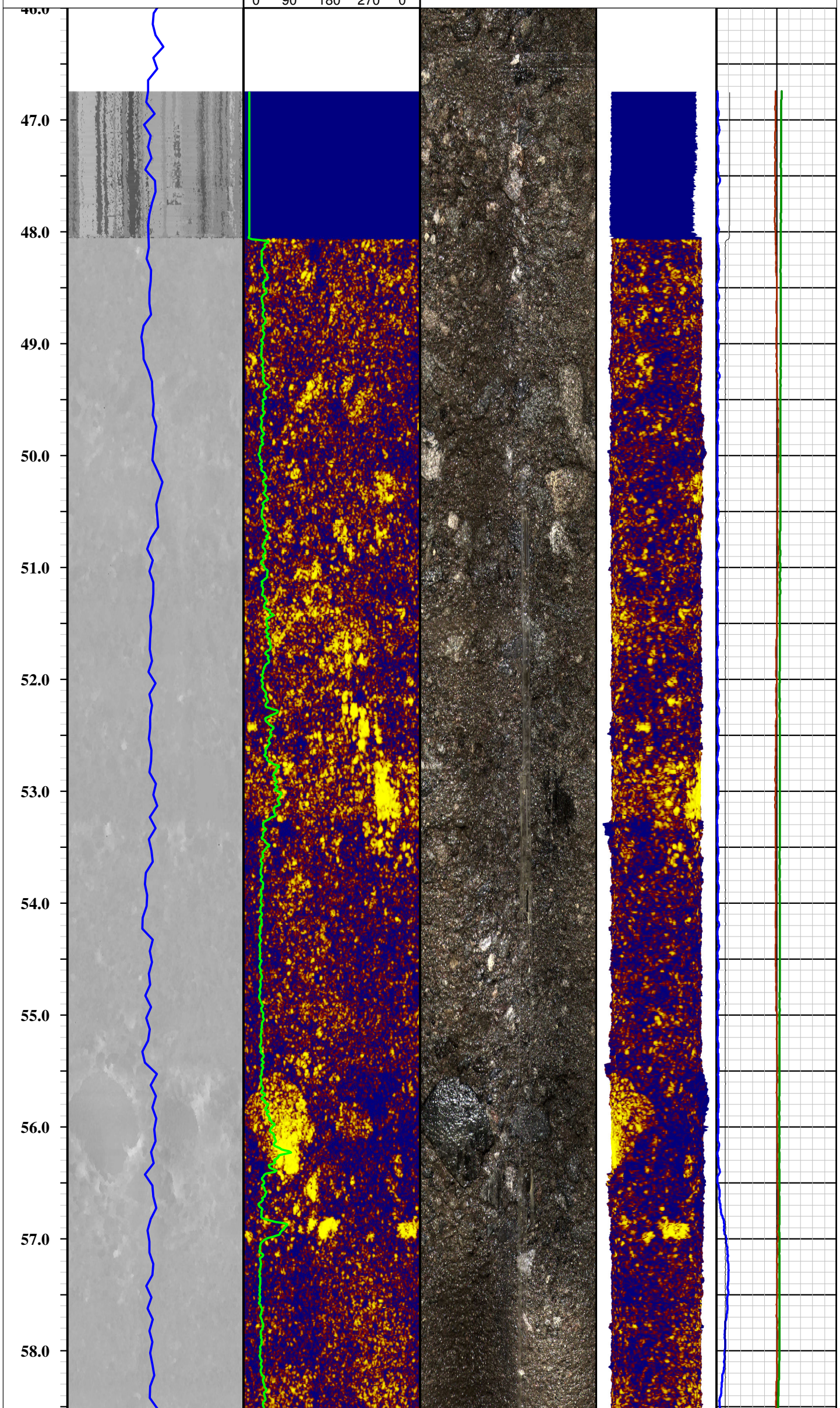
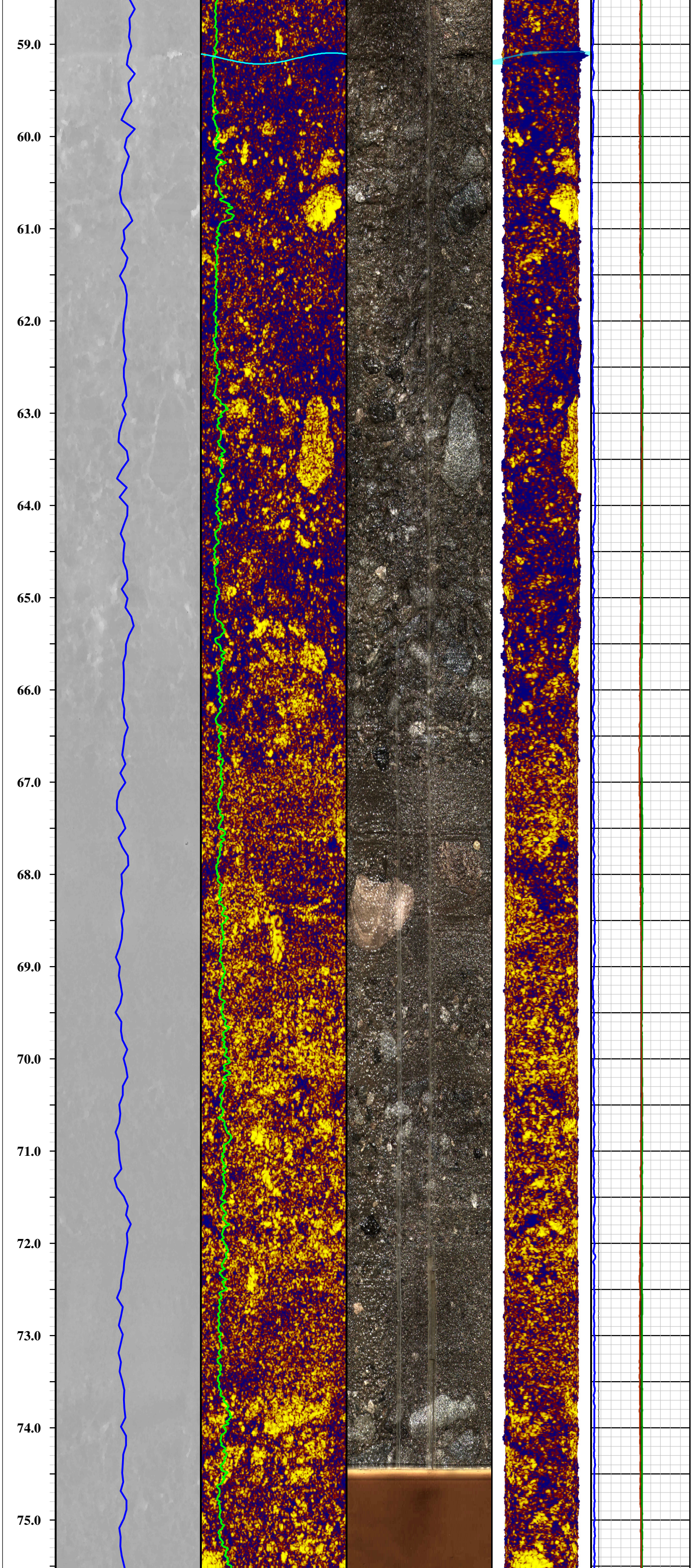
Gravity
0.8 G 1.2

WndTime
0 us 50

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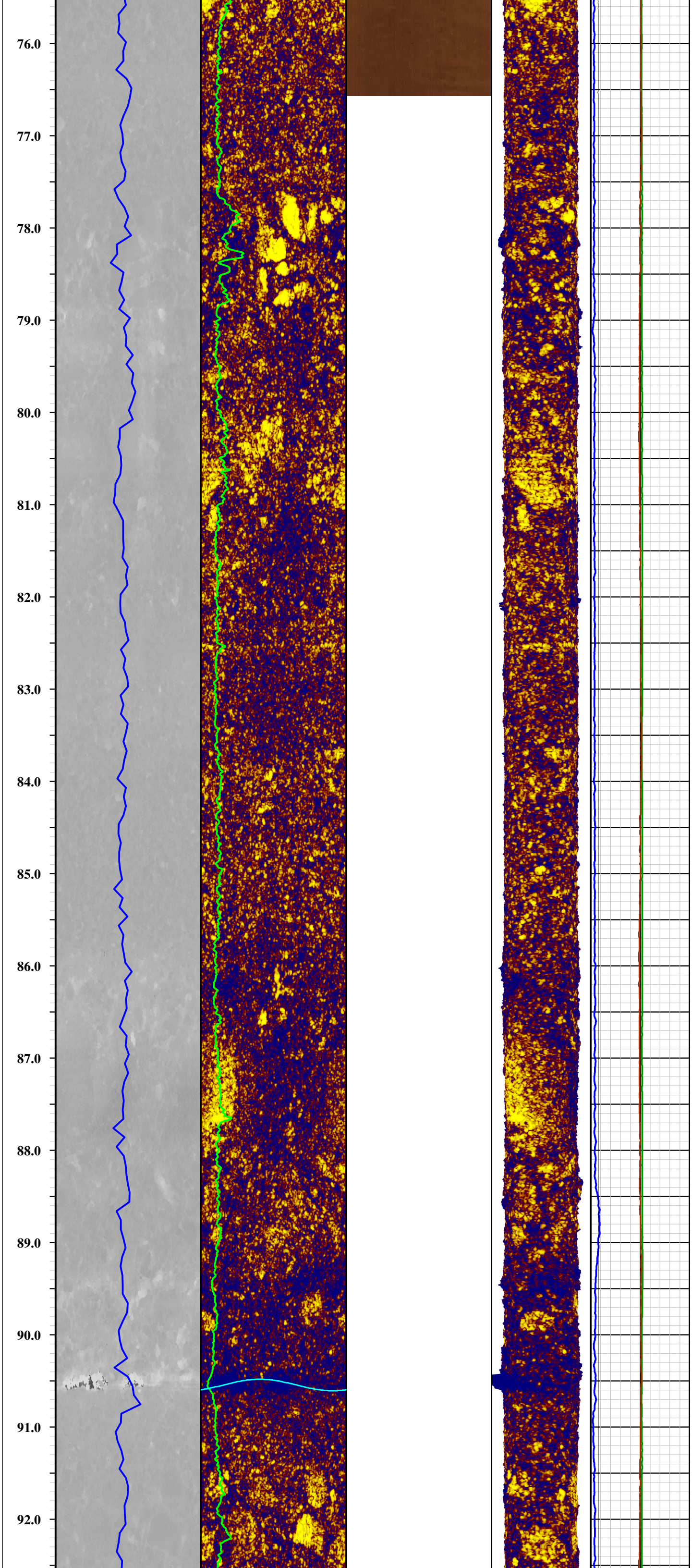
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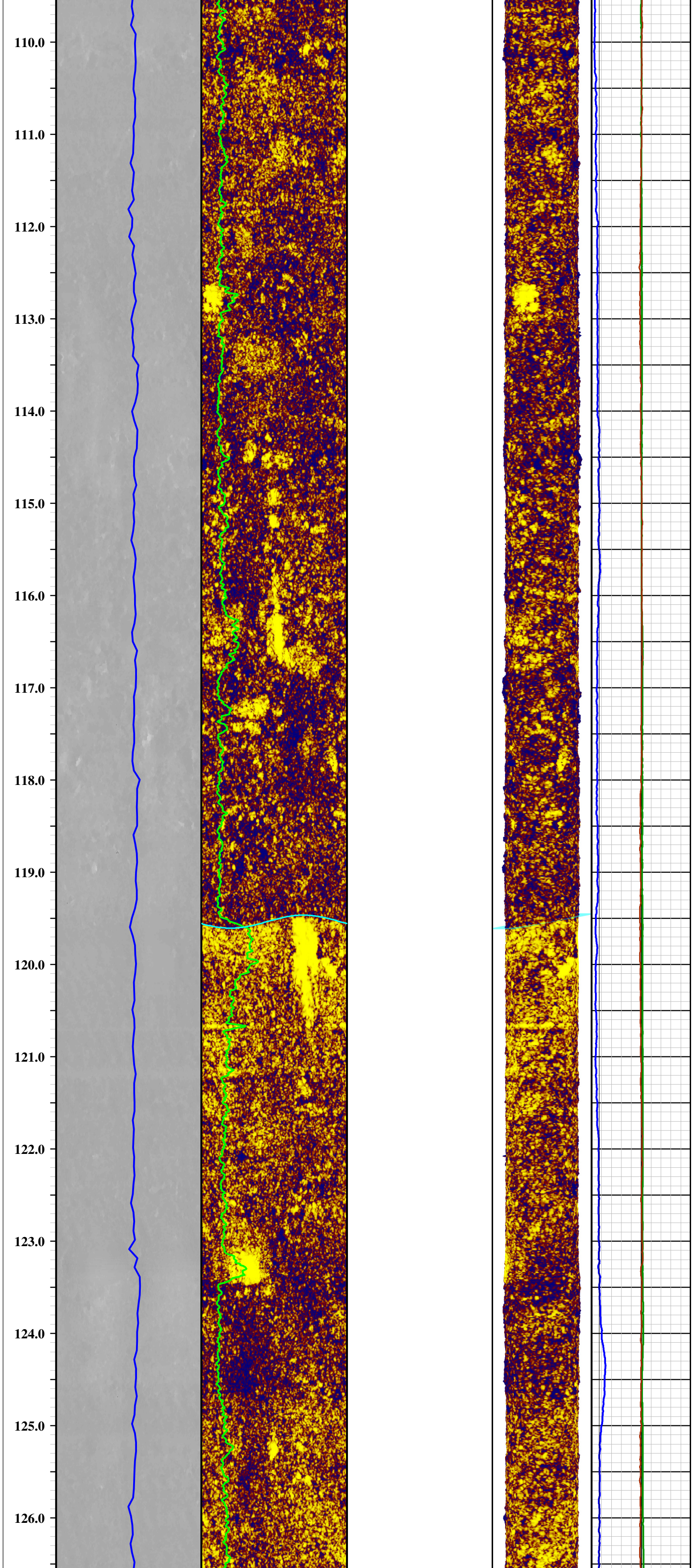
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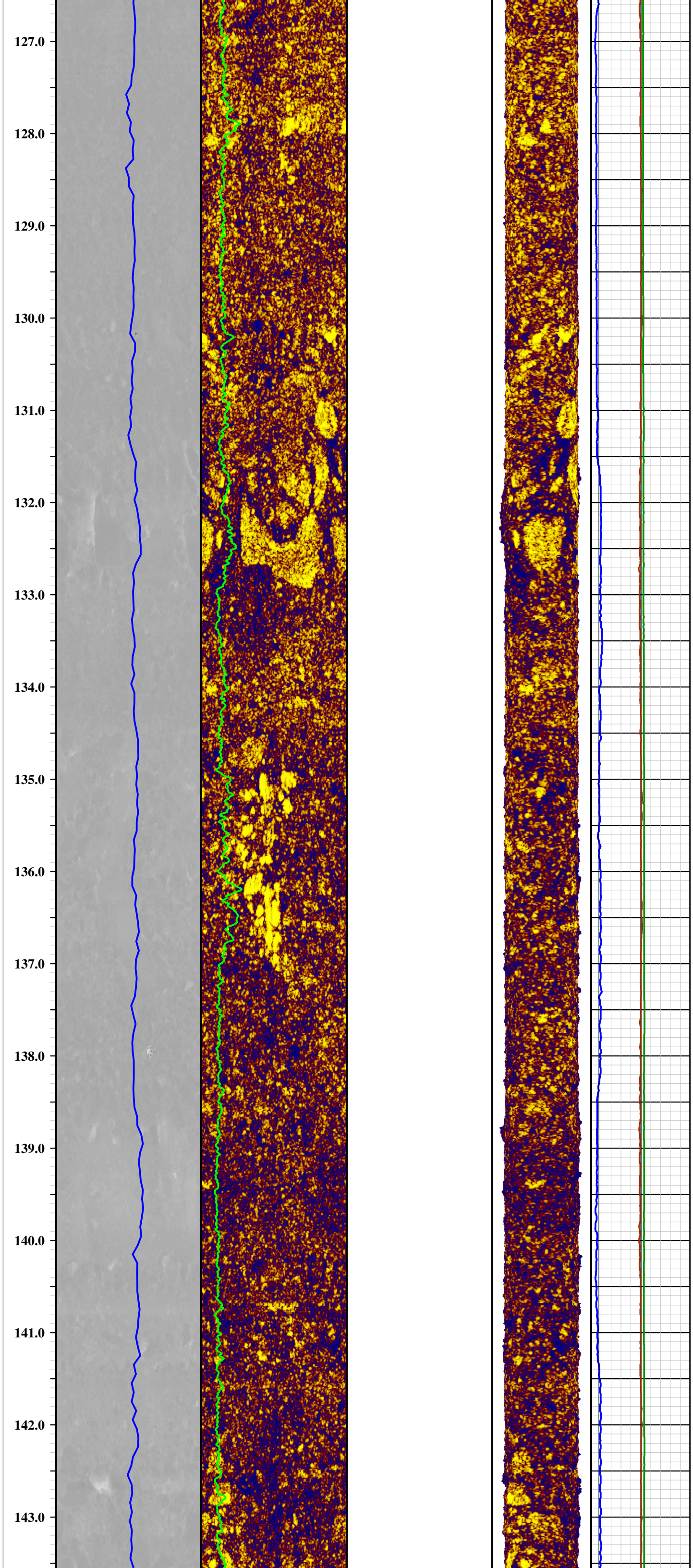
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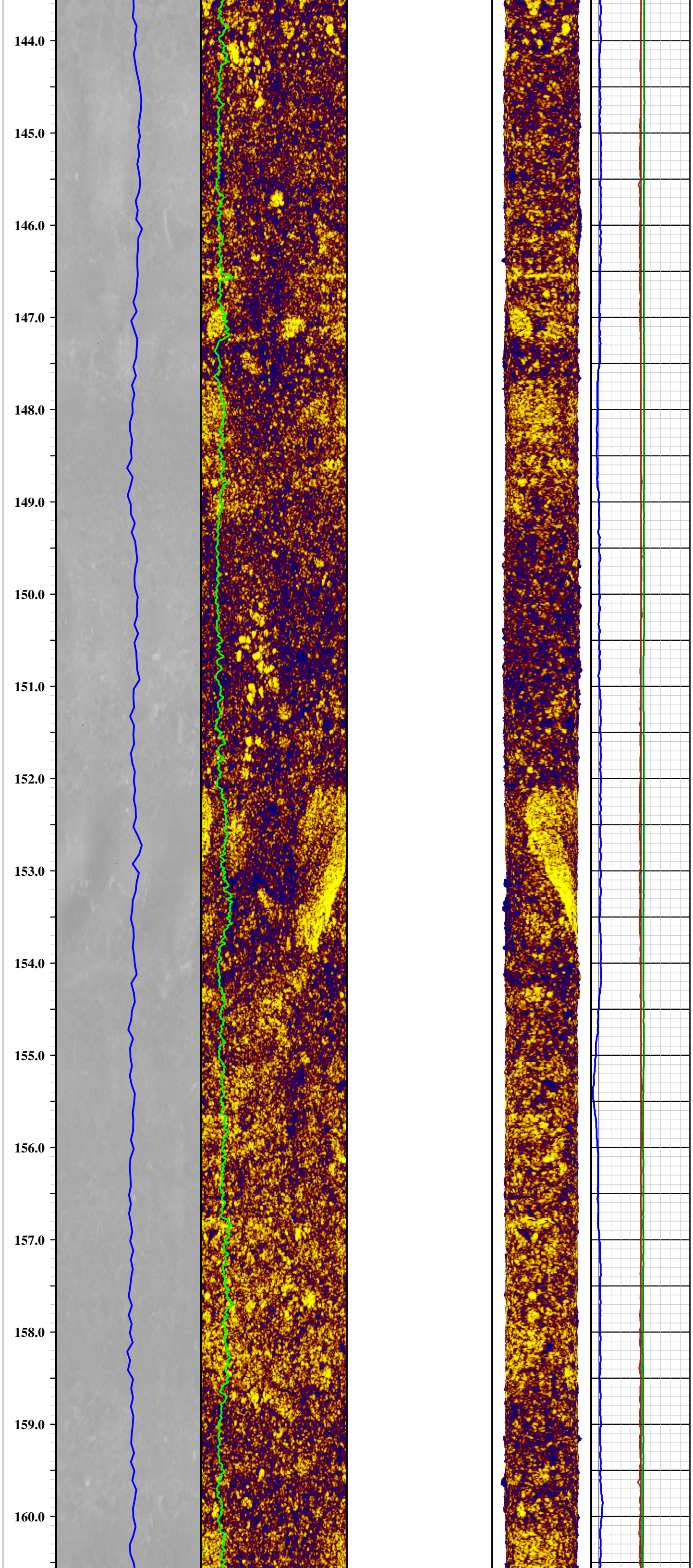
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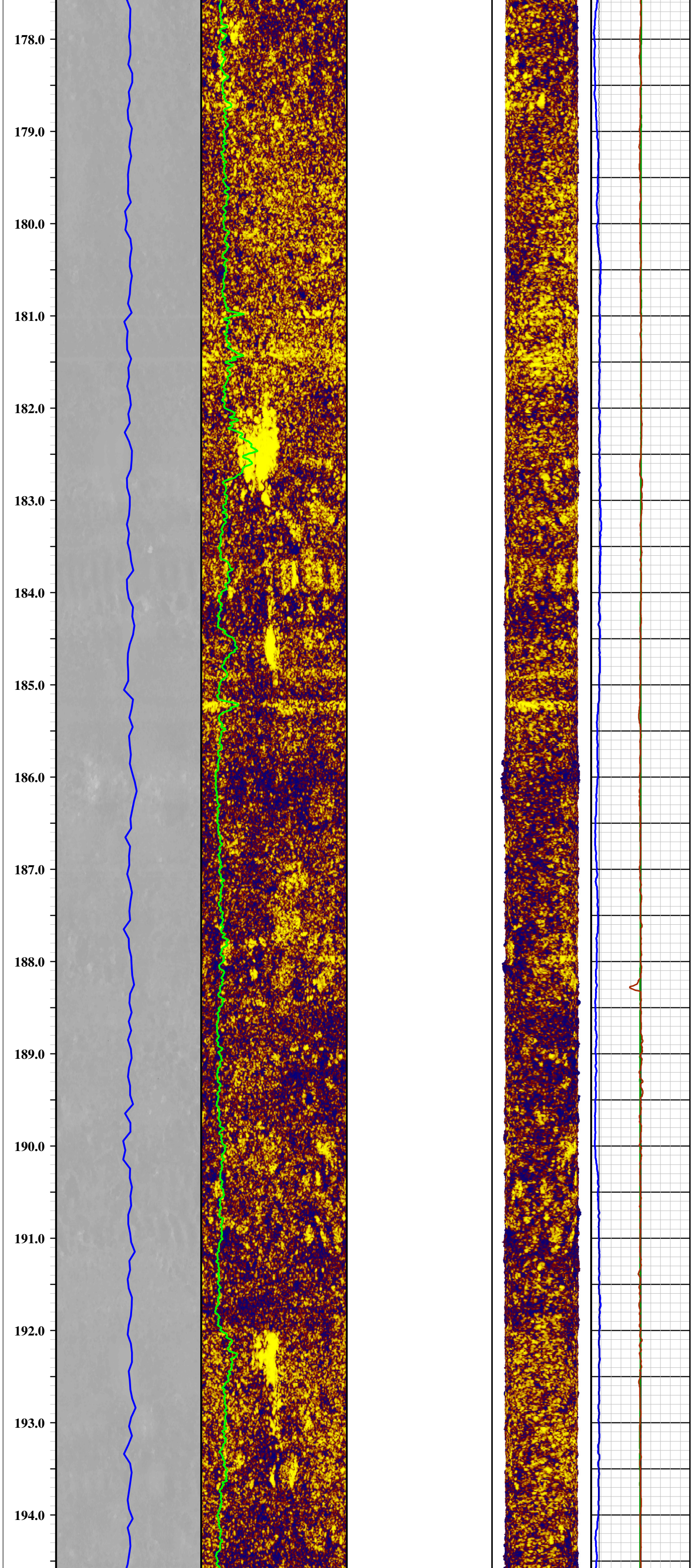
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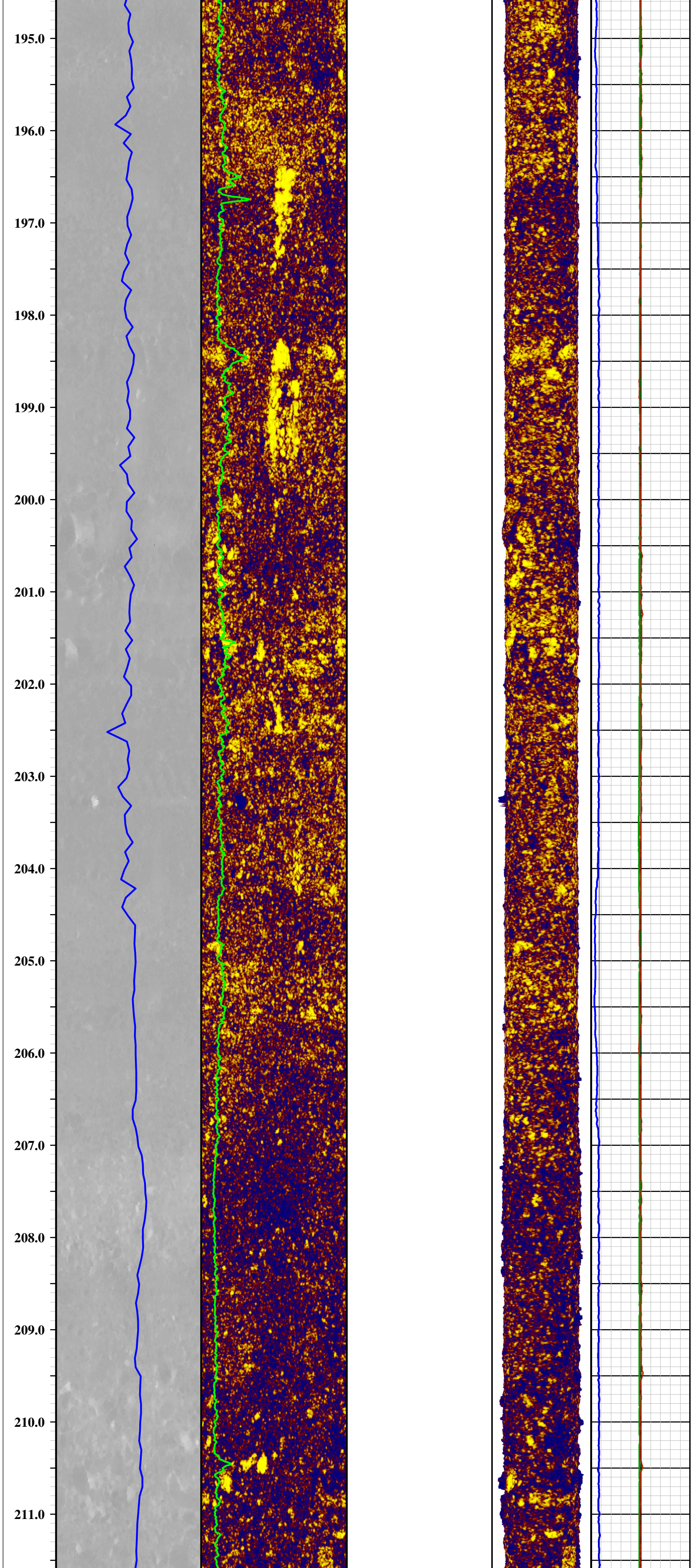
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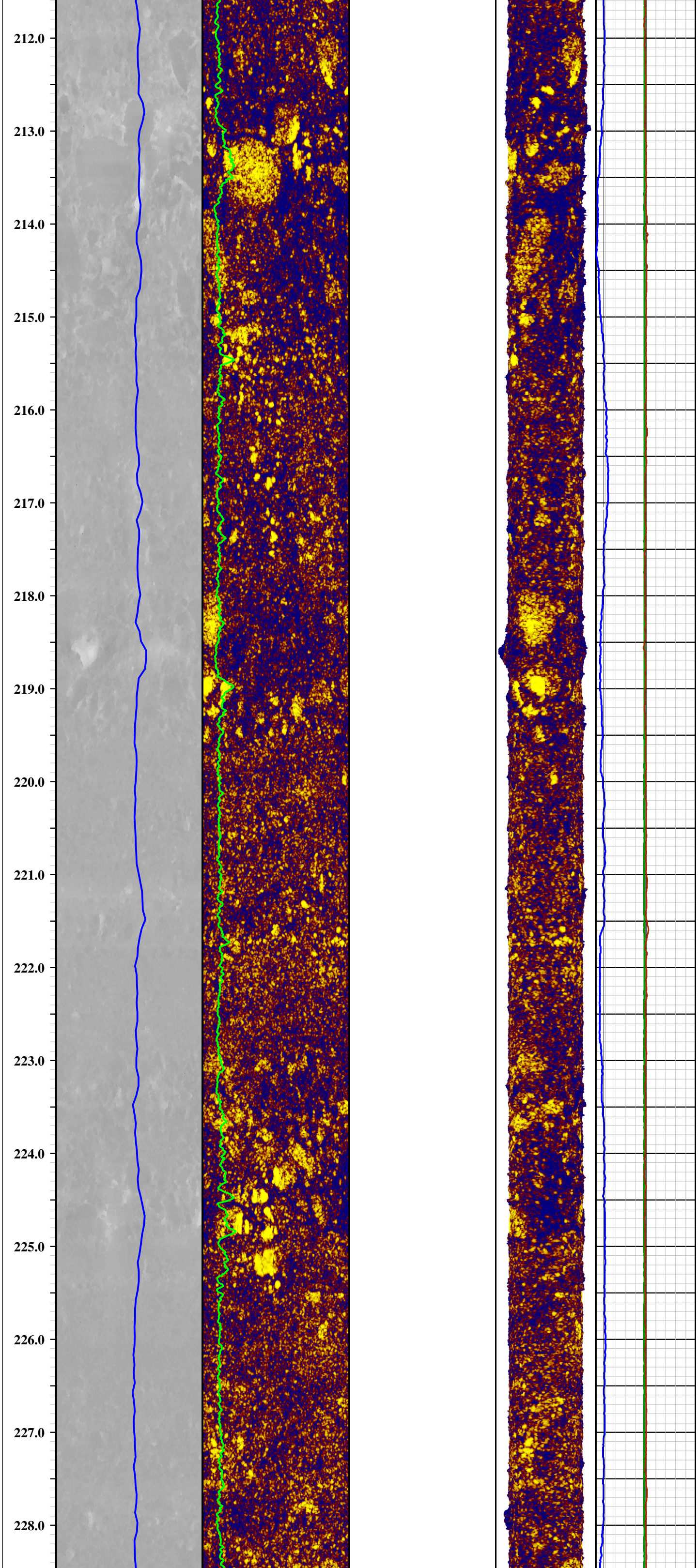
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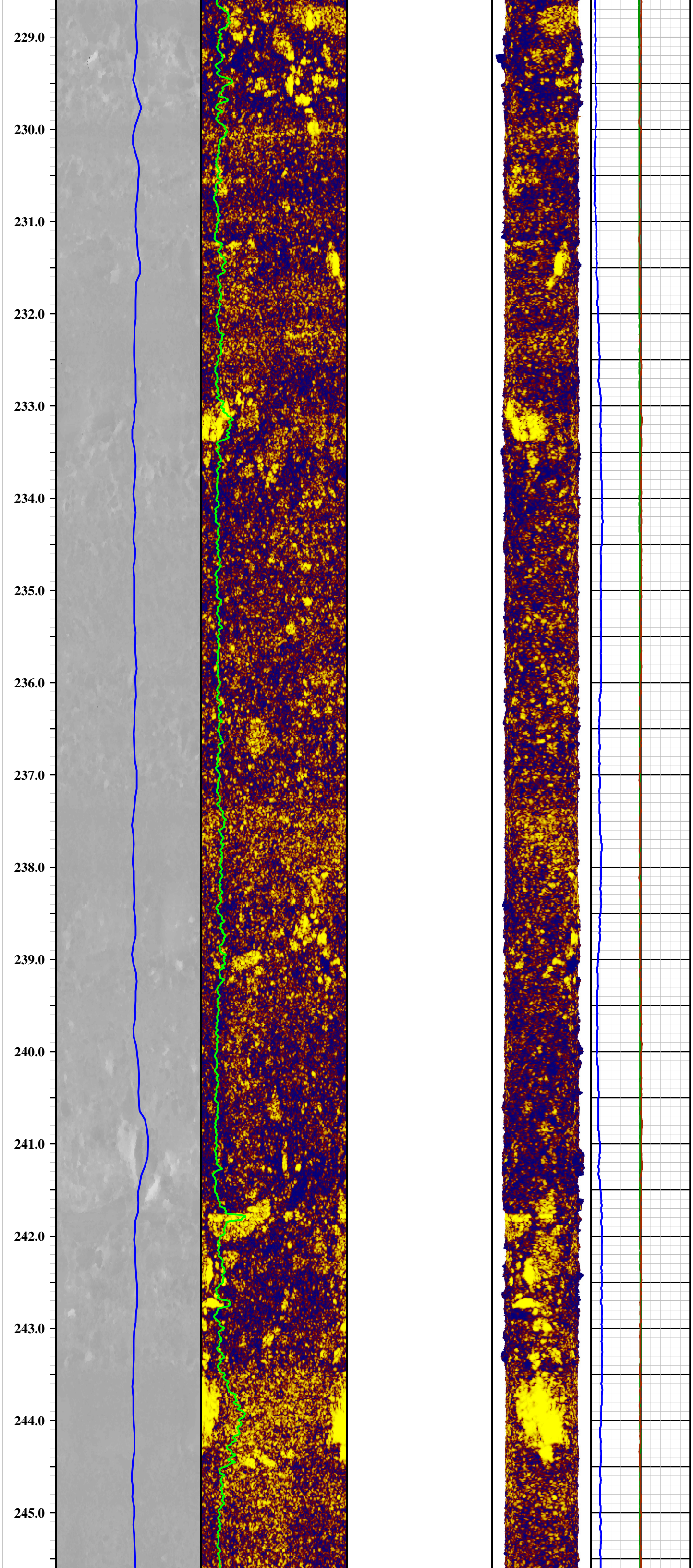

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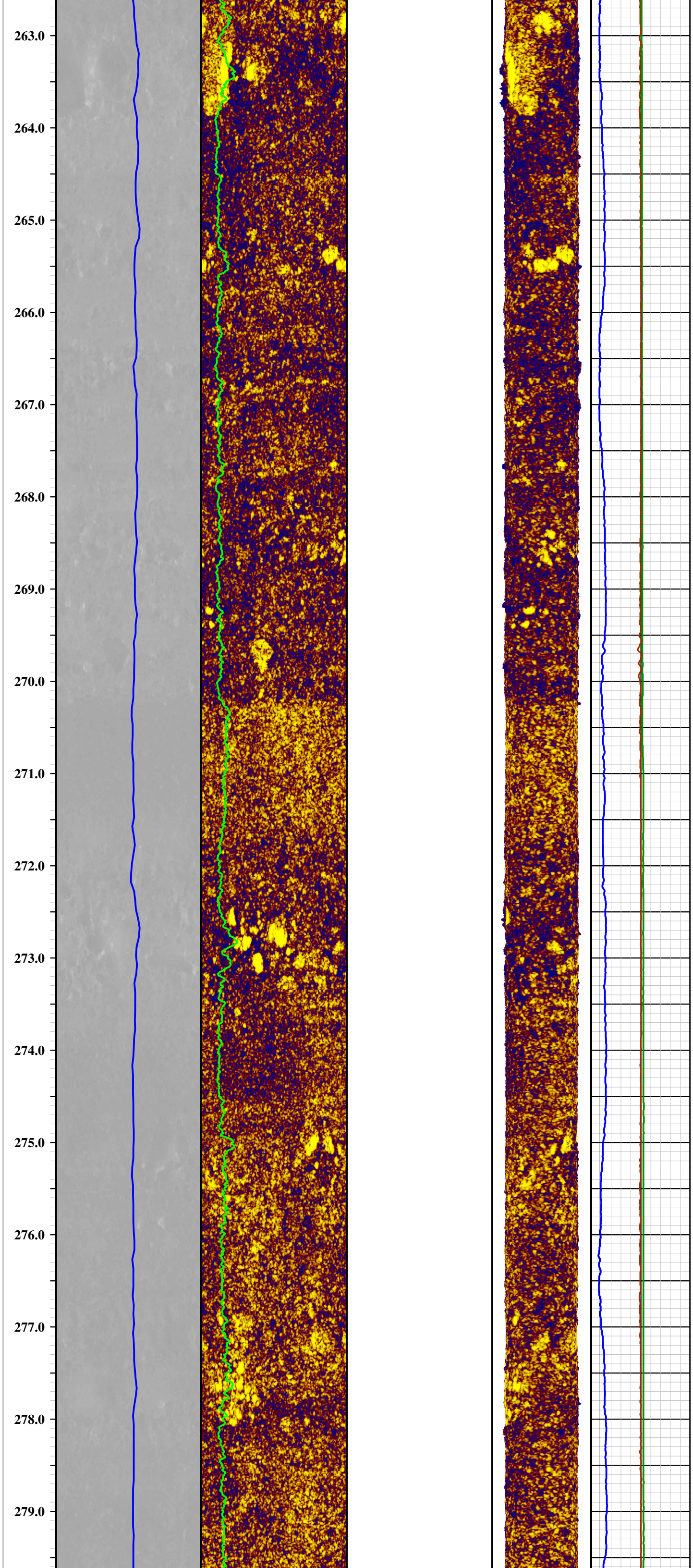
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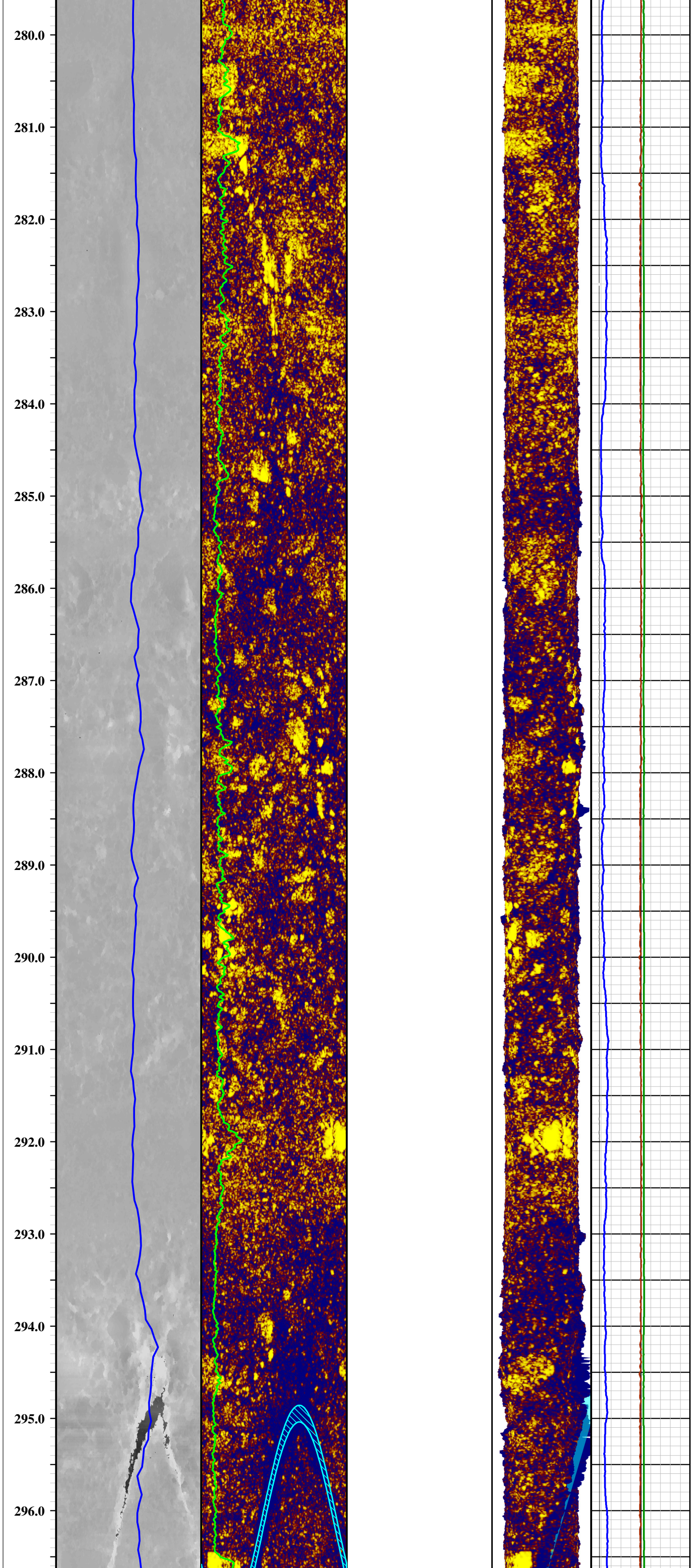
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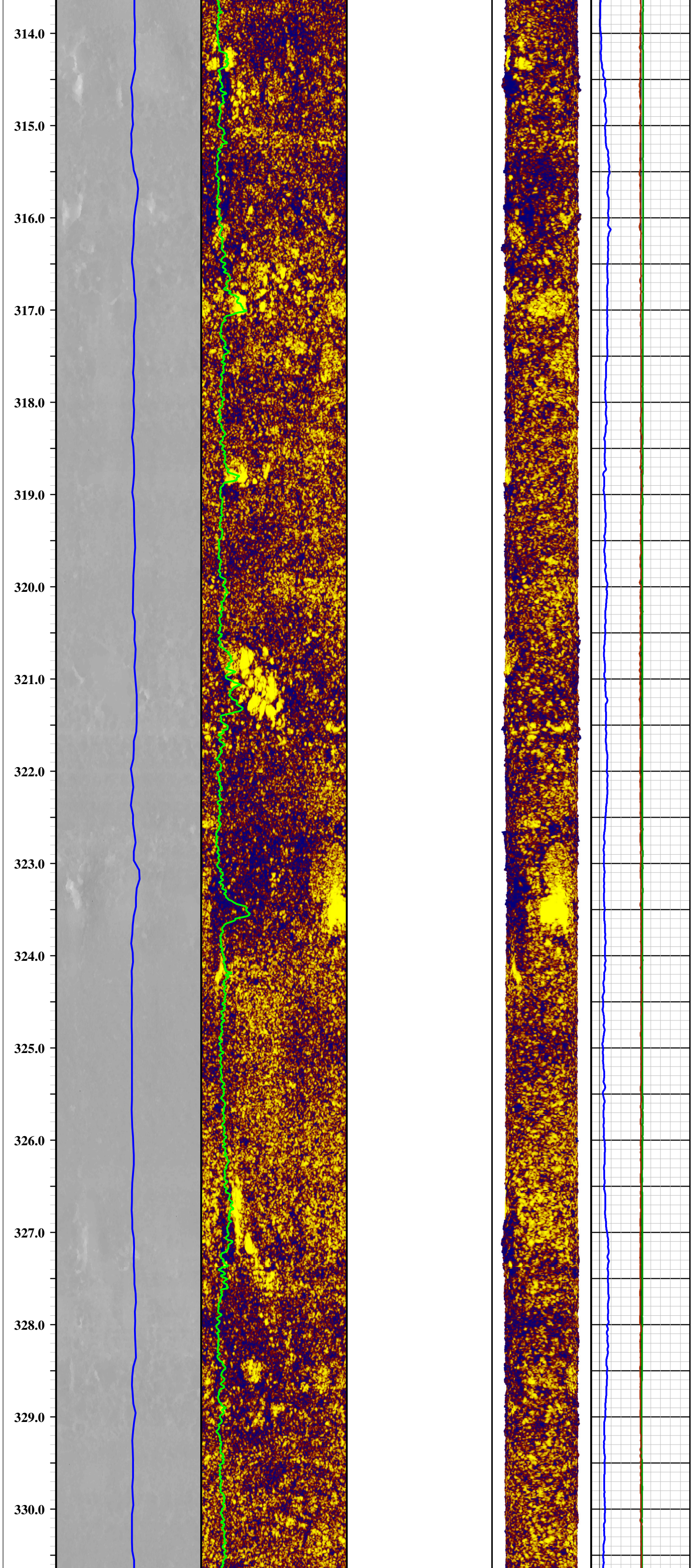
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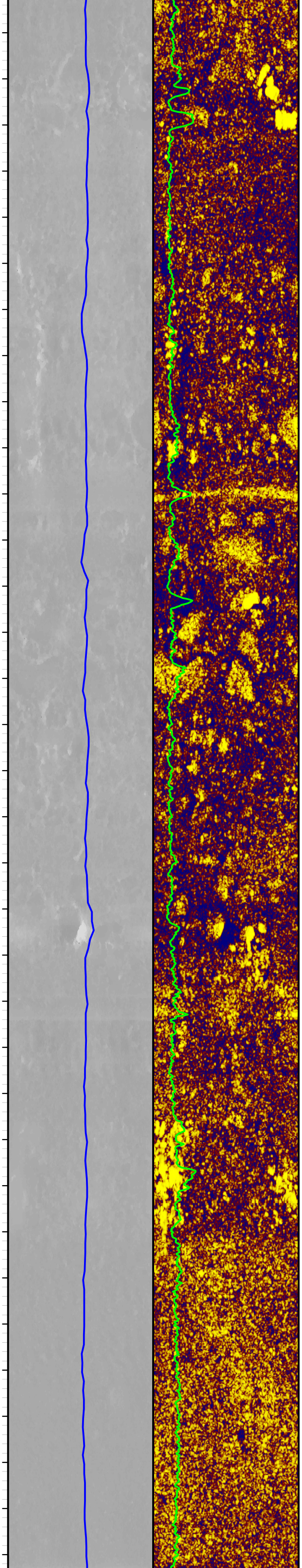

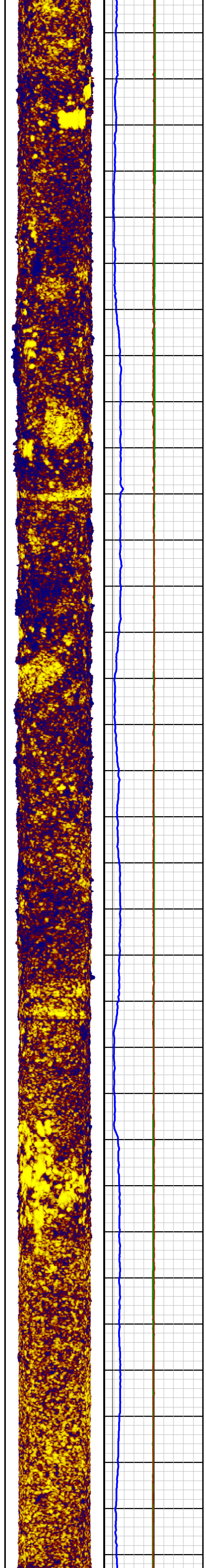

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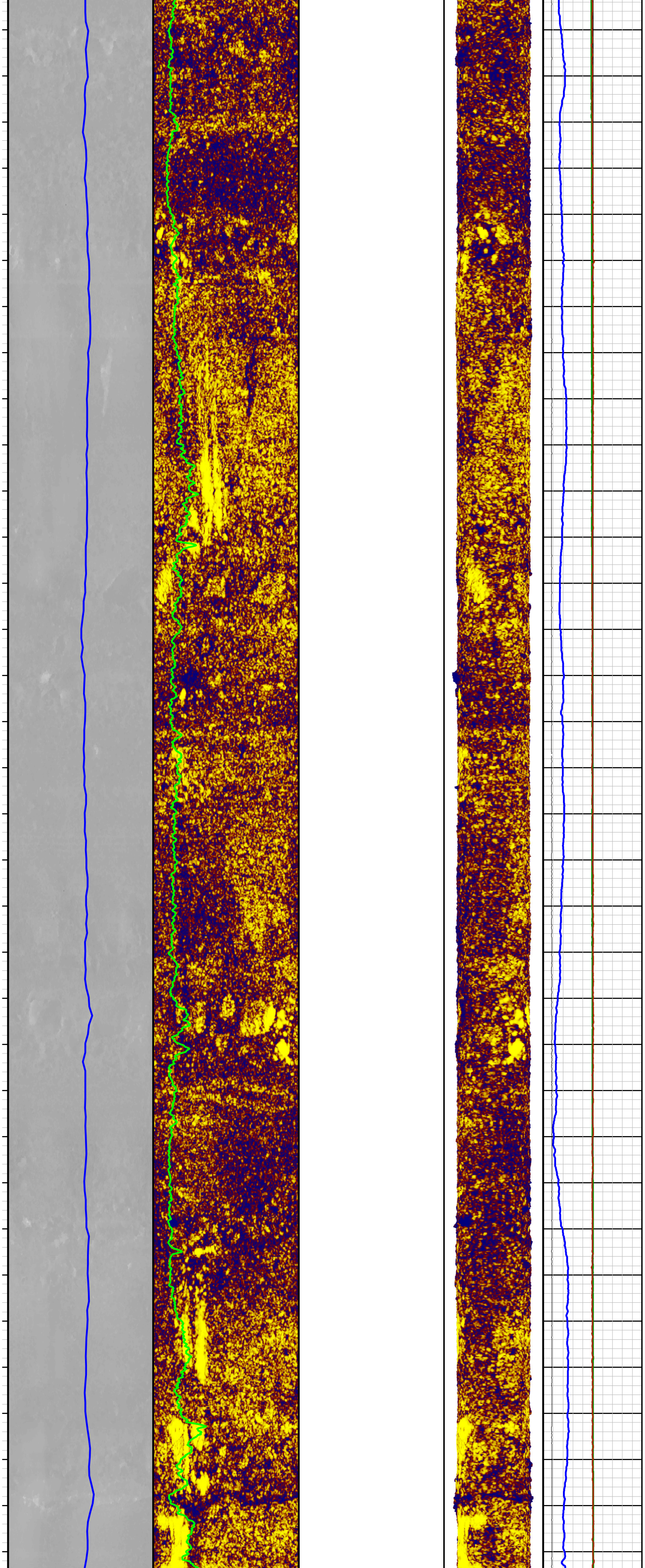

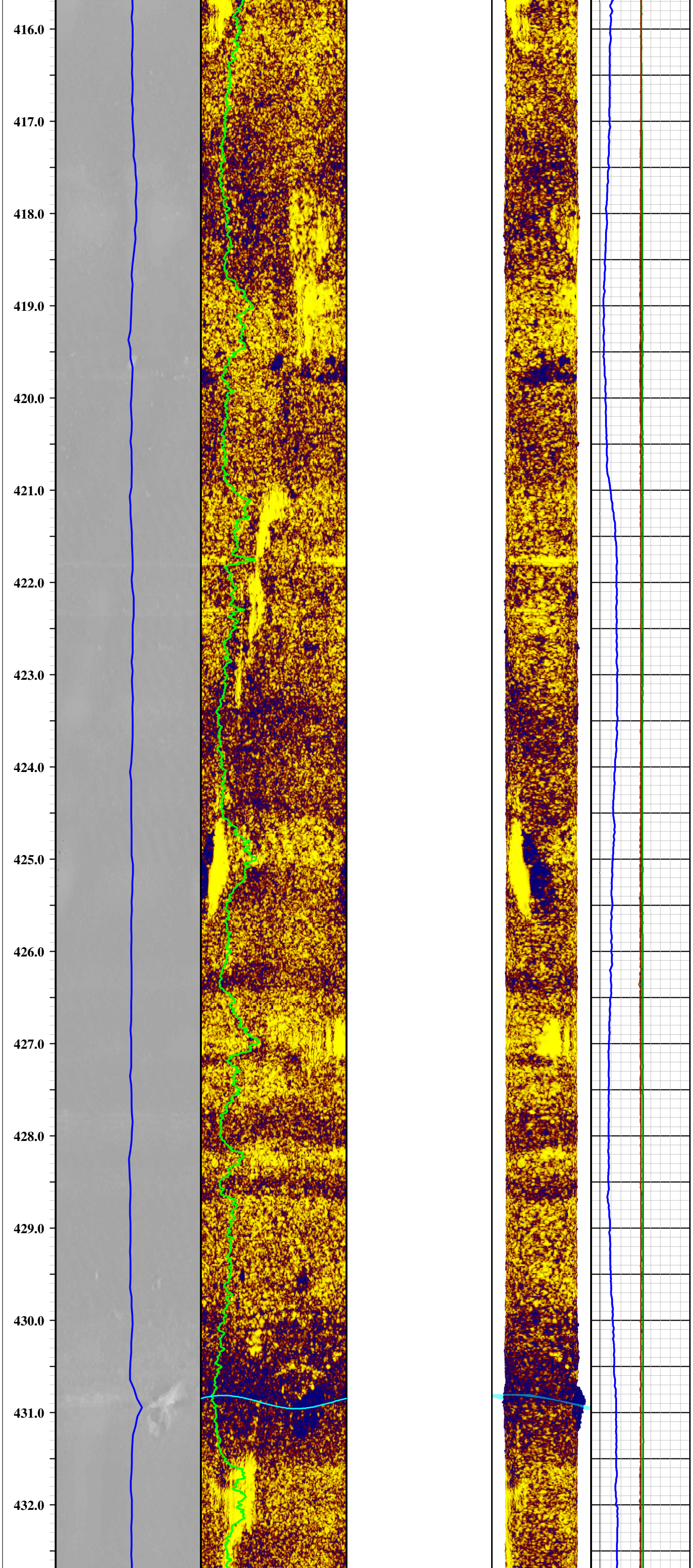
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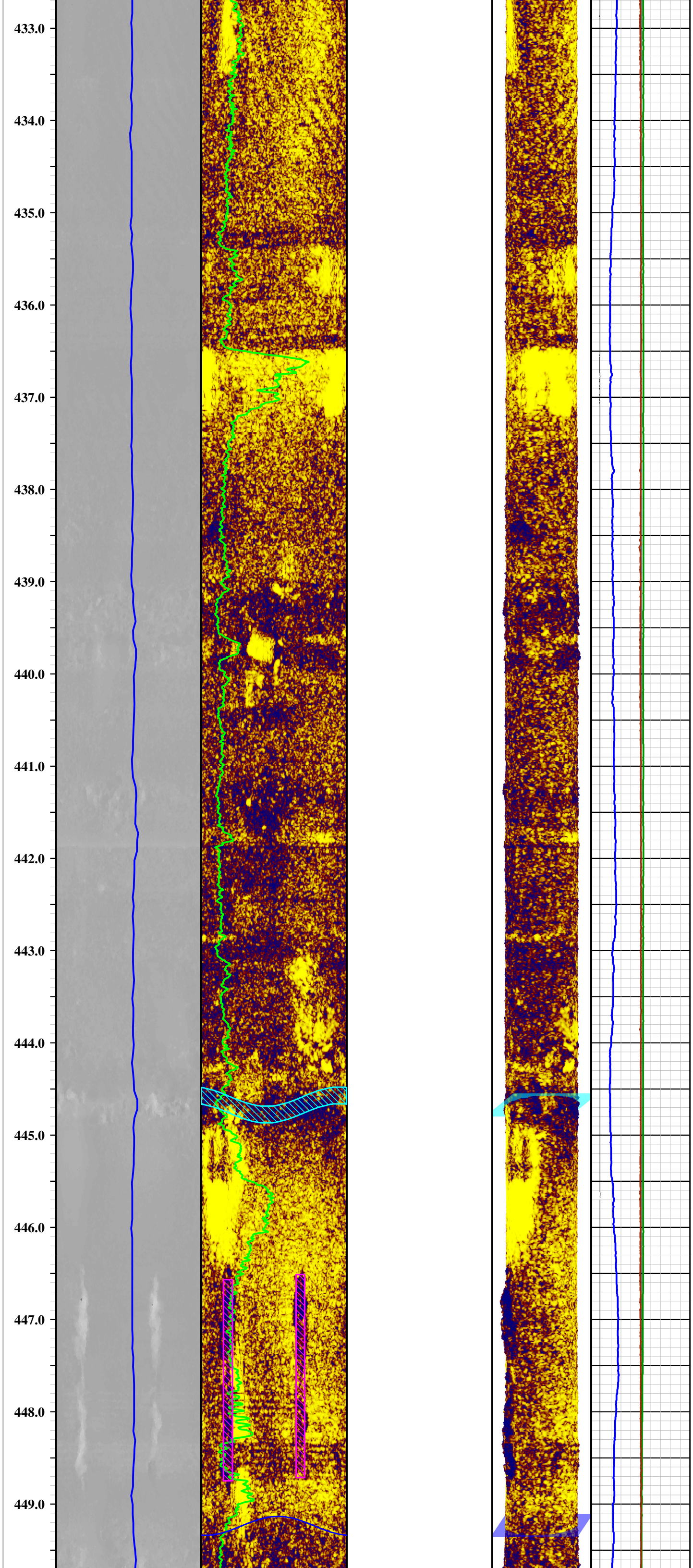
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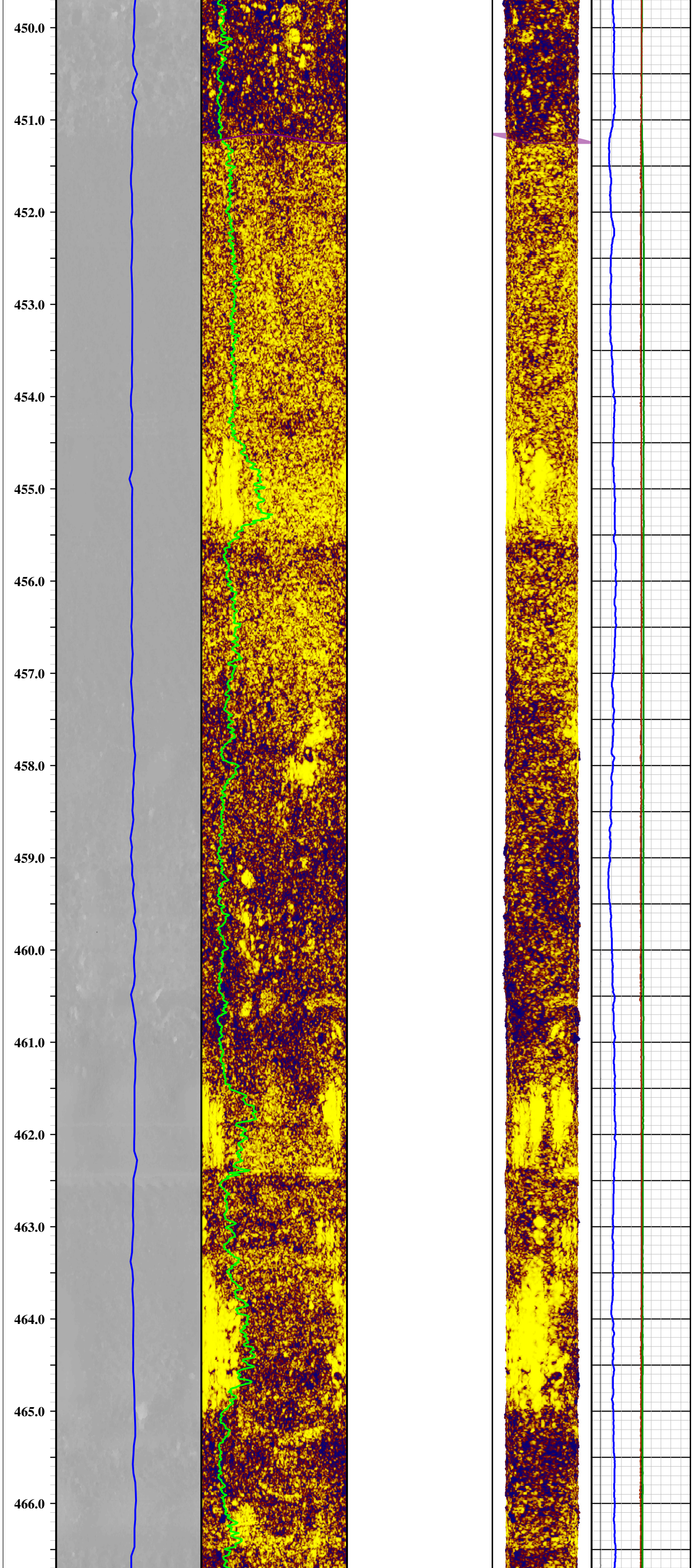
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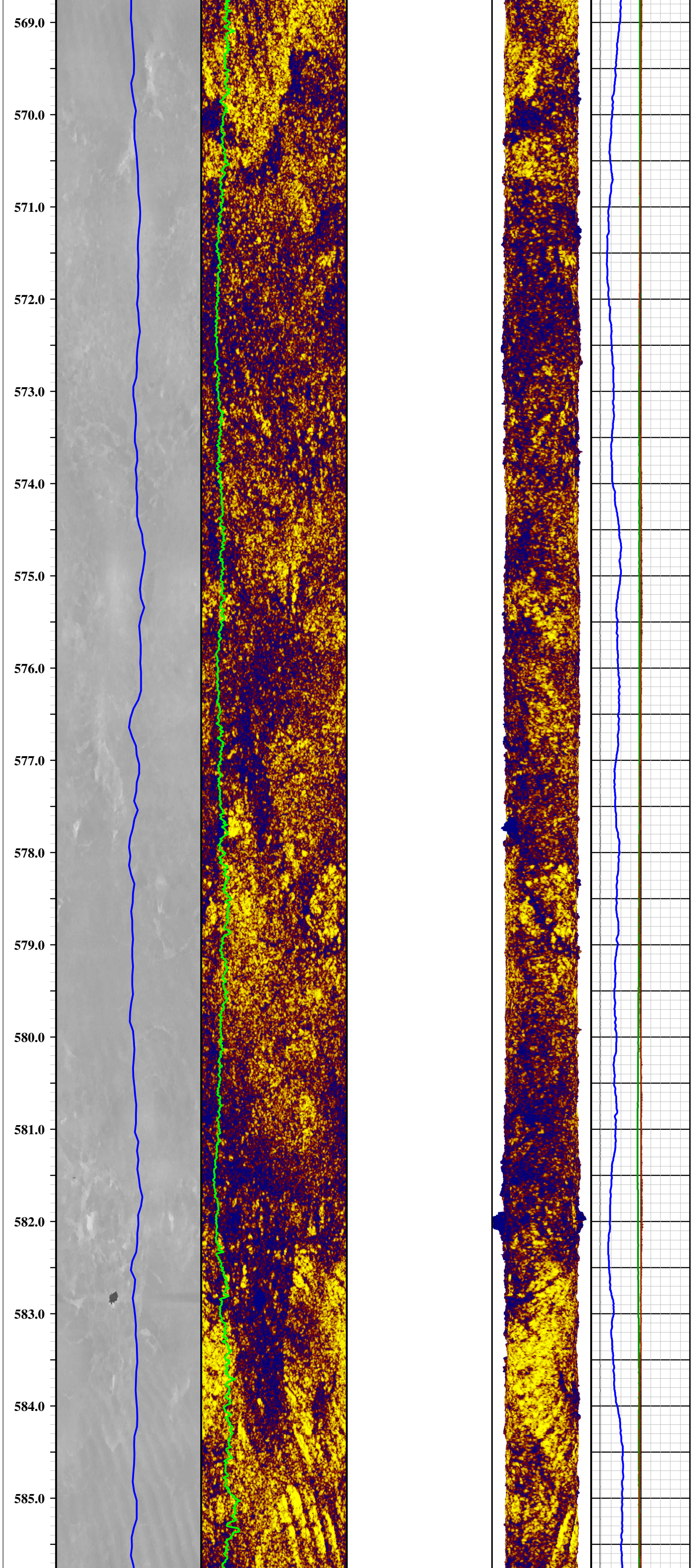
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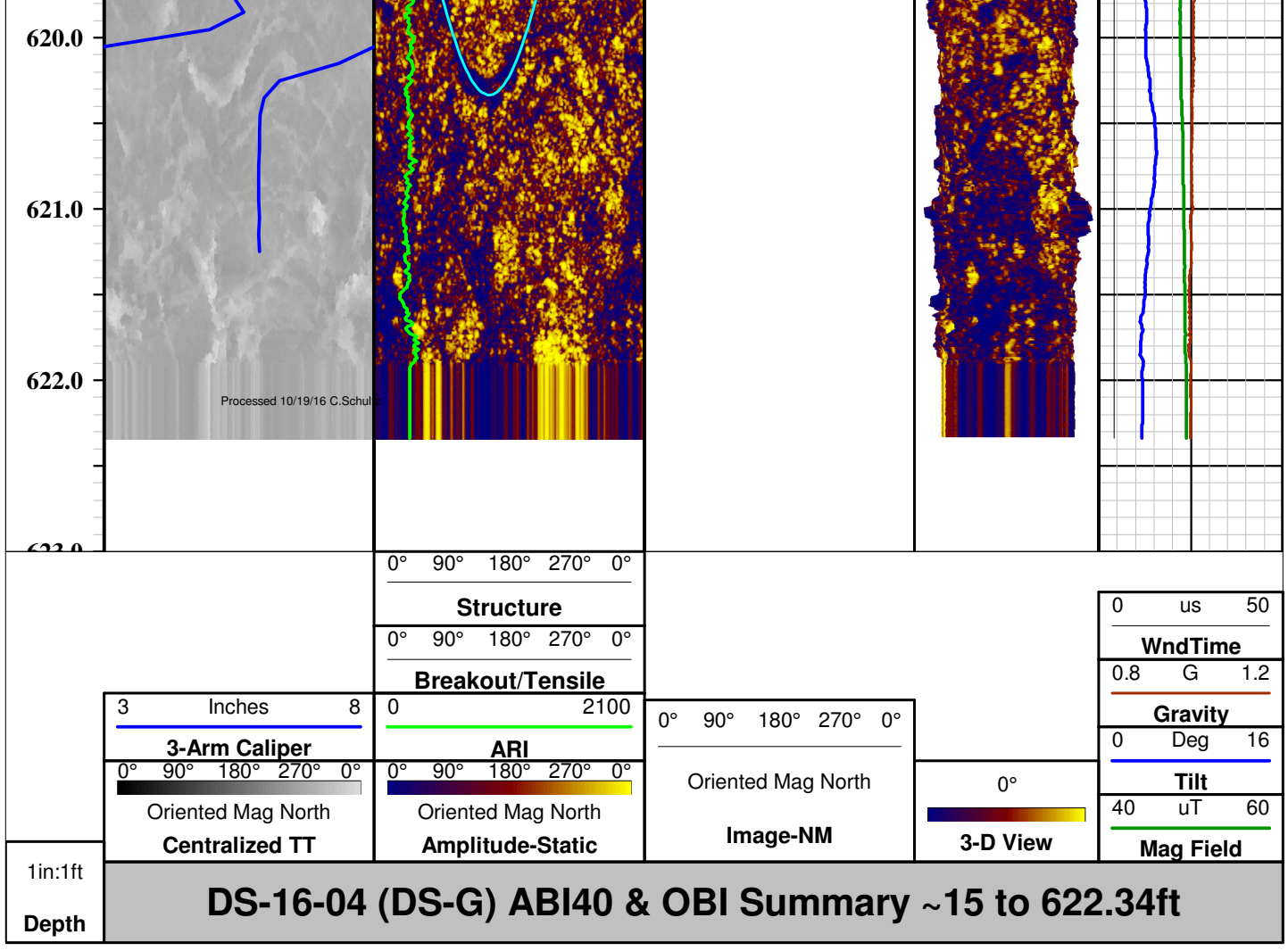
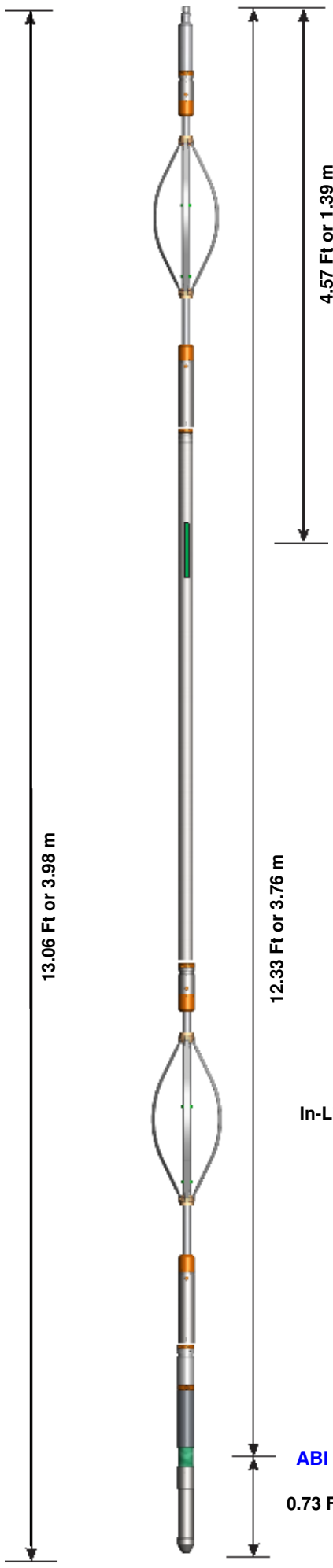


ABI Legend	
Mnemonics	**Description**

ABI-43 Acoustic Borehole Imager



Tool SN: 111801 & 091601

APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

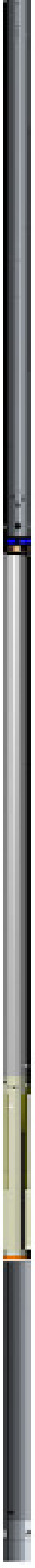
MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft



Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-04
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	DS16-05 (DS-O) 55-919896		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER			OTHER SERVICES
MORE: CALIPER			E-LOGS SONIC TEMP/FLUID RES GAMMA GYRO OPTICAL TELEVIEWER
LOCATION D(1-11)27cbb			
SEC 1 S	TWP 11 E	RGE 27	
PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	10-17-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	6		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	320.0 FT		LEVEL		~ 50 FT.
DEPTH-LOGGER	320.0 FT		MAX. REC. TEMP.		26.1 DEG. C
BTM LOGGED INTERVAL	320.0 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	54.0 FT		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	NATIONAL		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	CHRIS - M & A		LOG TIME:ON SITE/OFF SITE		7:30 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 3/4 IN	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	10-17-16	**Date**	10-17-16	**Date**	10-17-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	SPT CONT. GYRO	**Tool Model**	COMBO TOOL	**Tool Model**	ALT QL OBI40 2G
Tool SN	1413	**Tool SN**	4953	**Tool SN**	152511
From	SURFACE	**From**	SURFACE	**From**	15.0 FT
To	250.0 FT	**To**	320.0 FT	**To**	56.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-15-16	**Operation Check**	10-15-16	**Operation Check**	10-15-16
Calibration Check	N/A	**Calibration Check**	10-15-16	**Calibration Check**	N/A
Time Logged	8:30 AM	**Time Logged**	11:30 AM	**Time Logged**	12:15 PM

Date	10-17-16	**Date**	10-17-16	**Date**	10-17-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	E-LOG 40GRP	**Tool Model**	ALT 4RX SONIC	**Tool Model**	ALT QL ABI40 2G
Tool SN	5514	**Tool SN**	4572	**Tool SN**	143003
From	SURFACE	**From**		**From**	54.0 FT
To	320.0 FT	**To**	320.0 FT	**To**	320.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-15-16	**Operation Check**	10-15-16	**Operation Check**	10-15-16
Calibration Check	10-15-16	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	12:30 PM	**Time Logged**	1:00 PM	**Time Logged**	2:00 PM

Additional Comments:

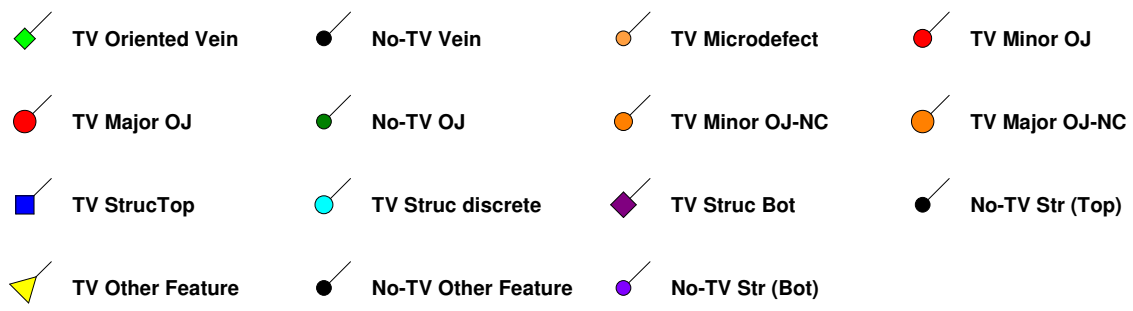
Caliper Arms Used: 9" ARMS **Calibration Points:** 6" & 12"

E-Log Calibration Range: 0.5 - 2000 OHM-M **Calibration Points:** 0.5 & 2000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend



Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS-16-05 (DS-O) ABI40 2G Summary51.27 to 320.99ft

Depth
1in:1ft

Centralized TT
Oriented Mag North
0° 90° 180° 270° 0°

3-Arm Caliper
3 Inches 8

Amplitude-Static
Oriented Mag North
0° 90° 180° 270° 0°

ARI
0 2100

Structure
0° 90° 180° 270° 0°

Structure w/ OBI
0° 90° 180° 270° 0°

3-D View
0°

Mag Field
40 uT 60

Gravity
0.8 G 1.2

WndTime
0 us 50

Azimuth
0 Deg 360

Tilt
0 Deg 5

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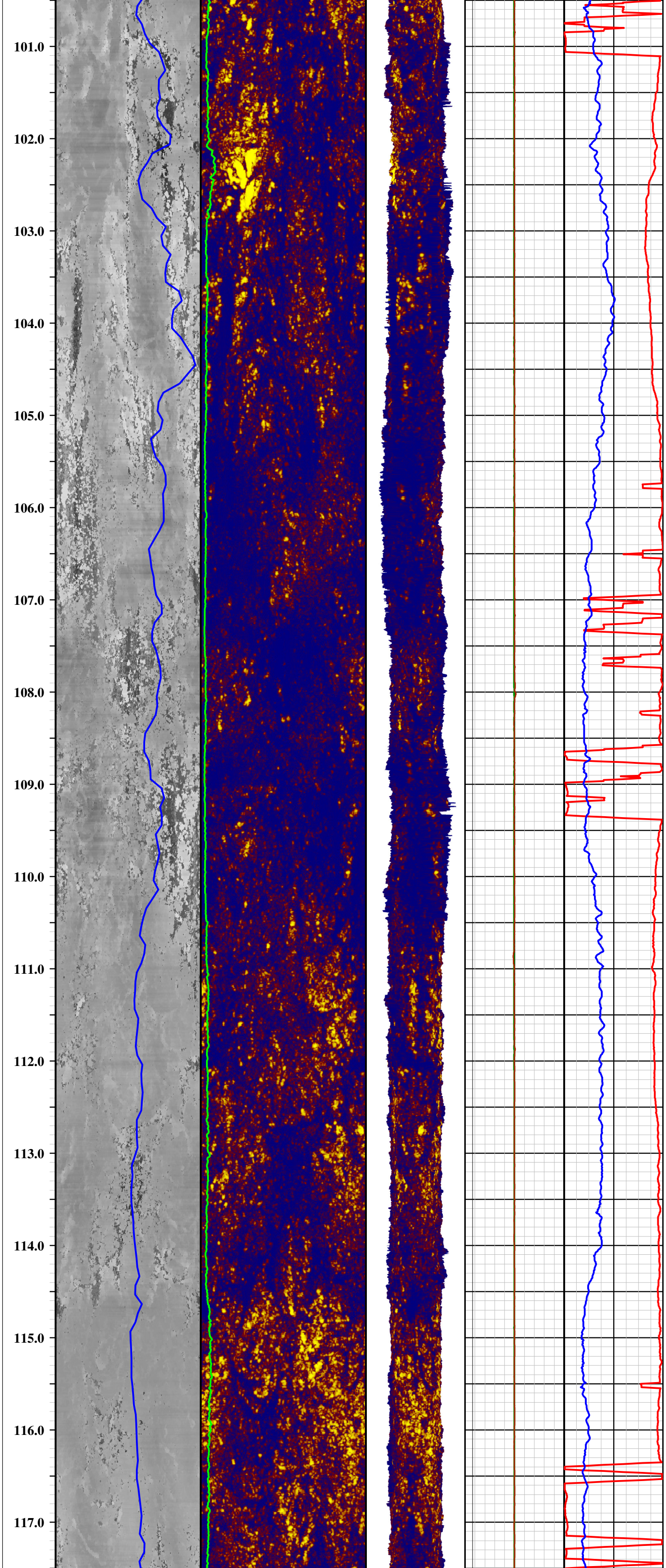
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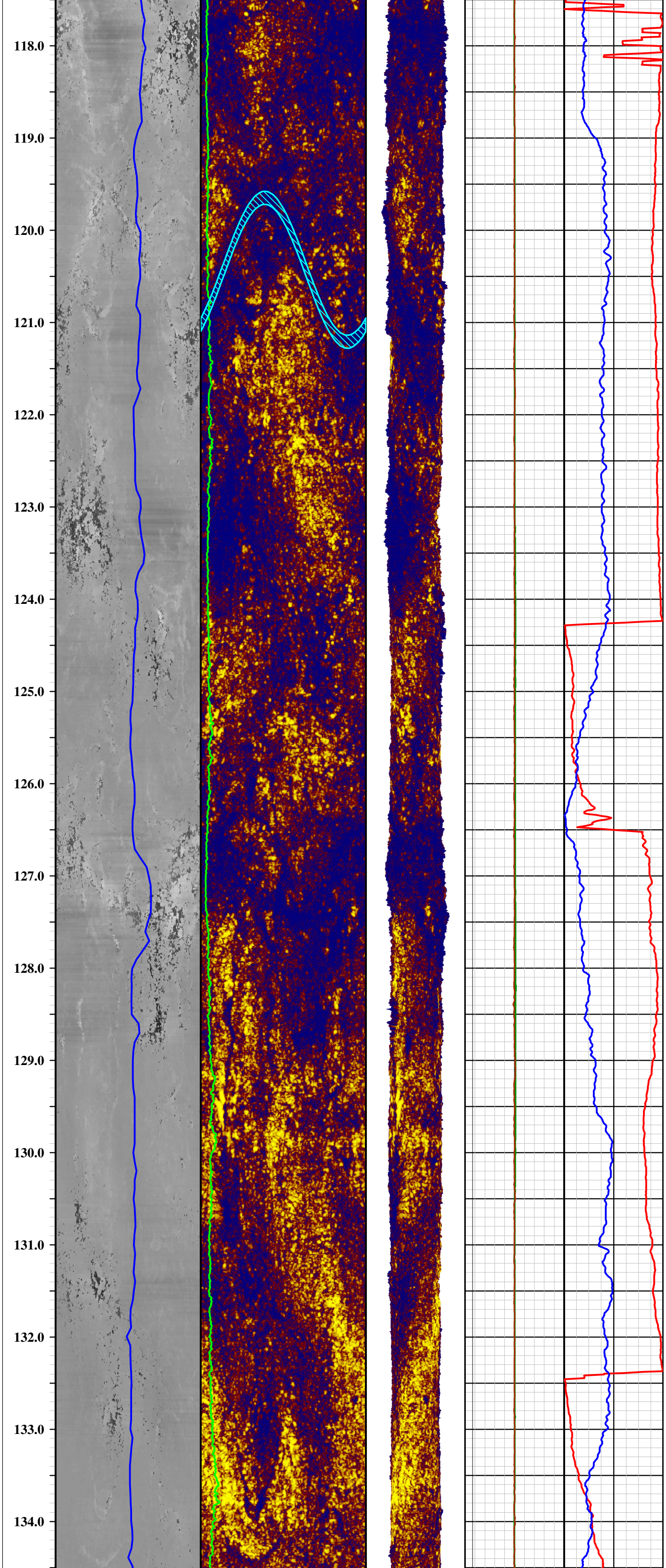
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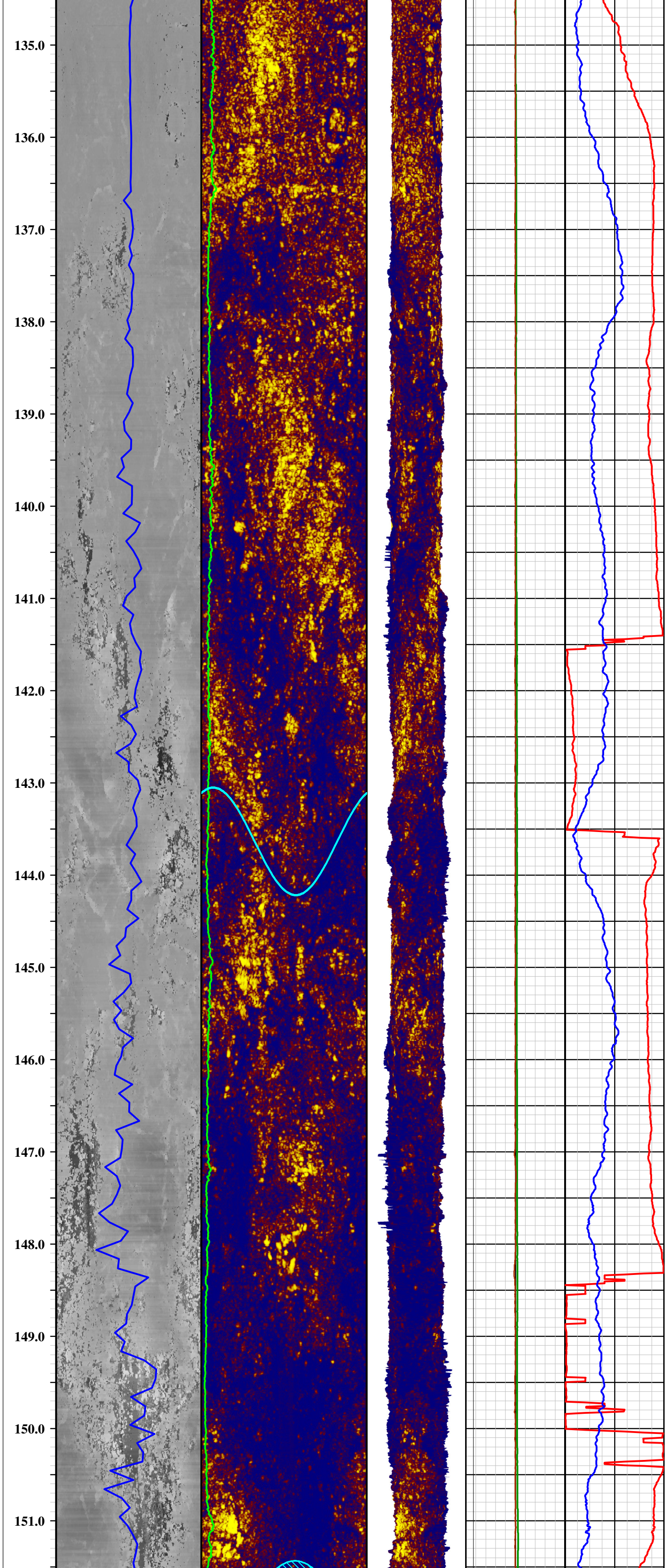

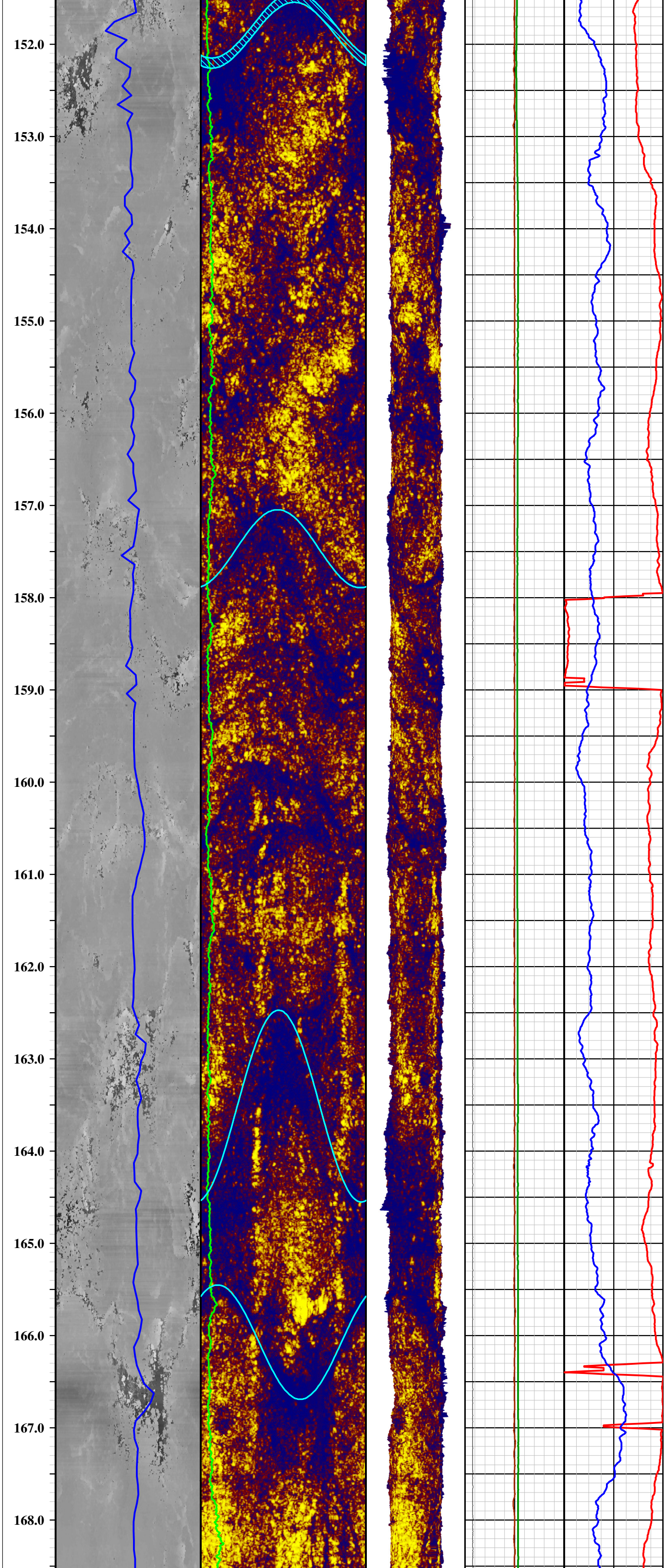
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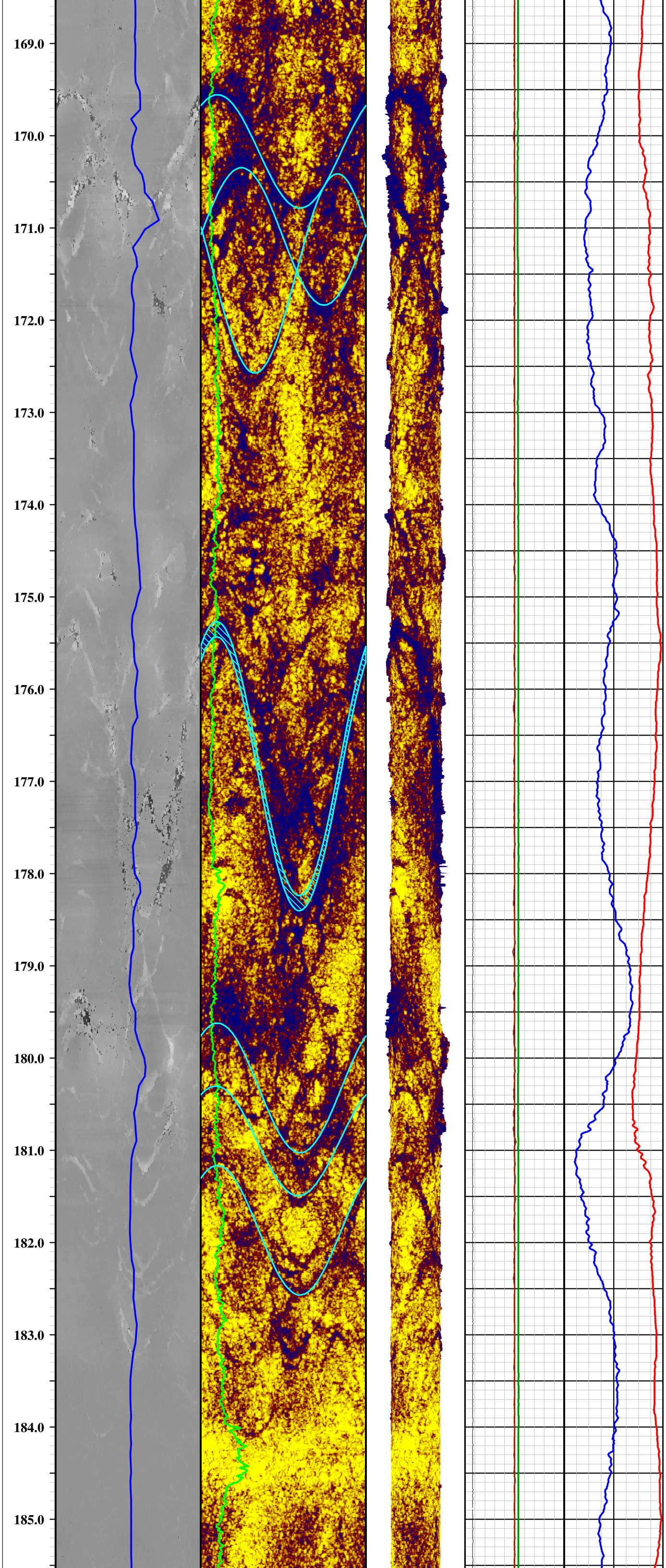
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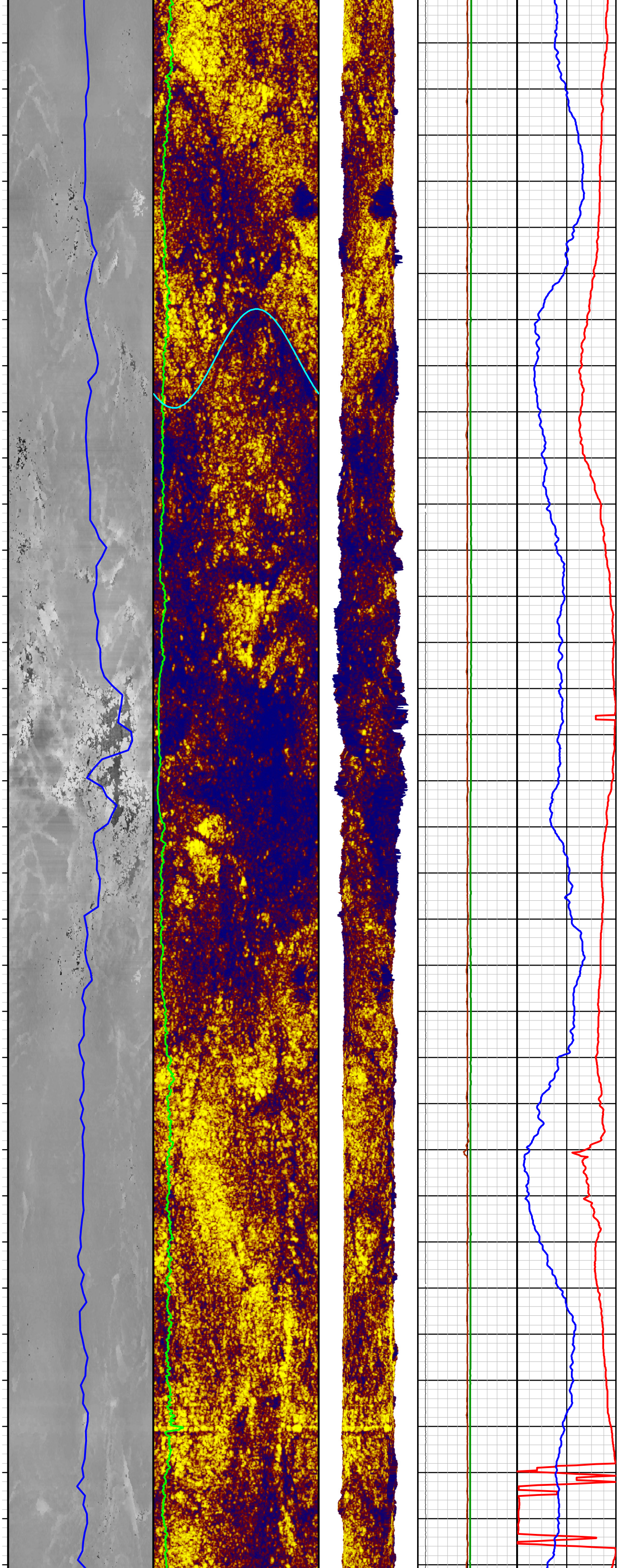

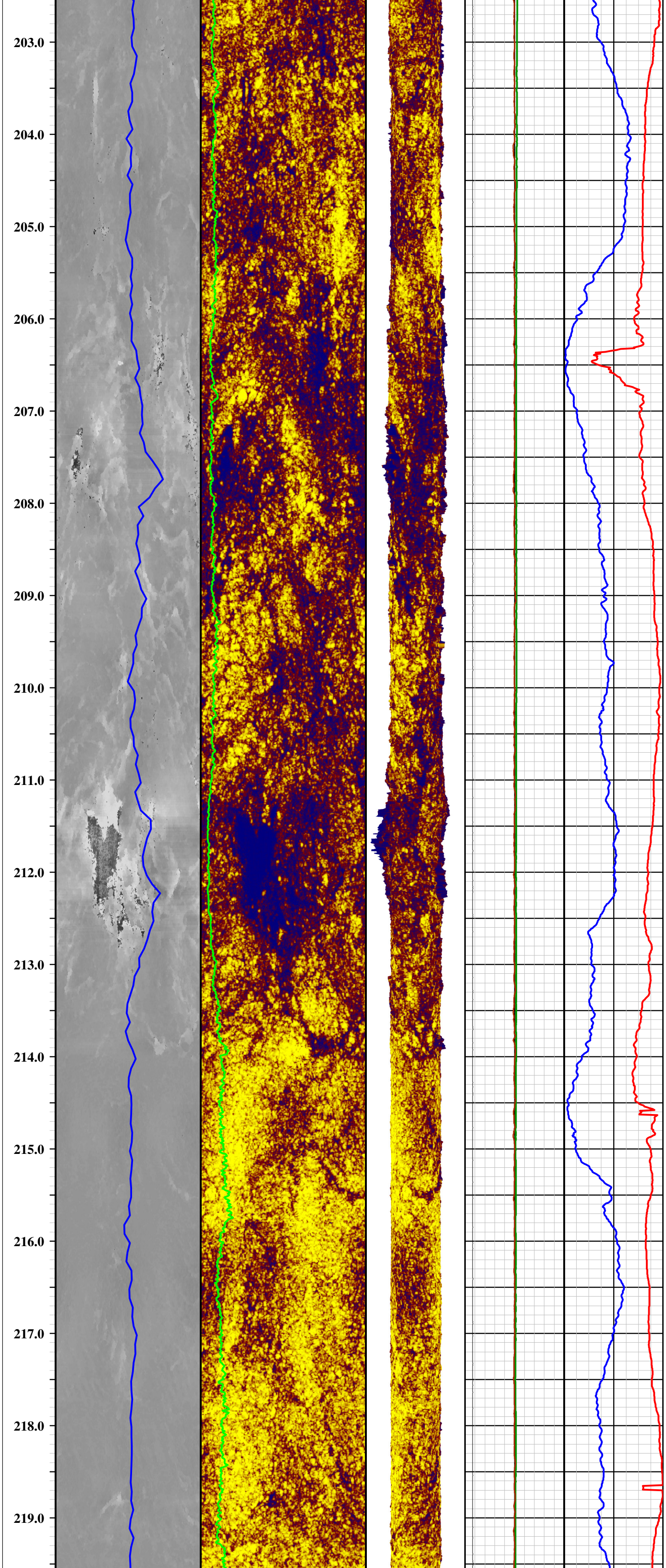
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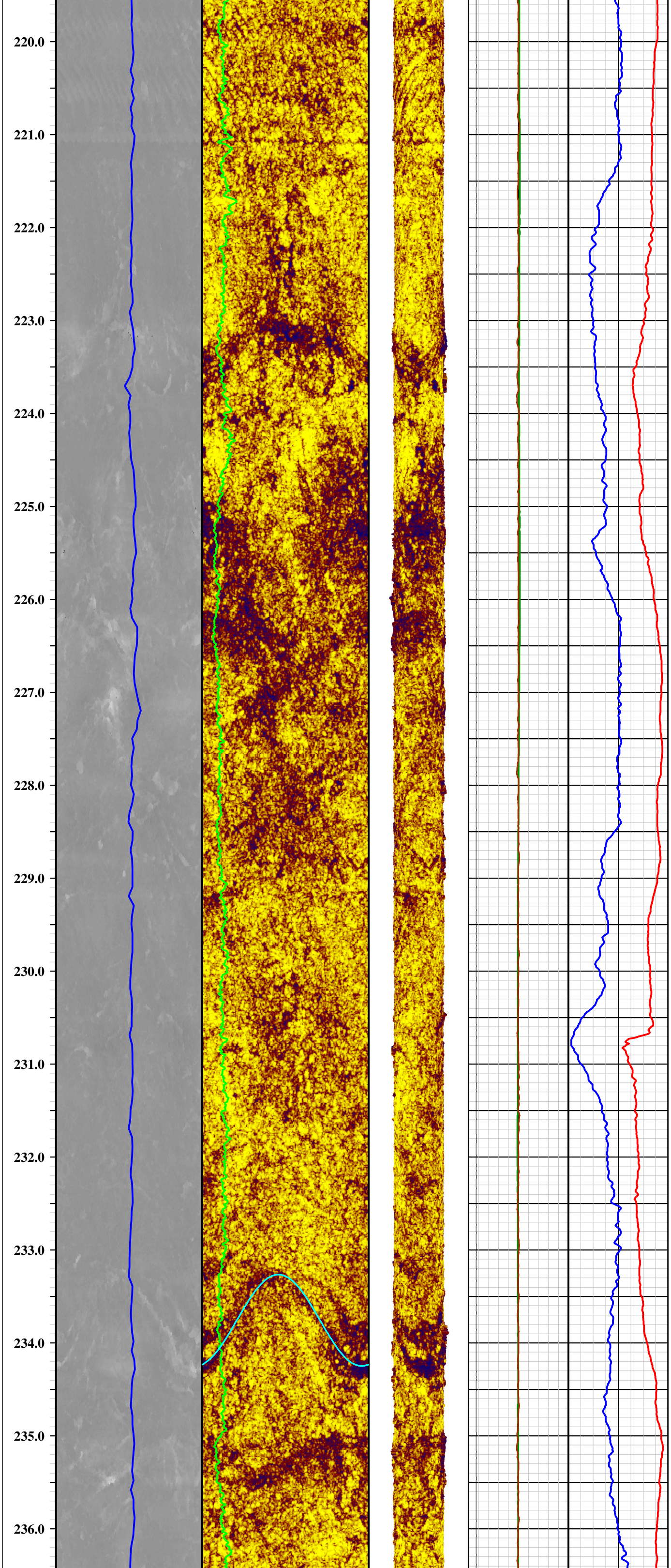
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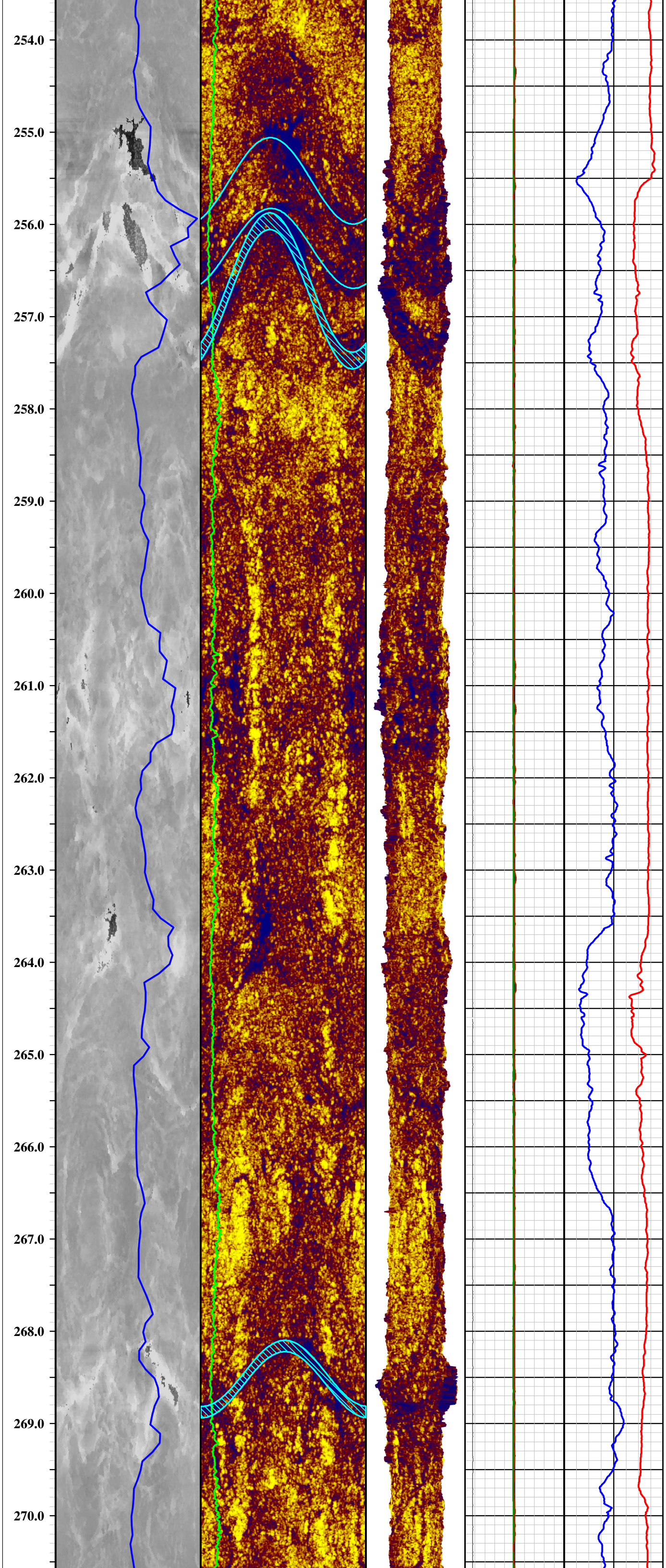
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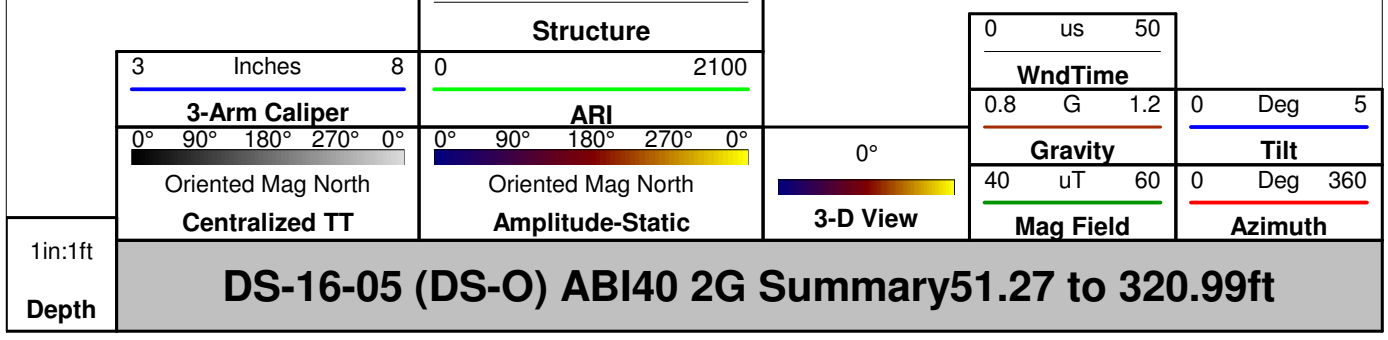
0° 90° 180° 270° 0°

Structure w/ OBI

0° 90° 180° 270° 0°



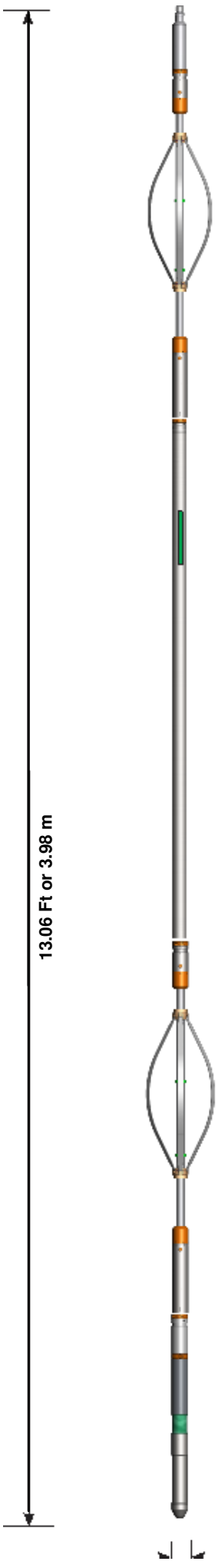
ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized



3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-05
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING
WELL ID	DS16-06 (DS-L) 55-920013
FIELD	NEAR WEST
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

LOCATION
D(1-11)27aba

SEC 1 S TWP 11 E RGE 27

OTHER SERVICES
E-LOGS
SONIC
GAMMA
TEMP/FLUID RES
GYRO
DUAL INDUCTION

PERMANENT DATUM	ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	10-21-16	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	6	MUD WEIGHT	N/A
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	120.0 FT	LEVEL	~ 32 FT.
DEPTH-LOGGER	120.0 FT	MAX. REC. TEMP.	258.3 DEG. C
BTM LOGGED INTERVAL	120.0 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	32.0 FT	SAMPLE INTERVAL	0.010 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM / D. ECKMAN	TOOL STRING/SN	ALT QL ABI40 2G SN 143003
WITNESSED BY	MELISSA - M & A	LOG TIME:ON SITE/OFF SITE	6:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 3/4 IN	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	10-21-16	**Date**	10-21-16	**Date**	10-21-16	**Date**	10-21-16
Run No.	1	**Run No.**	2	**Run No.**	3	**Run No.**	4
Tool Model	SPT CONT. GYRO	**Tool Model**	COMBO TOOL	**Tool Model**	MSILE-LOG 40GRP	**Tool Model**	ALT 4 RX SONIC
Tool SN	1413	**Tool SN**	4953	**Tool SN**	5513	**Tool SN**	4572
From	SURFACE	**From**	SURFACE	**From**	SURFACE	**From**	SURFACE
To	50.0 FT	**To**	120.0 FT	**To**	120.0 FT	**To**	120.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310	**Truck No**	310
Operation Check	10-21-16	**Operation Check**	10-21-16	**Operation Check**	10-21-16	**Operation Check**	10-21-16
Calibration Check	10-21-16	**Calibration Check**	10-21-16	**Calibration Check**	10-21-16	**Calibration Check**	N/A
Time Logged	6:45 PM	**Time Logged**	8:45 PM	**Time Logged**	9:10 PM	**Time Logged**	9:20 PM

Date	10-21-16	**Date**	10-21-16
Run No.	5	**Run No.**	6
Tool Model	QL DIL	**Tool Model**	ALT QL ABI40 2G
Tool SN	6261	**Tool SN**	143003
From	SURFACE	**From**	32.0 FT
To	120.0 FT	**To**	120.0 FT
Recorded By	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310
Operation Check	10-21-16	**Operation Check**	10-21-16
Calibration Check	10-21-16	**Calibration Check**	N/A
Time Logged	9:30 PM	**Time Logged**	9:50 PM

Additional Comments:

Caliper Arms Used: 9" ARMS **Calibration Points:** 6" & 12"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend

TV StrucTop
TV Struc discrete
TV Struc Bot

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-06 (DS-L) ABI40 2G Summary 31.05 to 119.72ft

Depth 1in:1ft

Centralized TT — Oriented Mag North: 0° 90° 180° 270° 0°

3-Arm Caliper: 3 Inches 8

Amplitude-NM — Oriented Mag North: 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North: 0° 90° 180° 270° 0°

ARI: 0 2100

Breakout/Tensile: 0° 90° 180° 270° 0°

Structure: 0° 90° 180° 270° 0°

3-D View: 0°

2ft Temp - Diff: -1 1

Tilt: 0 Deg 16

Azimuth: 0 Deg 360

Mag Field: 40 uT 60

Gravity: 0.8 G 1.2

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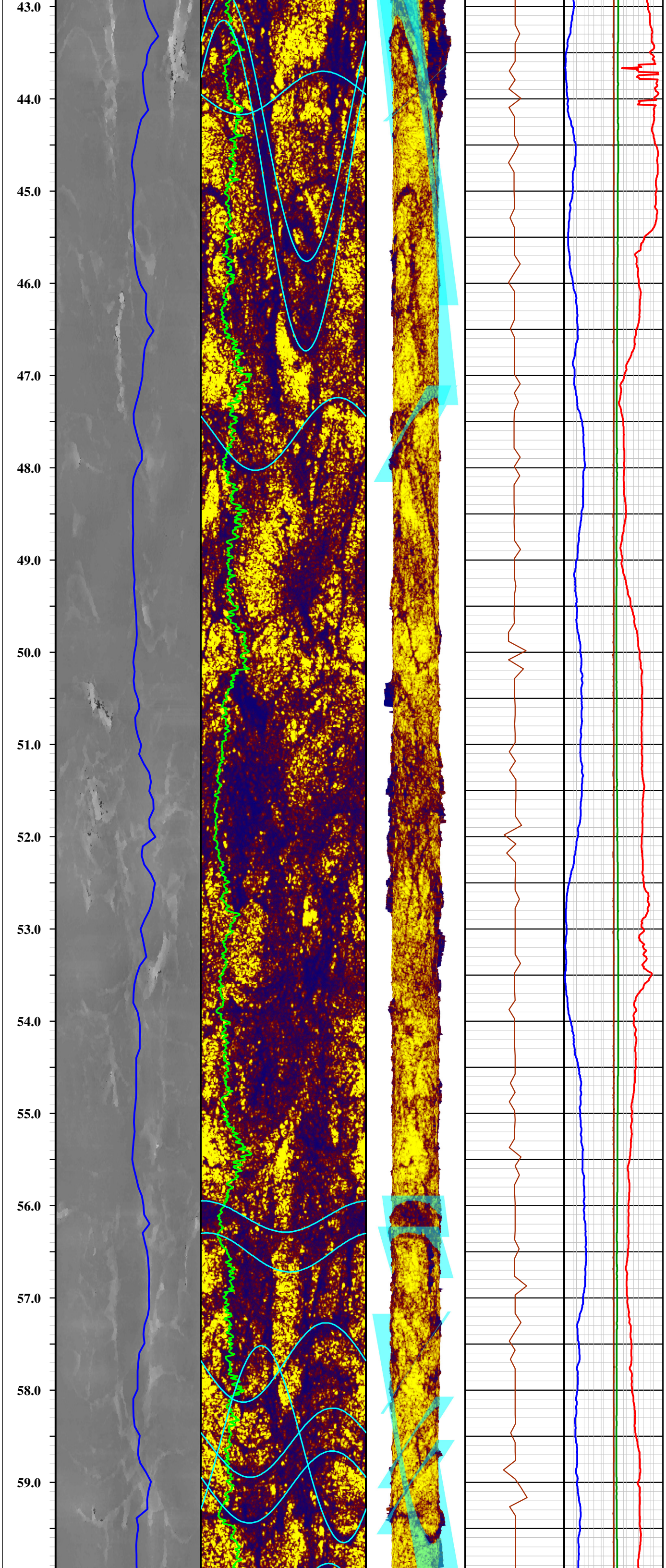
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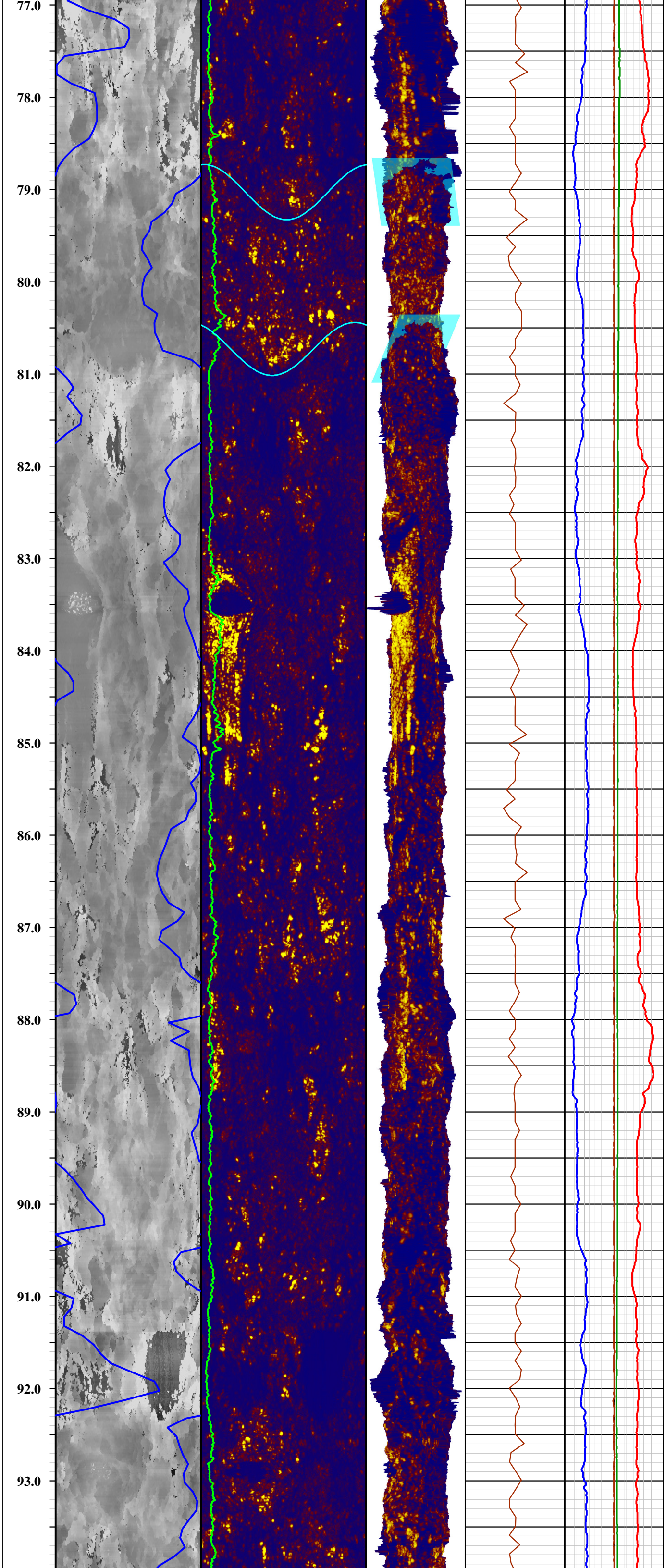
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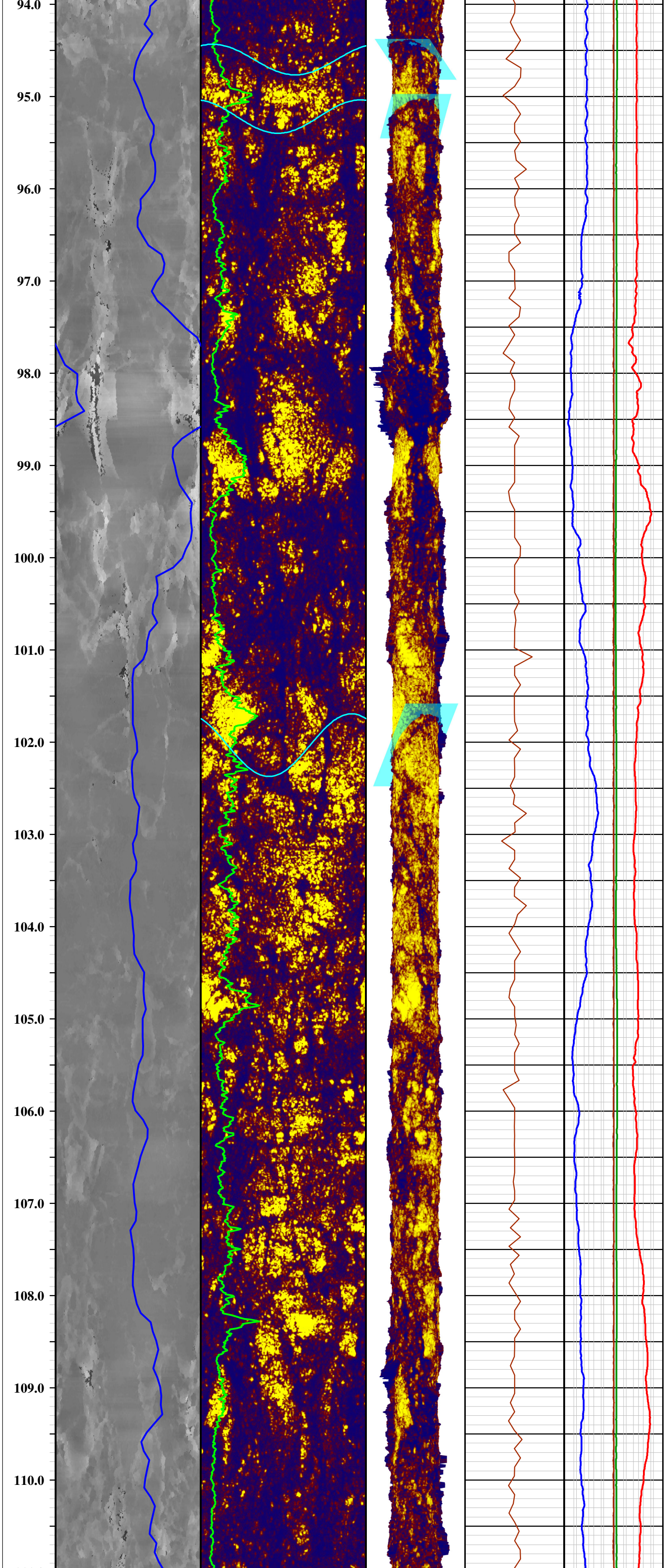
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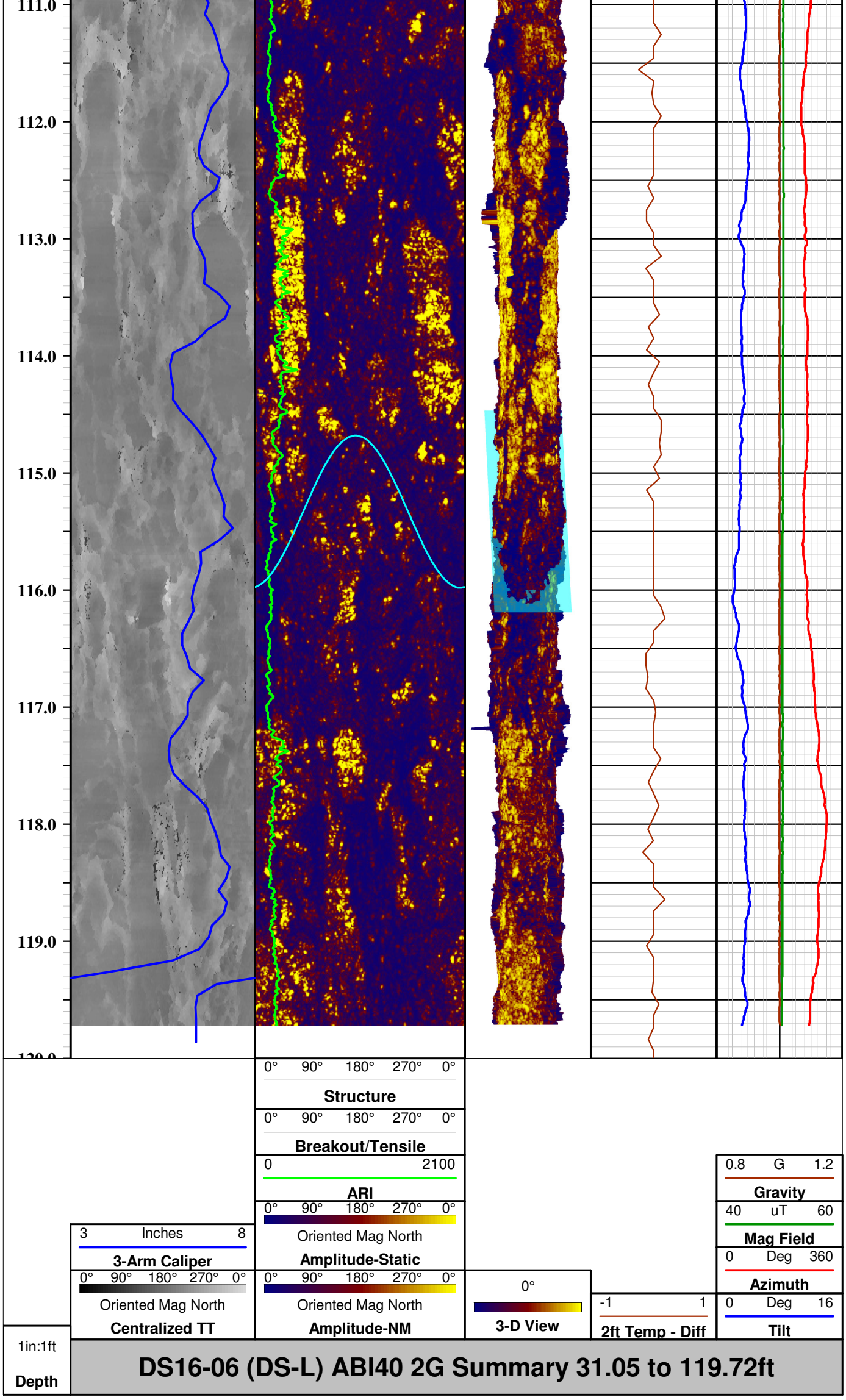
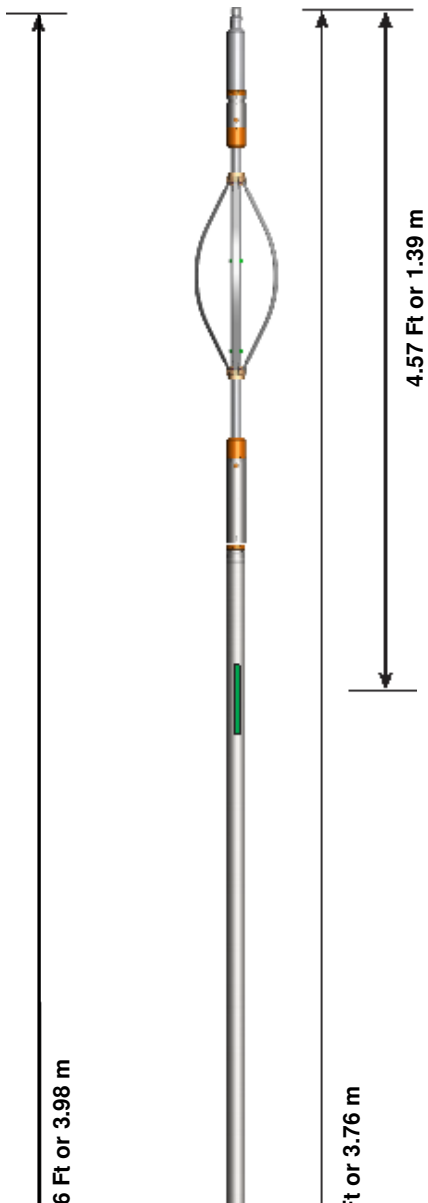


ABI Legend	
Mnemonics	**Description**

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

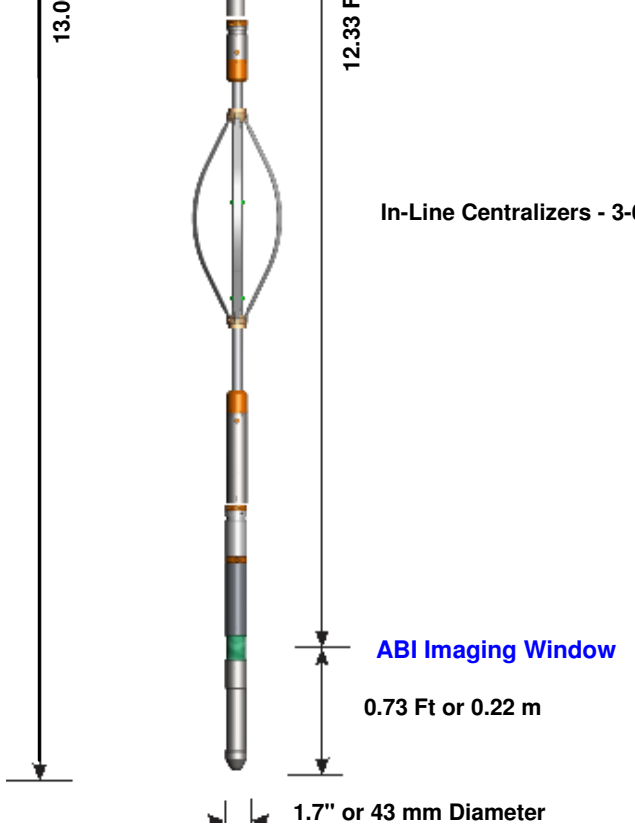
Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)



In-Line Centralizers - 3-6 band Titanium Bow Springs

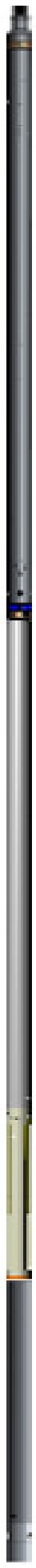
ABI Imaging Window

0.73 Ft or 0.22 m

1.7" or 43 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

Company	RESOLUTION COPPER MINING
Well	DS16-06

Services, LLC
borehole geophysics & video services

Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING
WELL ID	DS16-07 (DS-K) 55-920014
FIELD	NEAR WEST
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

LOCATION
D(1-11)26bba

SEC 1 S TWP 11 E RGE 26

OTHER SERVICES
E-LOG
DUAL INDUCTION
OPTICAL TELEVIEWER
GAMMA
TEMP/FLUID RES
SONIC

PERMANENT DATUM	ELEVATION 2,379 FT	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	10-24-16	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	1 & 6	MUD WEIGHT	N/A
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	320 FT	LEVEL	~ 70 FT
DEPTH-LOGGER	320 FT	MAX. REC. TEMP.	30.87 Deg C
BTM LOGGED INTERVAL	320 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	70 FT	SAMPLE INTERVAL	0.010 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	D. ECKMAN / E. TURNER	TOOL STRING/SN	ALT QL ABI40 2G SN 143003
WITNESSED BY	MONTGOMERY / MATT	LOG TIME:ON SITE/OFF SITE	2:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12"	STEEL	SURFACE	20 FT
2	10.5"	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	10-24-16		**Date**	10-24-16		**Date**	10-24-16		
Run No.	1		**Run No.**	2		**Run No.**	3		
Tool Model	COMBO TOOL		**Tool Model**	QL DIL		**Tool Model**	ALT QL ABI40 2G		
Tool SN	4953		**Tool SN**	6261		**Tool SN**	152511		
From	SURFACE		**From**	20 FT		**From**	20 FT		
To	320 FT		**To**	70 FT		**To**	70 FT		
Recorded By	E. TURNER		**Recorded By**	E. TURNER		**Recorded By**	E. TURNER		
Truck No	310		**Truck No**	310		**Truck No**	310		
Operation Check	10-23-16		**Operation Check**	10-23-16		**Operation Check**	10-23-16		
Calibration Check	10-23-16		**Calibration Check**	10-23-16		**Calibration Check**	N/A		
Time Logged	4:45 PM		**Time Logged**	5:40 PM		**Time Logged**	6:00 PM		

Date	10-24-16		**Date**	10-24-16		**Date**	10-24-16		
Run No.	4		**Run No.**	5		**Run No.**	6		
Tool Model	E-LOG 40GRP		**Tool Model**	ALT 4RX SONIC		**Tool Model**	ALT QL ABI40 2G		
Tool SN	5514		**Tool SN**	4572		**Tool SN**	143003		
From	70 FT		**From**	70 FT		**From**	70 FT		
To	320 FT		**To**	320 FT		**To**	320 FT		
Recorded By	E. TURNER		**Recorded By**	E. TURNER		**Recorded By**	E. TURNER		
Truck No	310		**Truck No**	310		**Truck No**	310		
Operation Check	10-23-16		**Operation Check**	10-23-16		**Operation Check**	10-23-16		
Calibration Check	N/A		**Calibration Check**	N/A		**Calibration Check**	N/A		
Time Logged	6:25 PM		**Time Logged**	6:40 PM		**Time Logged**	7:00 PM		

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 4" & 16"

E-Log Calibration Range: 1-1,000 OHM-M **Calibration Points:** 1 & 1,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend

TV StrucTop
TV Struc discrete
TV Struc Bot

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-07 (DS-K) ABI/OBI Summary 19.14 to 317.85ft

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 4 Inches 14

Max Acoustic Caliper — 4 in 14

Ave Acoustic Caliper — 4 in 14

Enlargements

Structure — 0° 90° 180° 270° 0°

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 2100

Breakout/Tensile — 0° 90° 180° 270° 0°

Image-NM (Corrected) — Oriented Mag North — 0° 90° 180° 270° 0°

3D View ABI — 0°

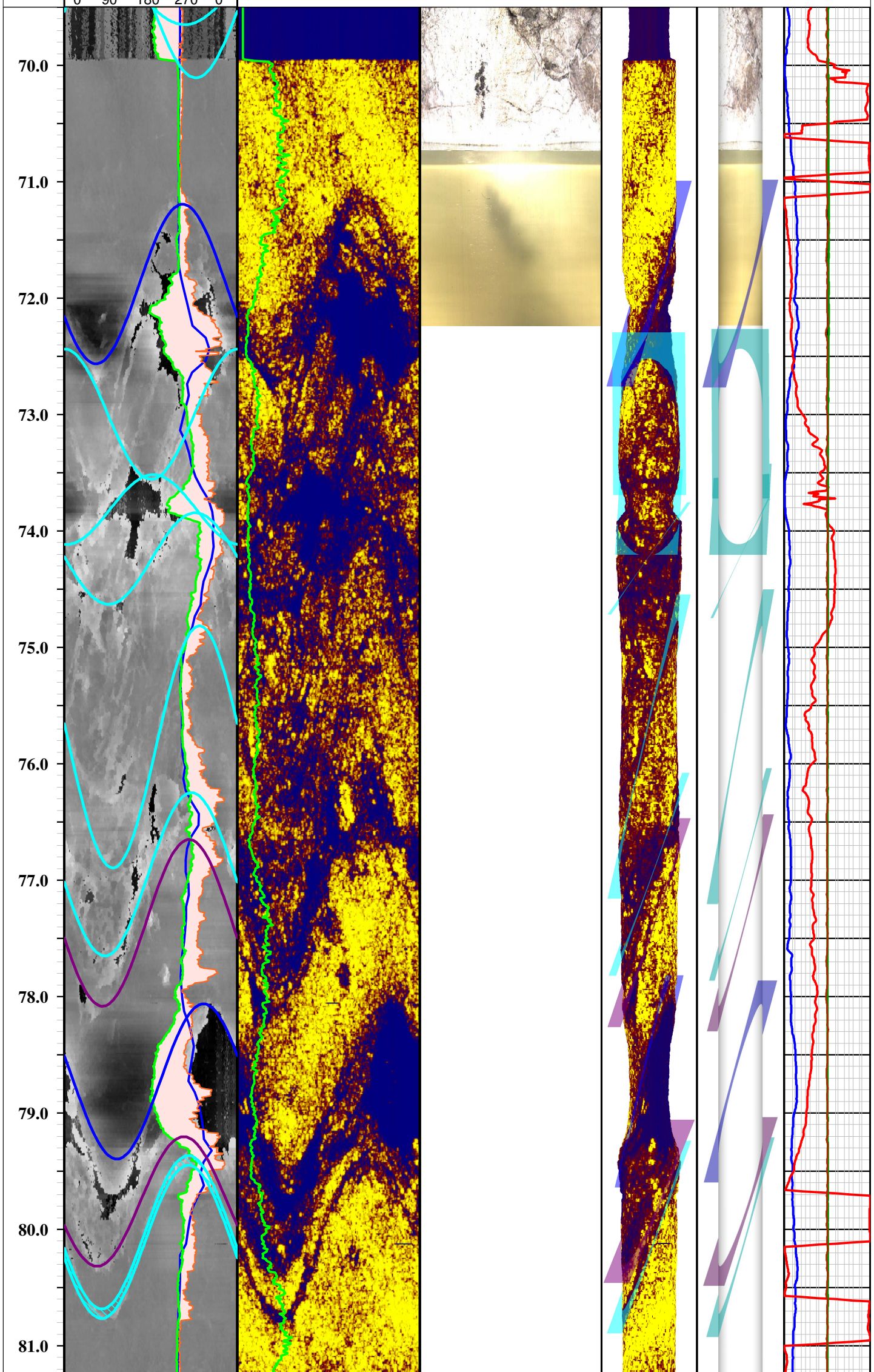
3D View OBI — 0°

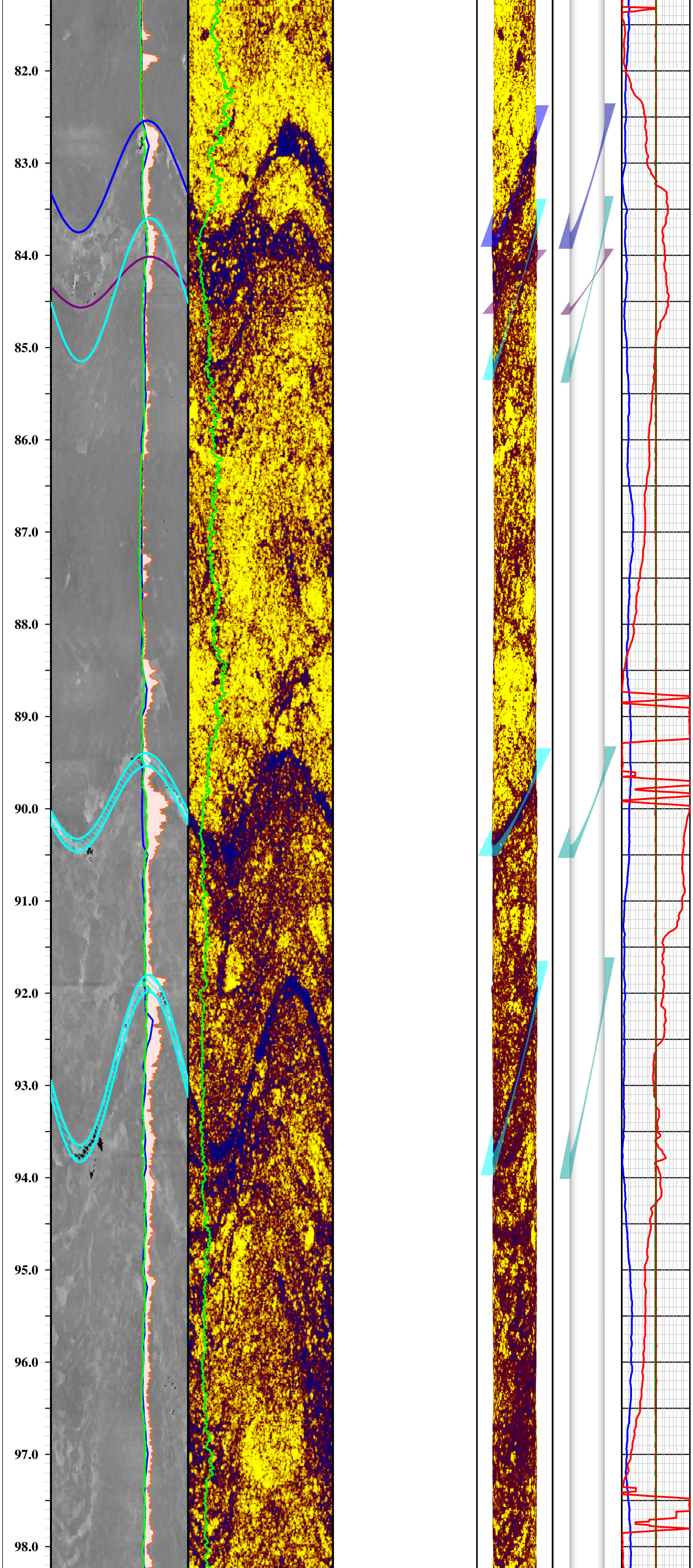
Tilt — 0 Deg 16

Azimuth — 0 360

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

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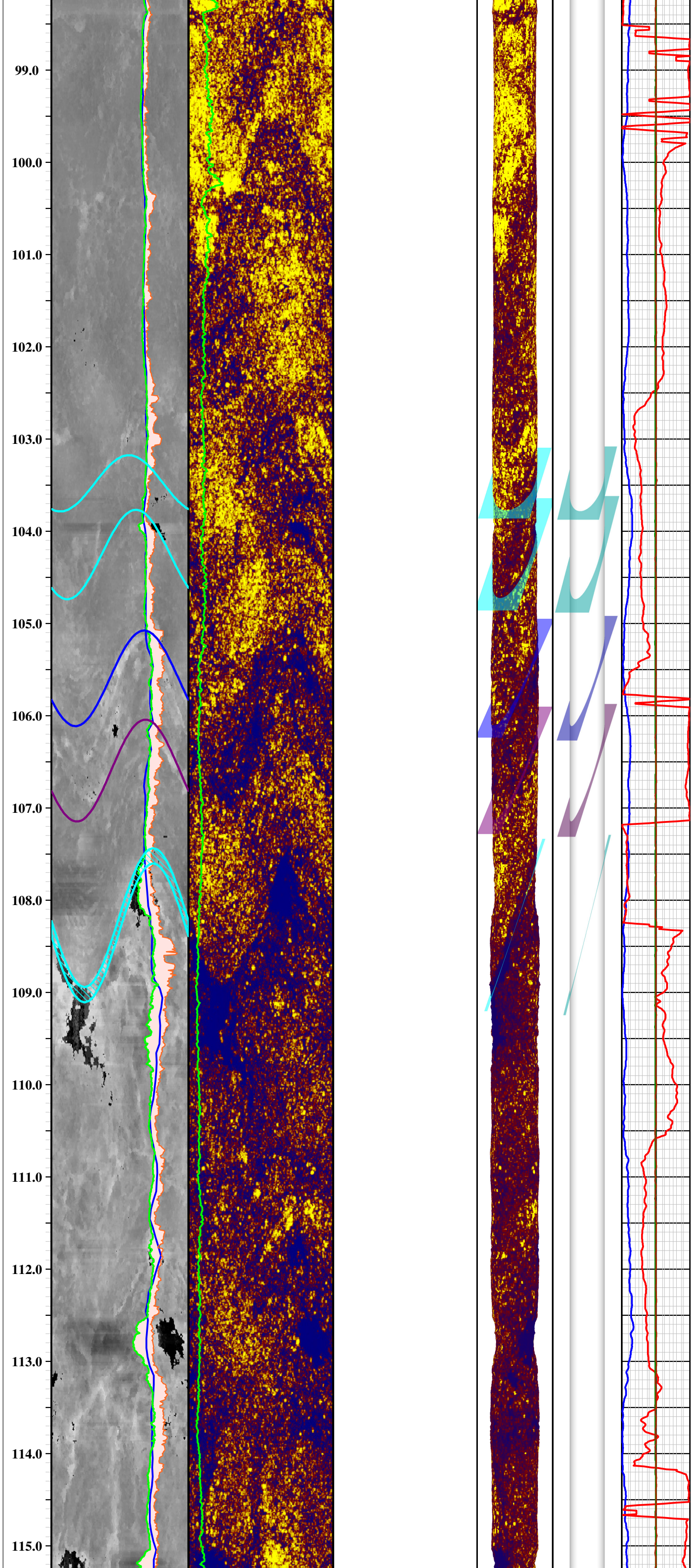
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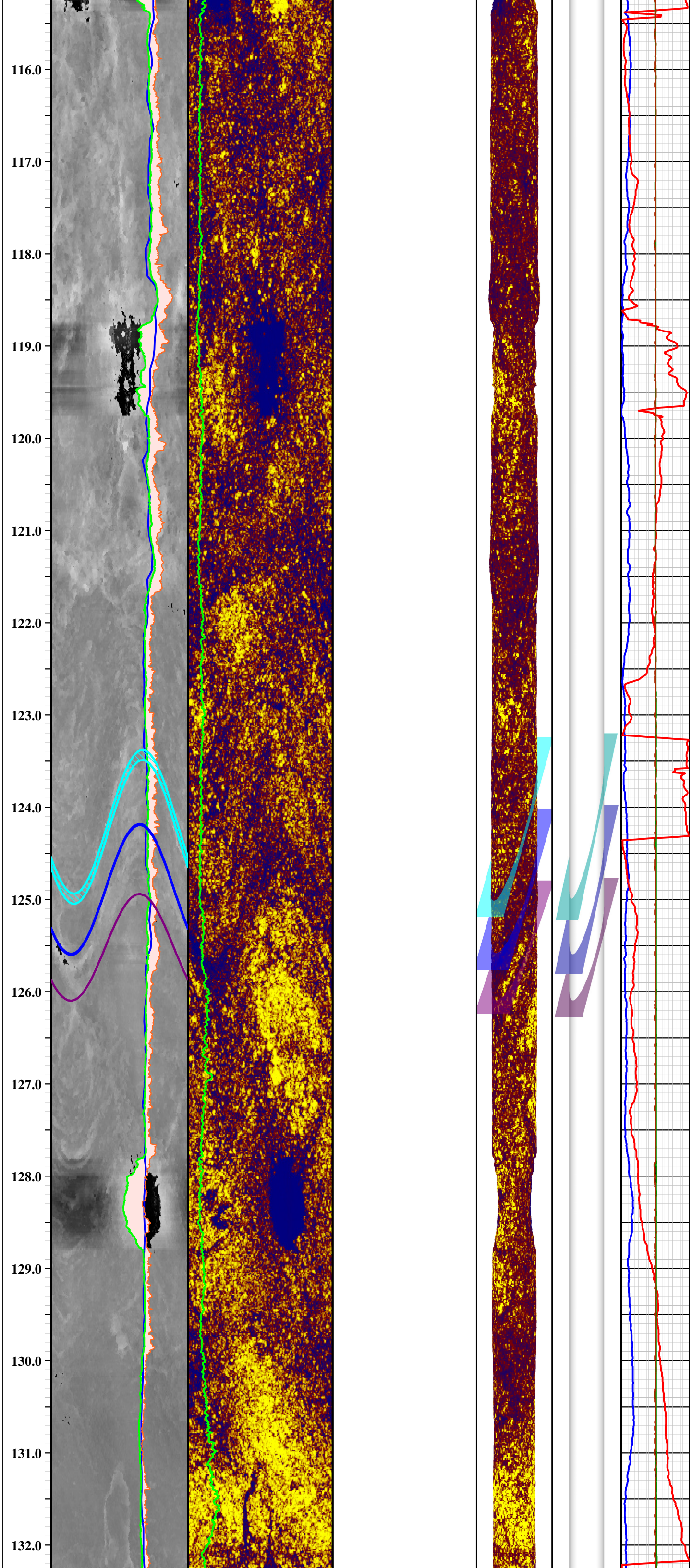
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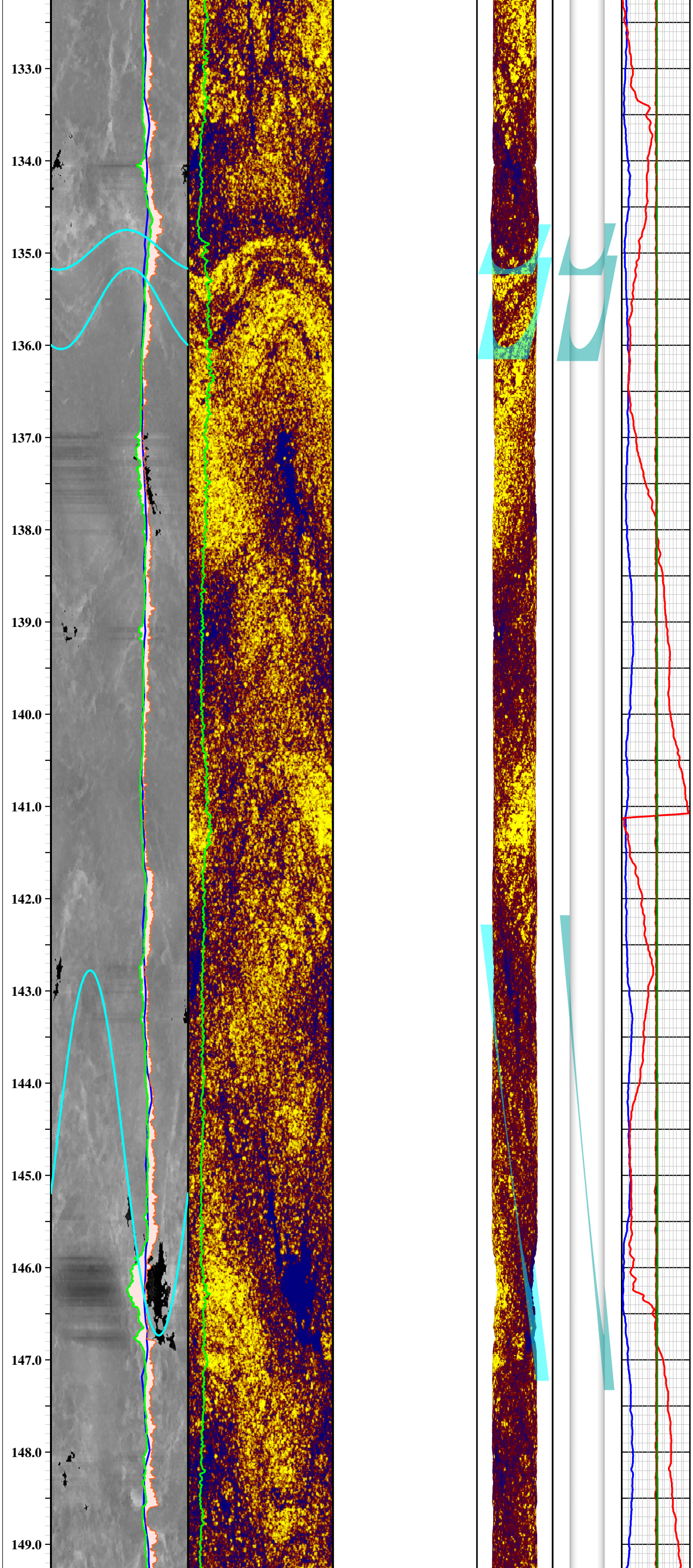
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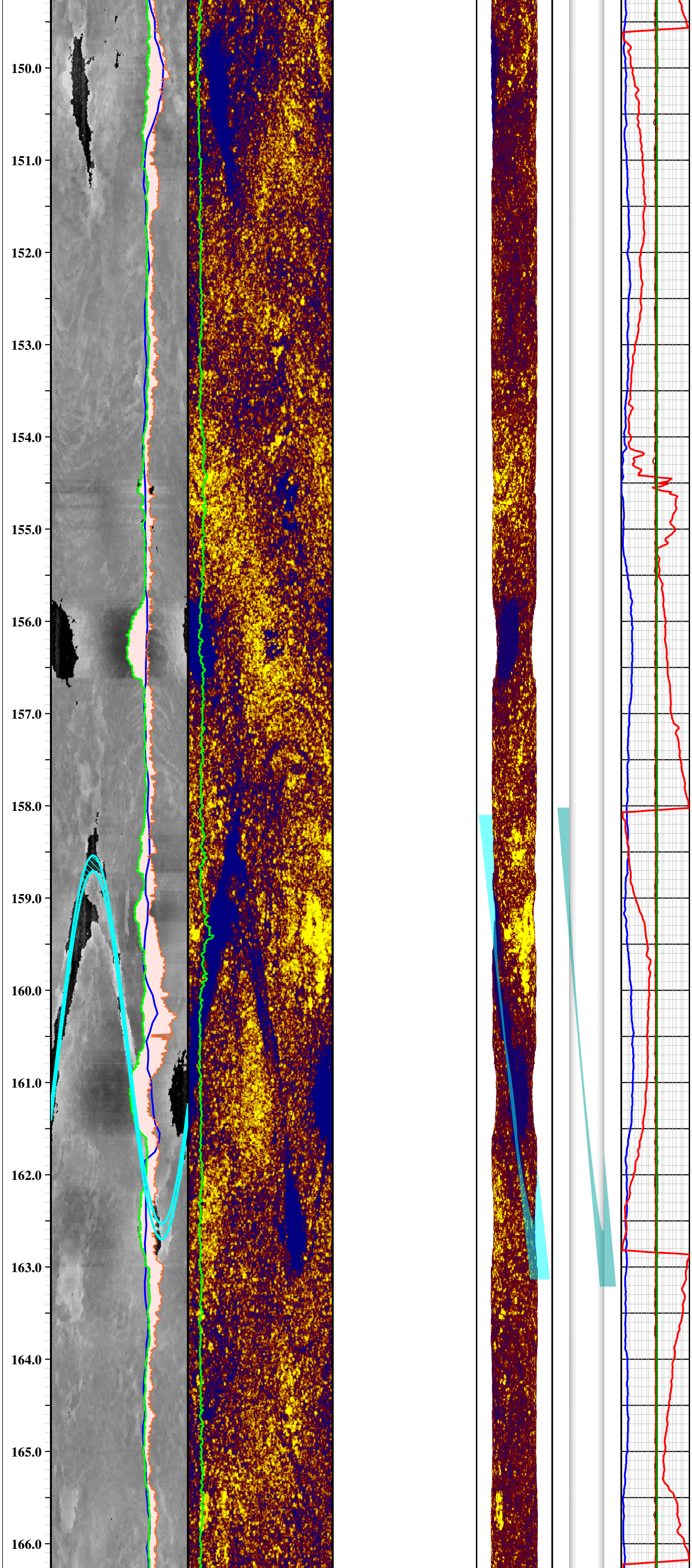
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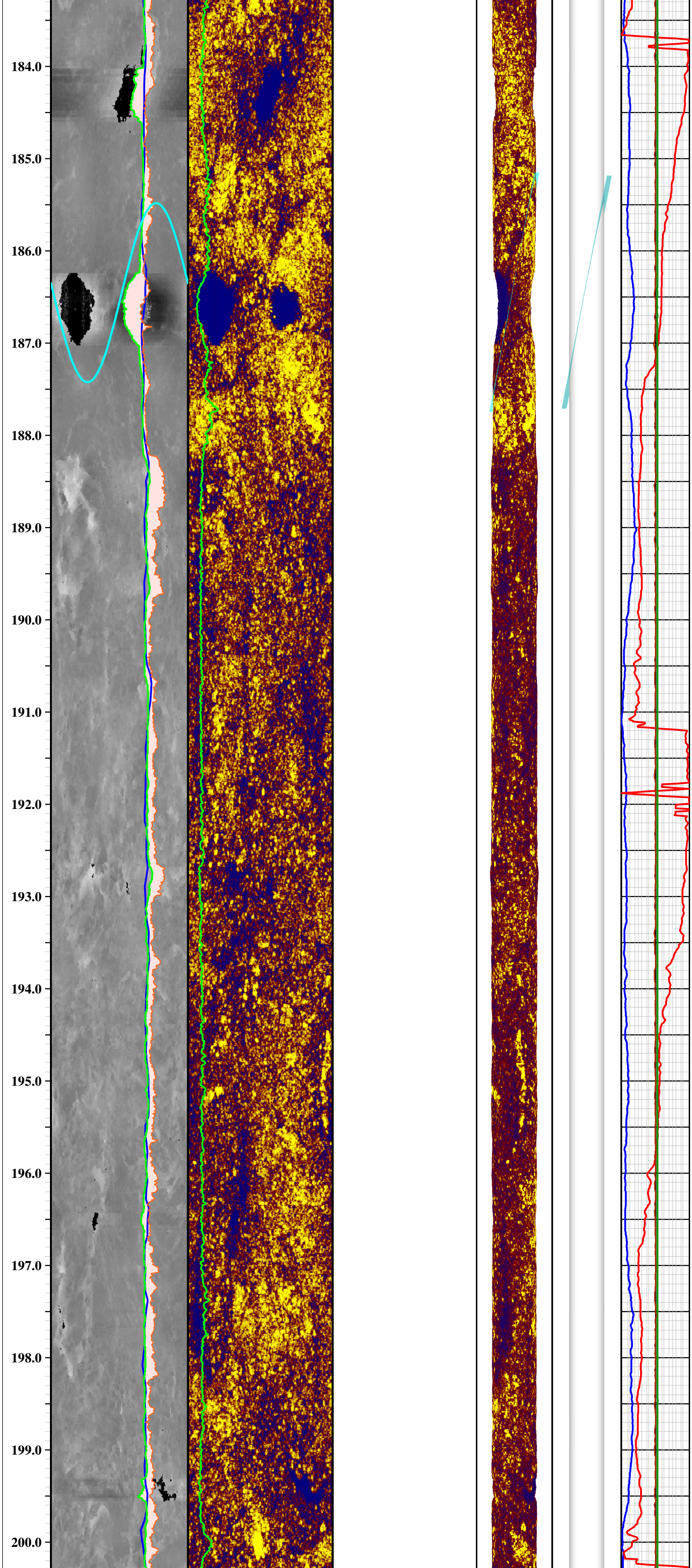
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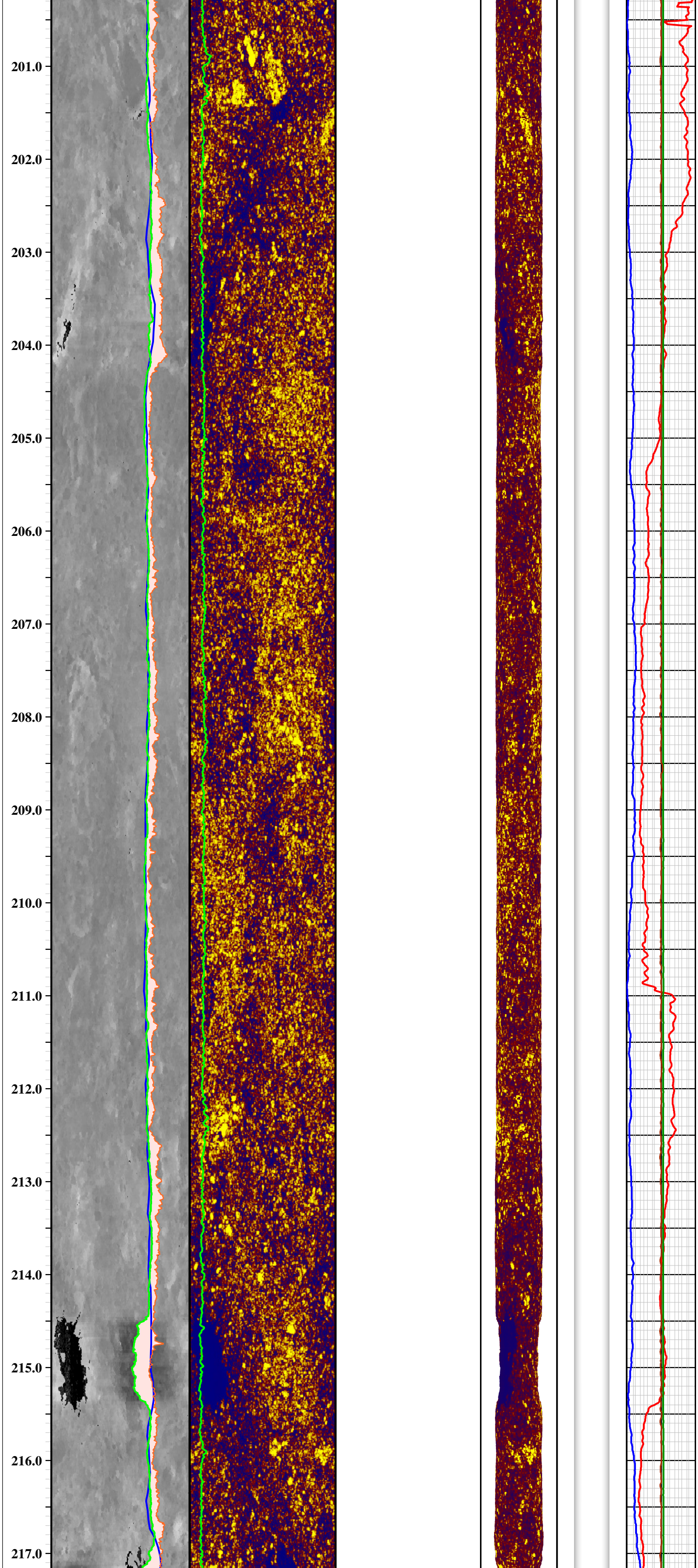
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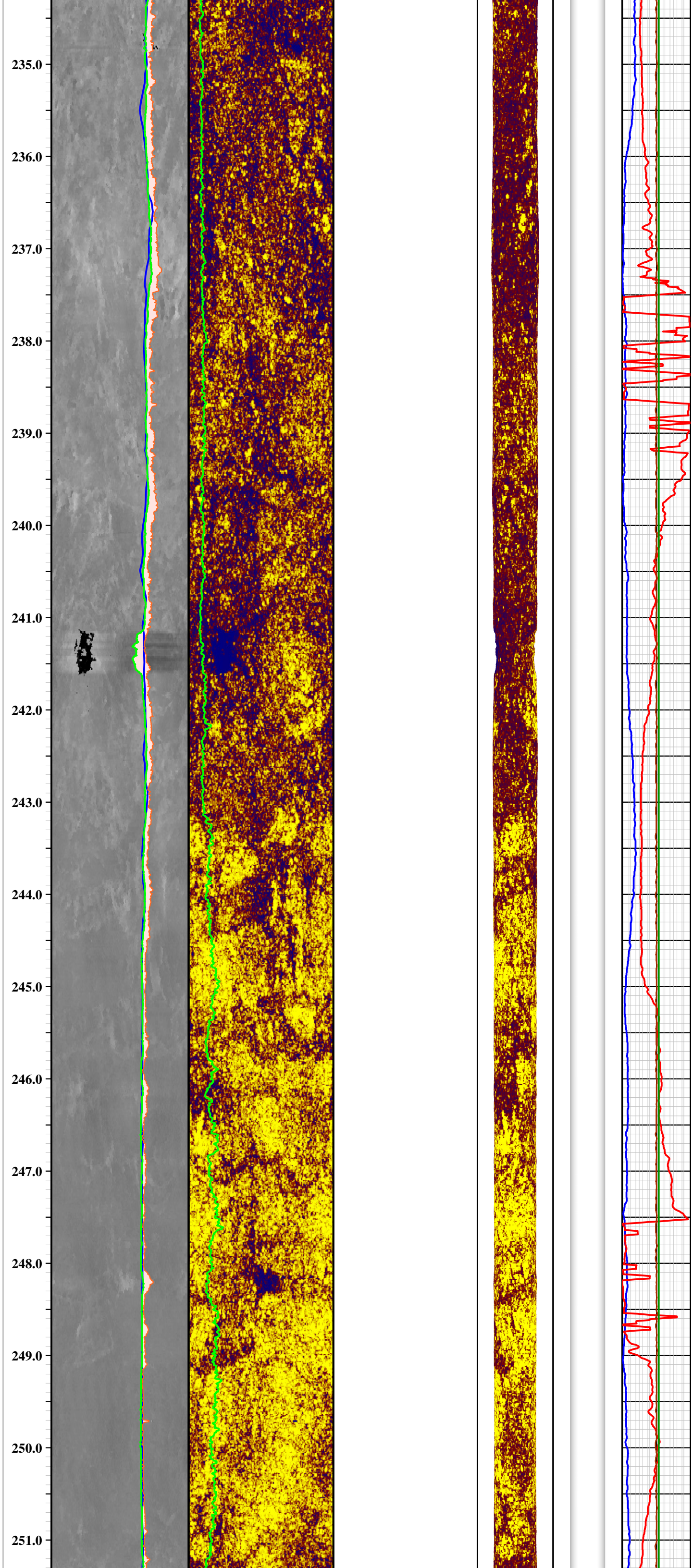
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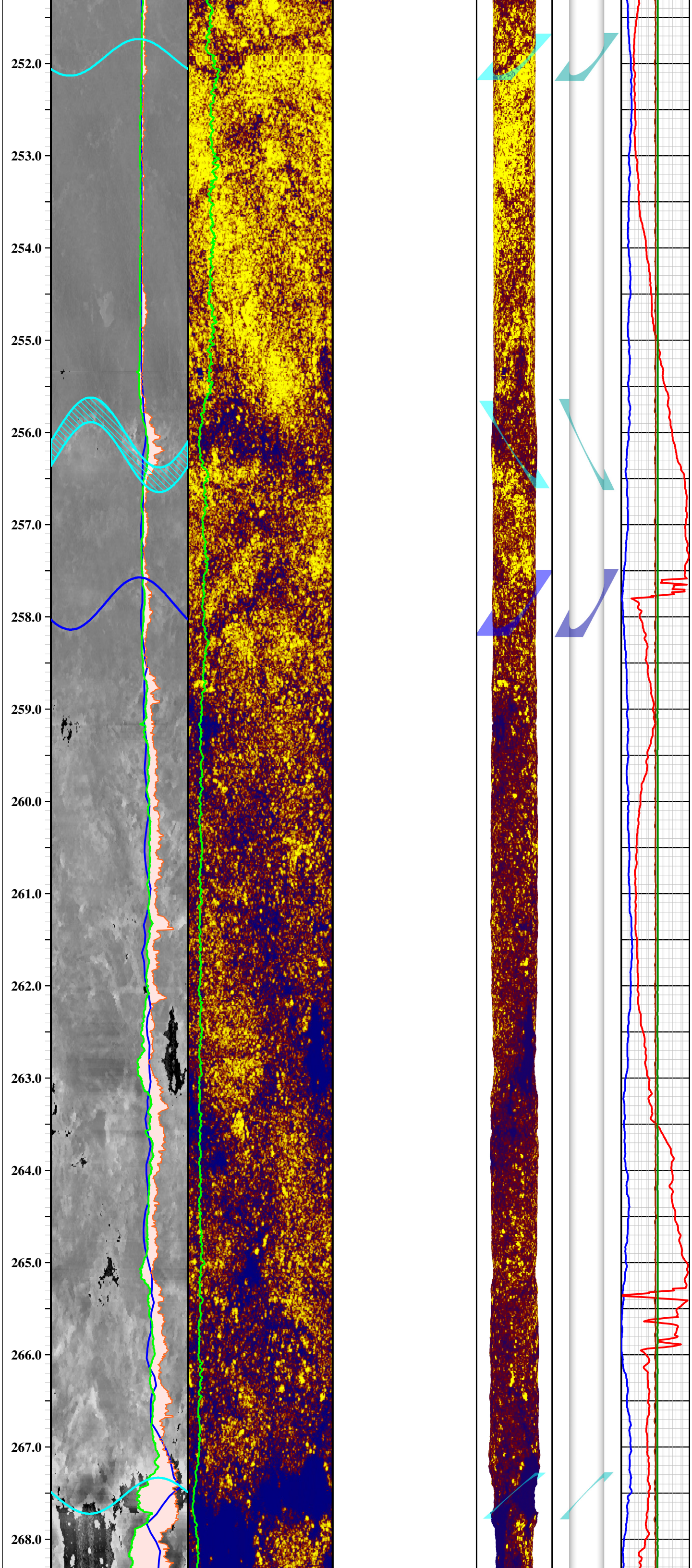
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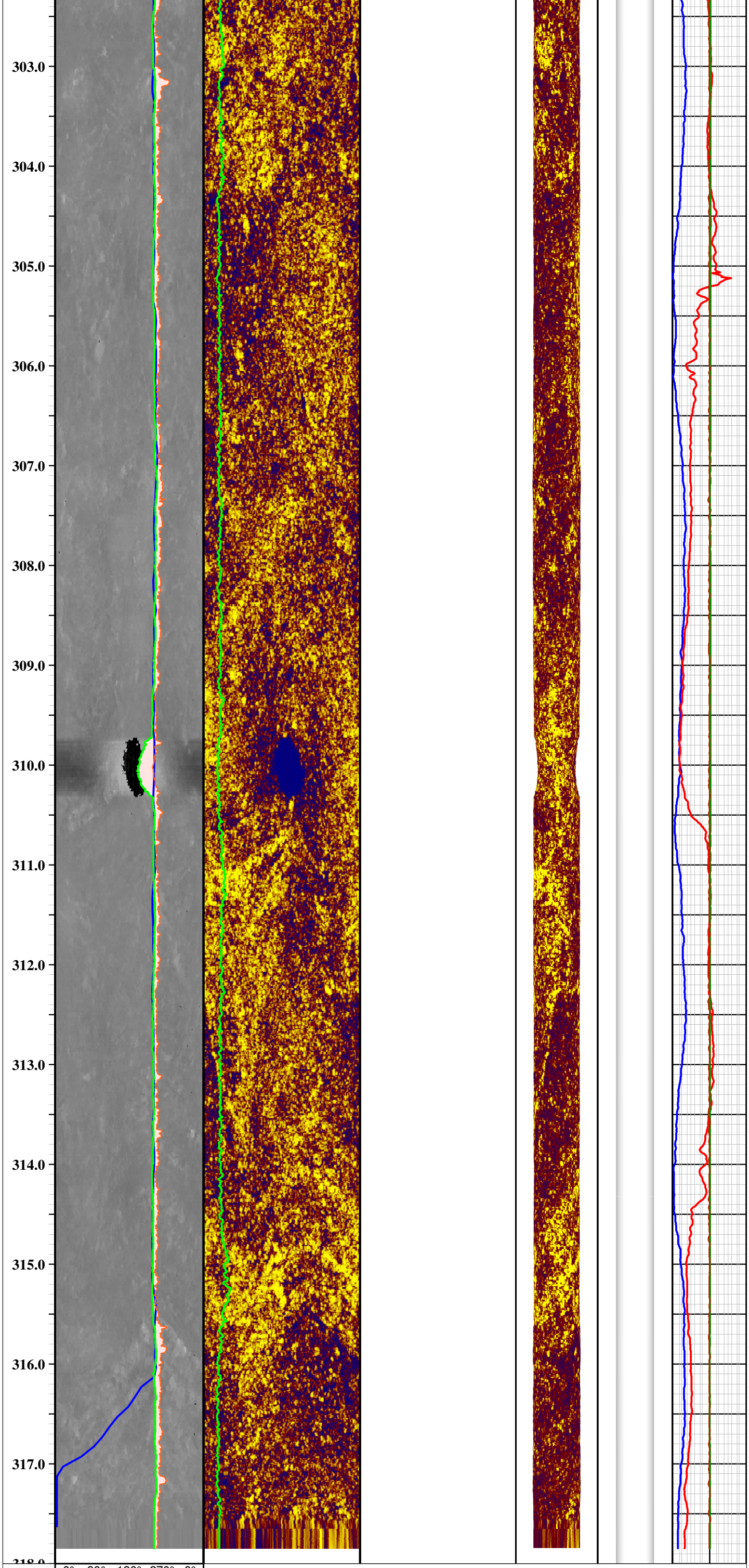
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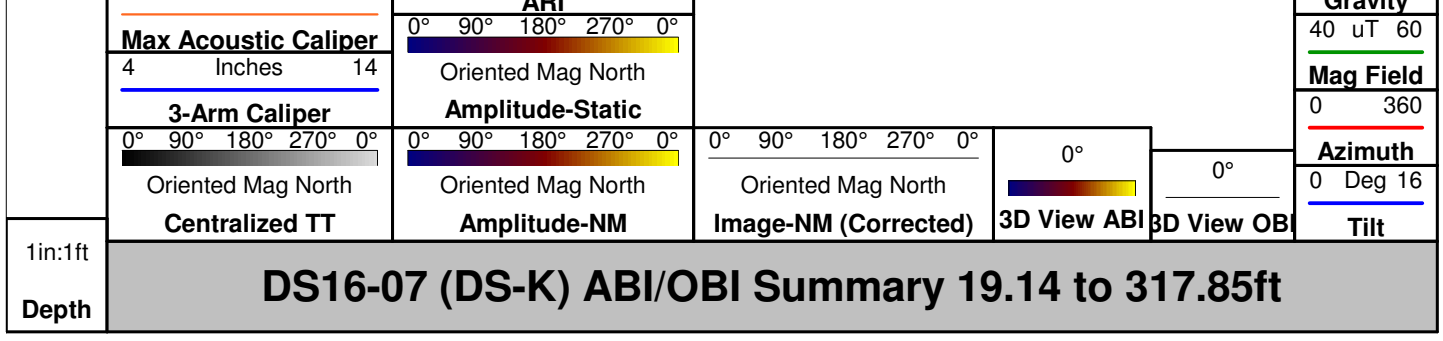
0° 90° 180° 270° 0°
Structure
Enlargements
4 in 14
Ave Acoustic Caliper
4 in 14
0° 90° 180° 270° 0°
Breakout/Tensile
0 2100
0.8 G 1.2



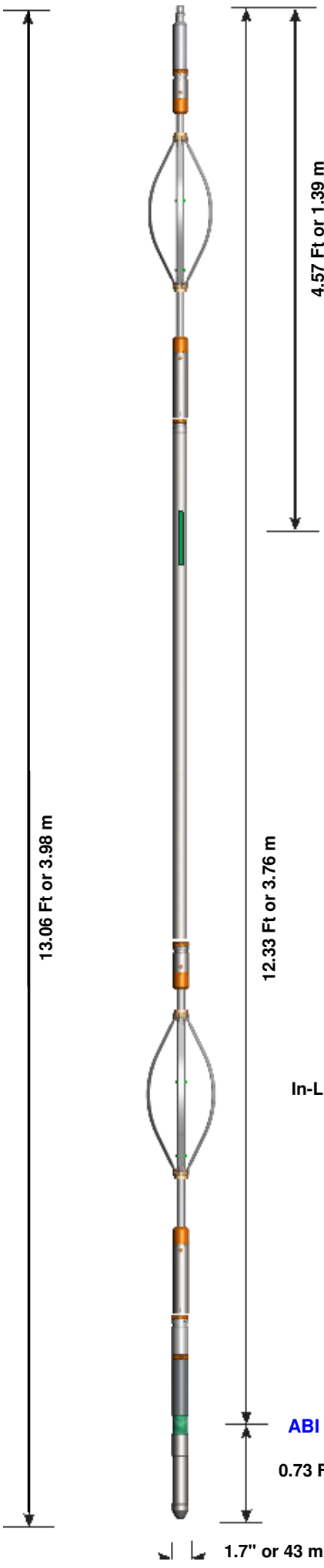
ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Presure Rating: 200 bar (2900 psi)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized



3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-07
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	DS16-08 (DS-I) 55-920015				
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER					OTHER SERVICES
MORE: CALIPER					E-LOGS
					SONIC
LOCATION					OPTICAL TELEVIEWER
D(1-11)24aab					GYRO
					DUAL INDUCTION
					GAMMA
SEC 1 S		TWP 11 E		RGE 24	TEMP/FLUID RES
PERMANENT DATUM			ELEVATION	2,717 FT	K.B.
LOG MEAS. FROM	GROUND LEVEL		ABOVE PERM. DATUM		D.F.
DRILLING MEAS. FROM	GROUND LEVEL				G.L.

DATE	10-29-16		TYPE FLUID IN HOLE		FORMATION WATER
RUN No	5		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	400.0 FT		LEVEL		~ 290 FT.
DEPTH-LOGGER	346.0 FT		MAX. REC. TEMP.		25.4 DEG. C
BTM LOGGED INTERVAL	307.0 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	211.0 FT		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	NATIONAL		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM / M. QUINONES		TOOL STRING/SN		ALT QL ABI40 2G SN 143003
WITNESSED BY	CHRIS - M & A		LOG TIME:ON SITE/OFF SITE		6:00 PM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 3/4 IN	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	10-29-16	**Date**	10-29-16	**Date**	10-29-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	SPT CONT. GYRO	**Tool Model**	COMBO TOOL	**Tool Model**	MSI QL DIL
Tool SN	1413	**Tool SN**	4953	**Tool SN**	6261
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	300.0 FT	**To**	346.0 FT	**To**	346.0 FT
Recorded By	M. QUINONES	**Recorded By**	E. BEAM	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-21-16	**Operation Check**	10-28-16	**Operation Check**	10-28-16
Calibration Check	10-21-16	**Calibration Check**	10-28-16	**Calibration Check**	10-28-16
Time Logged	12:30 AM	**Time Logged**	3:15 AM	**Time Logged**	3:45 AM

Date	10-29-16	**Date**	10-29-16	**Date**	10-29-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL OBI40 2G	**Tool Model**	ALT QL ABI40 2G	**Tool Model**	MSI E-LOG 40GRP
Tool SN	152511	**Tool SN**	143003	**Tool SN**	5514
From	SURFACE	**From**	211.0 FT	**From**	30.0 FT
To	221.0 FT	**To**	307.0 FT	**To**	325.0 FT
Recorded By	E. BEAM	**Recorded By**	M. QUINONES	**Recorded By**	E. BEAM
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	10-28-16	**Operation Check**	10-28-16	**Operation Check**	10-28-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	4:15 AM	**Time Logged**	6:30 AM	**Time Logged**	7:16 AM

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend

TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-08 (DS-I) ABI40 2G Summary 210.82 to 306.45ft

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 5 Inches 20

Max Acoustic Caliper — 5 in 20

Ave Acoustic Caliper — 5 in 20

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 2100

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Structure — 0° 90° 180° 270° 0°

3-D View — 102°

3-D View# — 332°

Tilt — 0 Deg 16

Azimuth — 0 Deg 360

Mag Field — 40 uT 60

Gravity — 0.8 G 1.2

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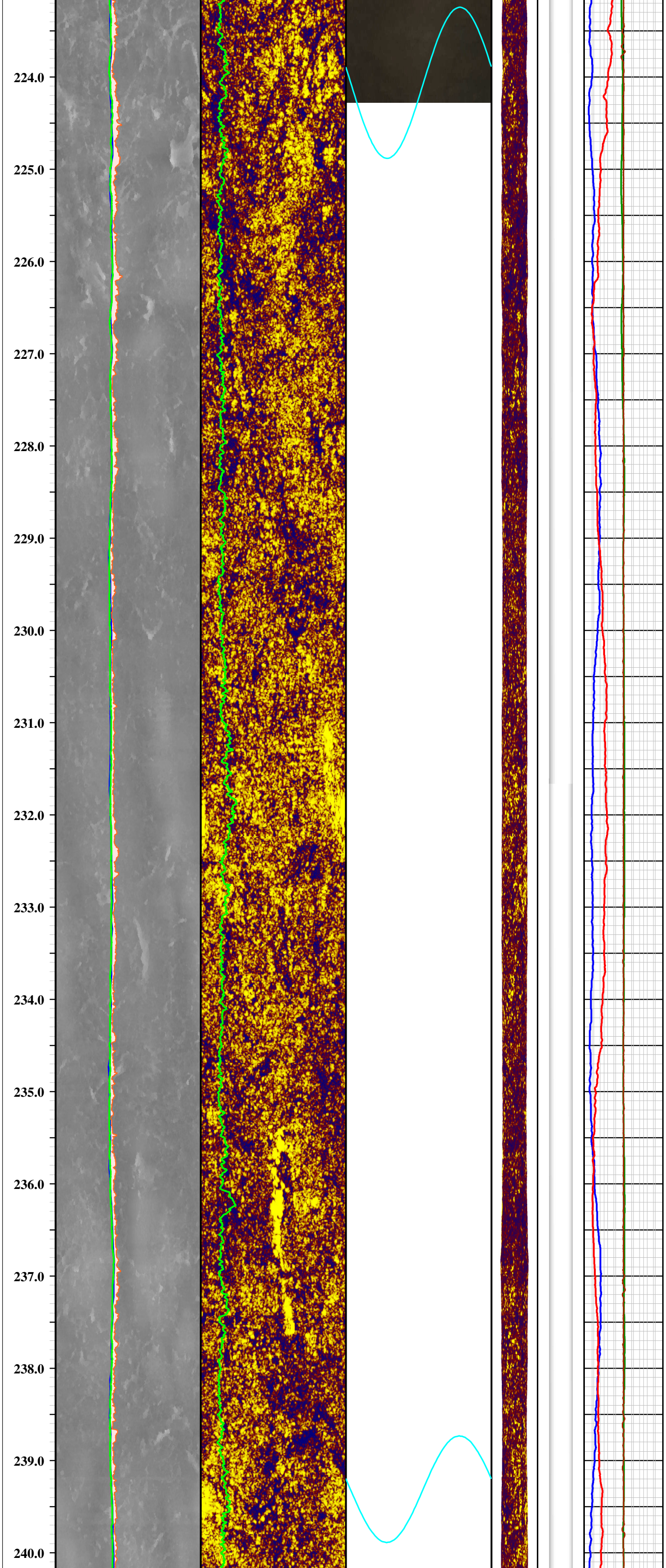
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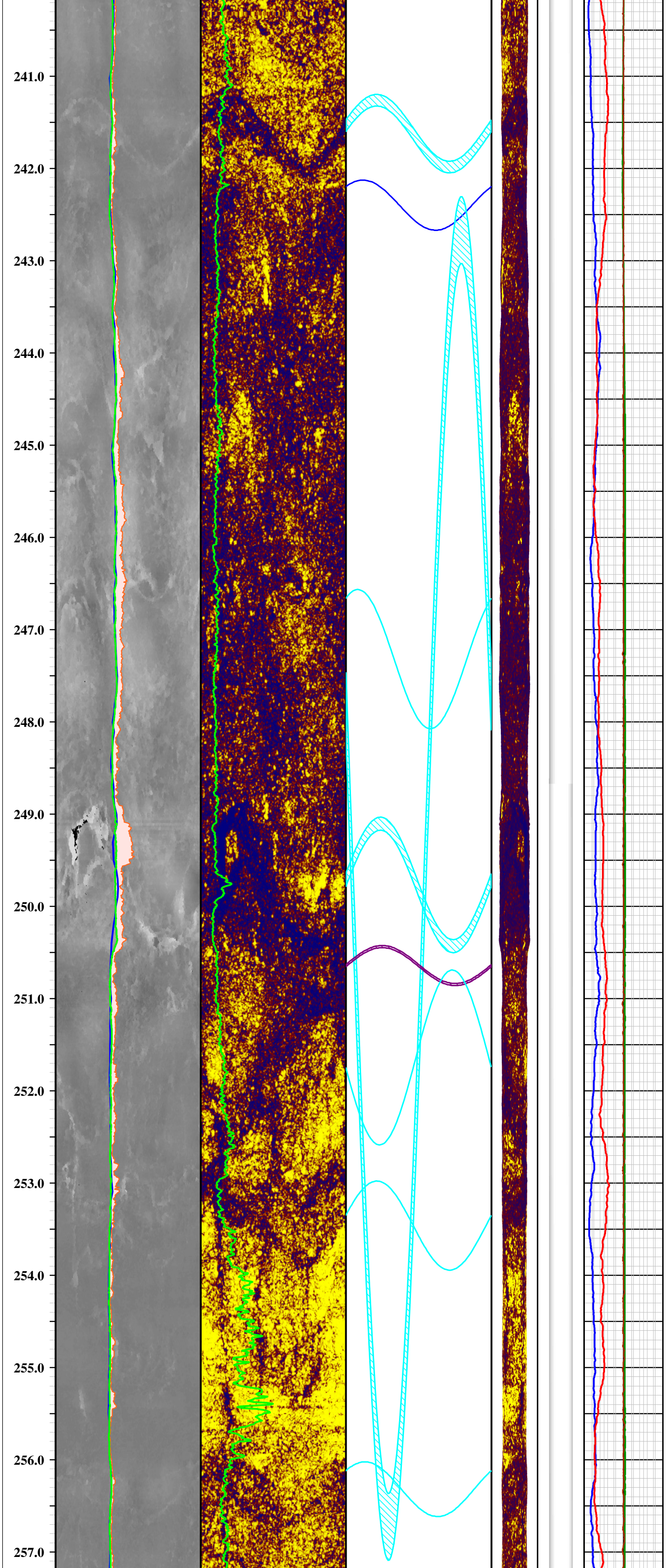
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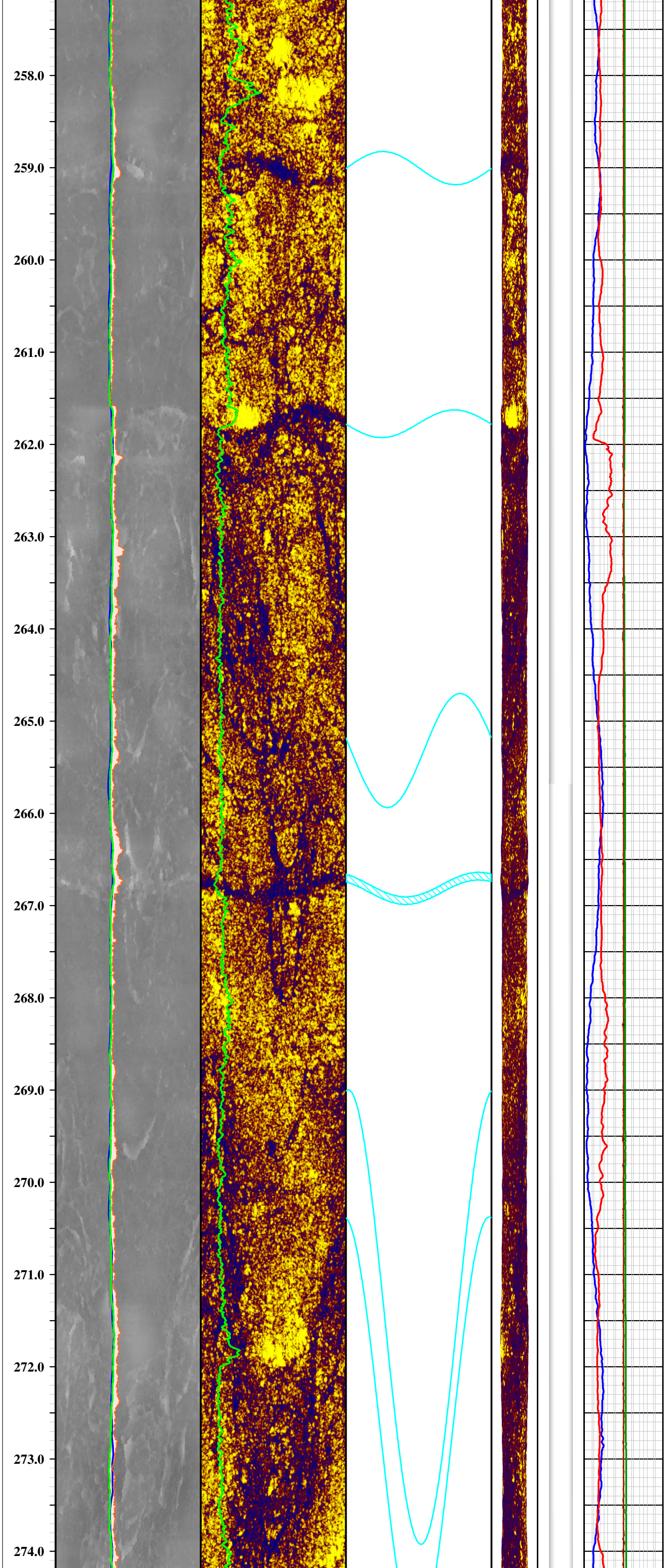
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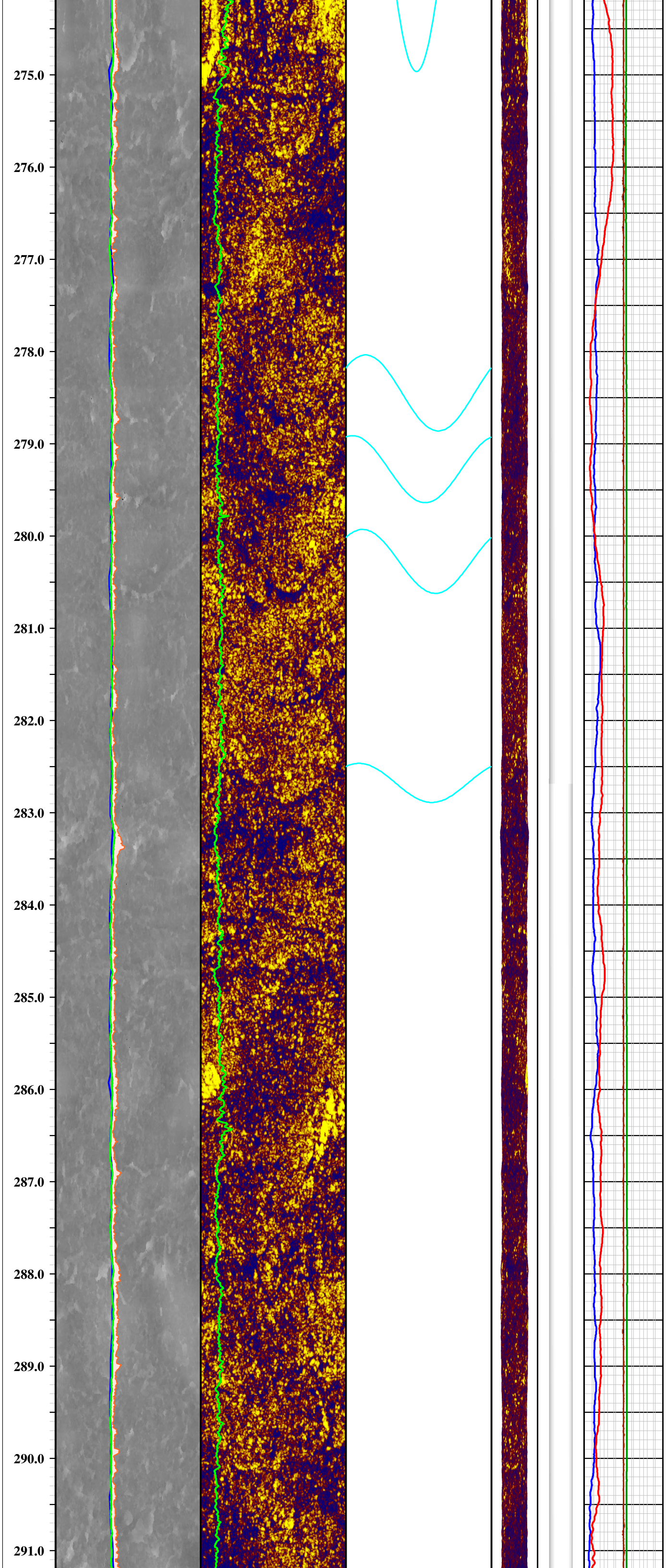
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Enlargements

5 in 20
Ave Acoustic Caliper

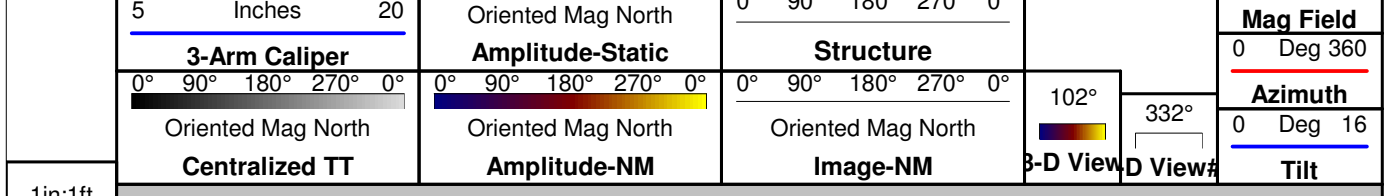
5 in 20
Max Acoustic Caliper

0 2100
ARI

0° 90° 180° 270° 0°

0.8 G 1.2
Gravity

40 uT 60



ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized



3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-08
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

ACOUSTIC TELEVIEWER SUMMARY

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING		
WELL ID	DS16-09 (DS-P) 55-920076		
FIELD	NEAR WEST		
COUNTY	PINAL	STATE	ARIZONA

TYPE OF LOGS: OPTICAL TELEVIEWER
MORE: GAMMA - CALIPER

OTHER SERVICES
E-LOGS
SONIC
TEMPERATURE
GYRO
DUAL INDUCTION

LOCATION
D(1-11)13ddc

SEC	1 S	TWP	11 E	RGE	13

PERMANENT DATUM		ELEVATION	2,834 FT K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	11-4-16	TYPE FLUID IN HOLE	N/A
RUN No	3	MUD WEIGHT	N/A
TYPE LOG	OPTICAL TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	400 FT	LEVEL	N/A
DEPTH-LOGGER	350 FT	MAX. REC. TEMP.	27.36 Deg C
BTM LOGGED INTERVAL	208 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.035 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM / M. QUINONES	TOOL STRING/SN	ALT QL OBI40 2G SN 152511
WITNESSED BY	JUSTAN - M & A	LOG TIME:ON SITE/OFF SITE	12:00 AM

RUN	BOREHOLE RECORD		CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 3/4 IN	20 FT	TOTAL DEPTH				
3							

COMMENTS:

Tool Summary:

Date	11-4-16	**Date**	11-4-16	**Date**	11-4-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	SPT CONT. GYRO	**Tool Model**	MSI COMBO TOOL	**Tool Model**	ALT QL OBI40 2G
Tool SN	1413	**Tool SN**	4953	**Tool SN**	152511
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	300 FT	**To**	350 FT	**To**	200 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	11-4-16	**Operation Check**	11-4-16	**Operation Check**	11-4-16
Calibration Check	11-4-16	**Calibration Check**	11-4-16	**Calibration Check**	N/A
Time Logged	12:30 AM	**Time Logged**	3:15 AM	**Time Logged**	4:00 AM
Date	11-4-16	**Date**	11-4-16	**Date**	11-4-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL DIL	**Tool Model**	ALT 4RX SONIC	**Tool Model**	MSI E-LOG 40GRP
Tool SN	6261	**Tool SN**	4572	**Tool SN**	5514
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	350 FT	**To**	270 FT	**To**	260 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	11-4-16	**Operation Check**	11-4-16	**Operation Check**	11-4-16
Calibration Check	11-4-16	**Calibration Check**	N/A	**Calibration Check**	11-4-16
Time Logged	5:30 AM	**Time Logged**	8:05 AM	**Time Logged**	8:25 AM
Date	11-4-16	**Date**		**Date**	
Run No.	7	**Run No.**	8	**Run No.**	9
Tool Model	ALT QL ABI40 2G	**Tool Model**		**Tool Model**	
Tool SN	143003	**Tool SN**		**Tool SN**	
From	SURFACE	**From**		**From**	
To	260 FT	**To**		**To**	
Recorded By	M. QUINONES	**Recorded By**		**Recorded By**	
Truck No	310	**Truck No**		**Truck No**	
Operation Check	11-4-16	**Operation Check**		**Operation Check**	
Calibration Check	N/A	**Calibration Check**		**Calibration Check**	
Time Logged	8:45 AM	**Time Logged**		**Time Logged**	

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

NO ABI DATA COLLECTED DUE TO FLUID BEING TOO AERATED. OBI WAS ONLY RAN TO 200 FT DUE TO TOO MUCH HOLE MATERIAL GETTING ON THE LENSE AND IMPEDING CENTRALIZERS.

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

DS16-09 (DS-P) OBI40 2G Summary 17.54 to 207.05ft

Depth
1in:0.5ft

Nat. Gamma	Image-NM	3-D View	Mag Field	Tilt
0 API 300	Oriented Mag North	0°	40 uT 60	0 Deg 5
3-Arm Caliper	0° 90° 180° 270° 0°		**Gravity**	**Azim-Edited**
2 Inches 15	Structures		0.9 G 1.2	0 360
	0° 90° 180° 270° 0°			
	Breakouts			
	0° 90° 180° 270° 0°			



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24.0

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28.0

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34.0

36.0

38.0

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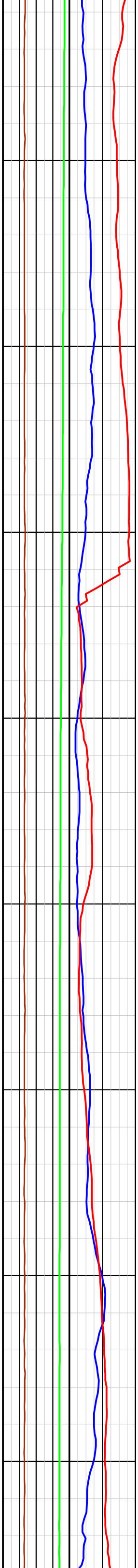

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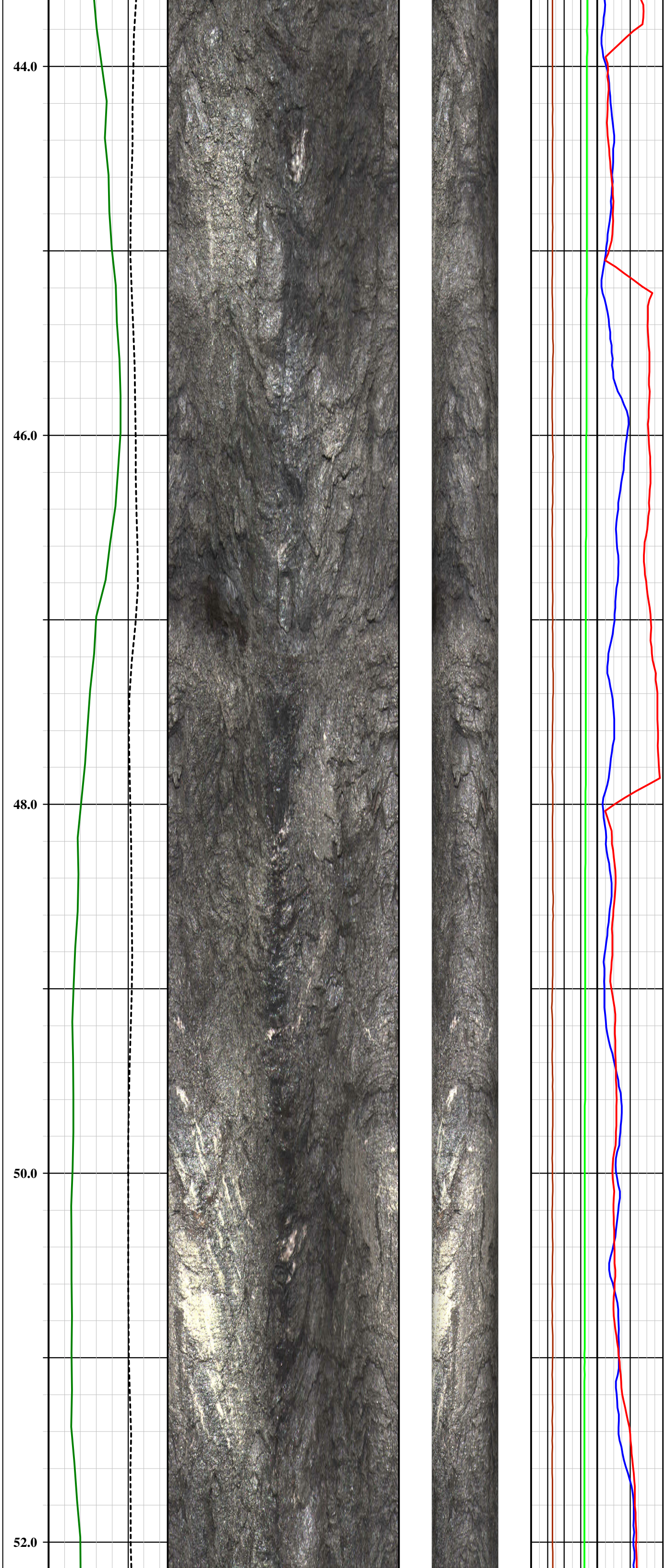

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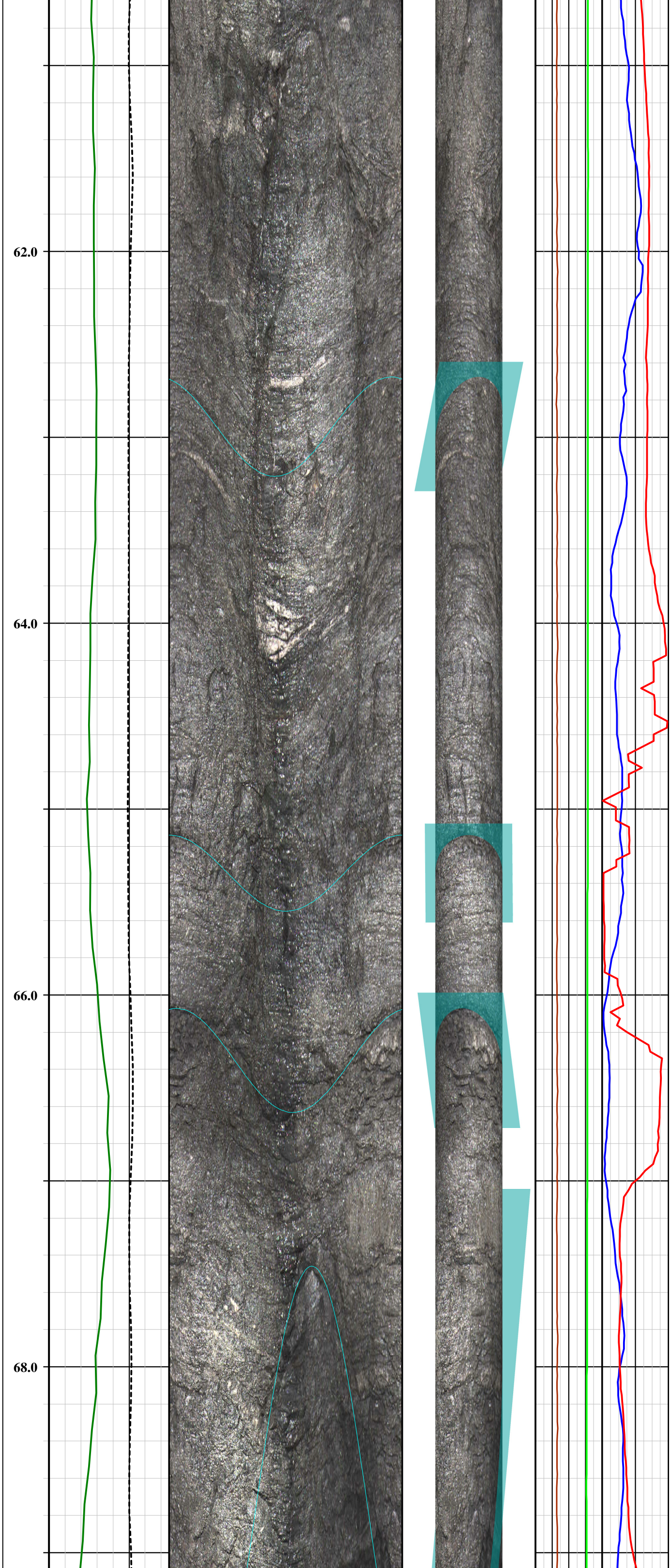

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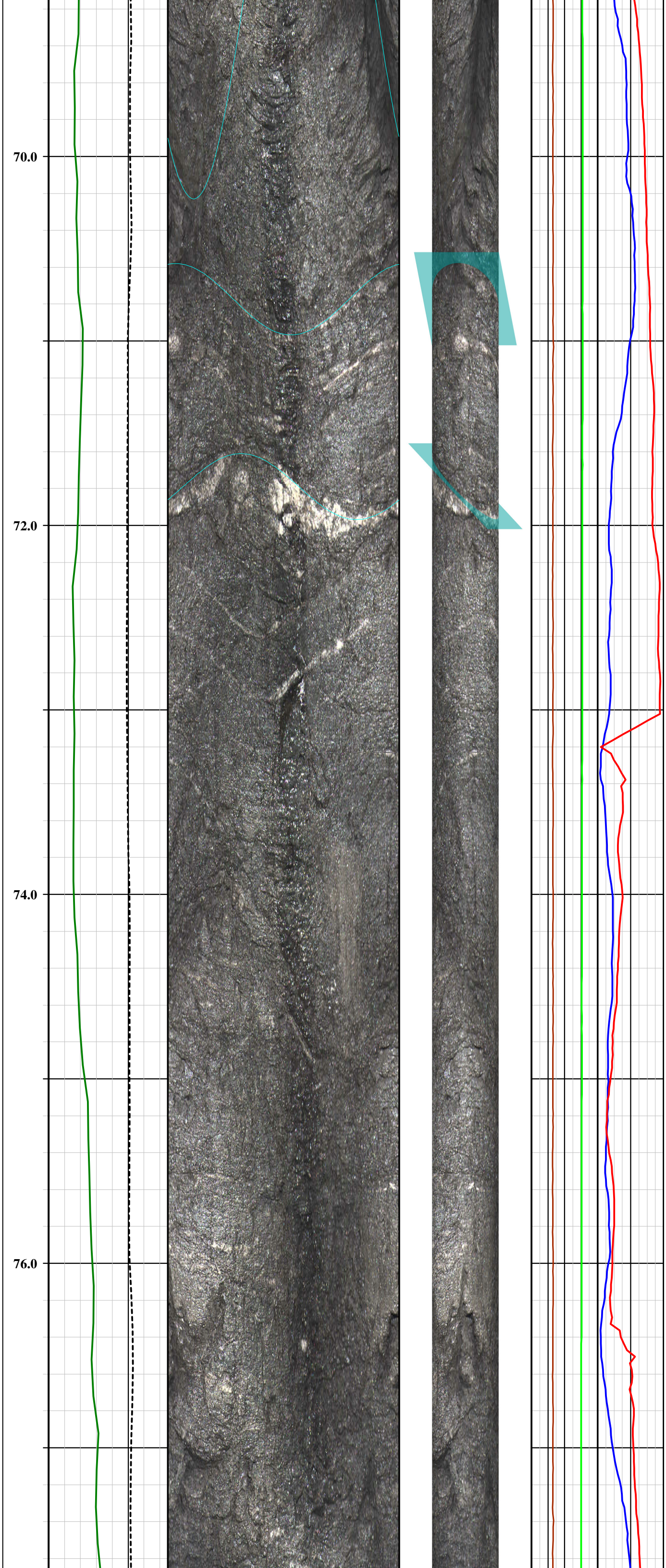

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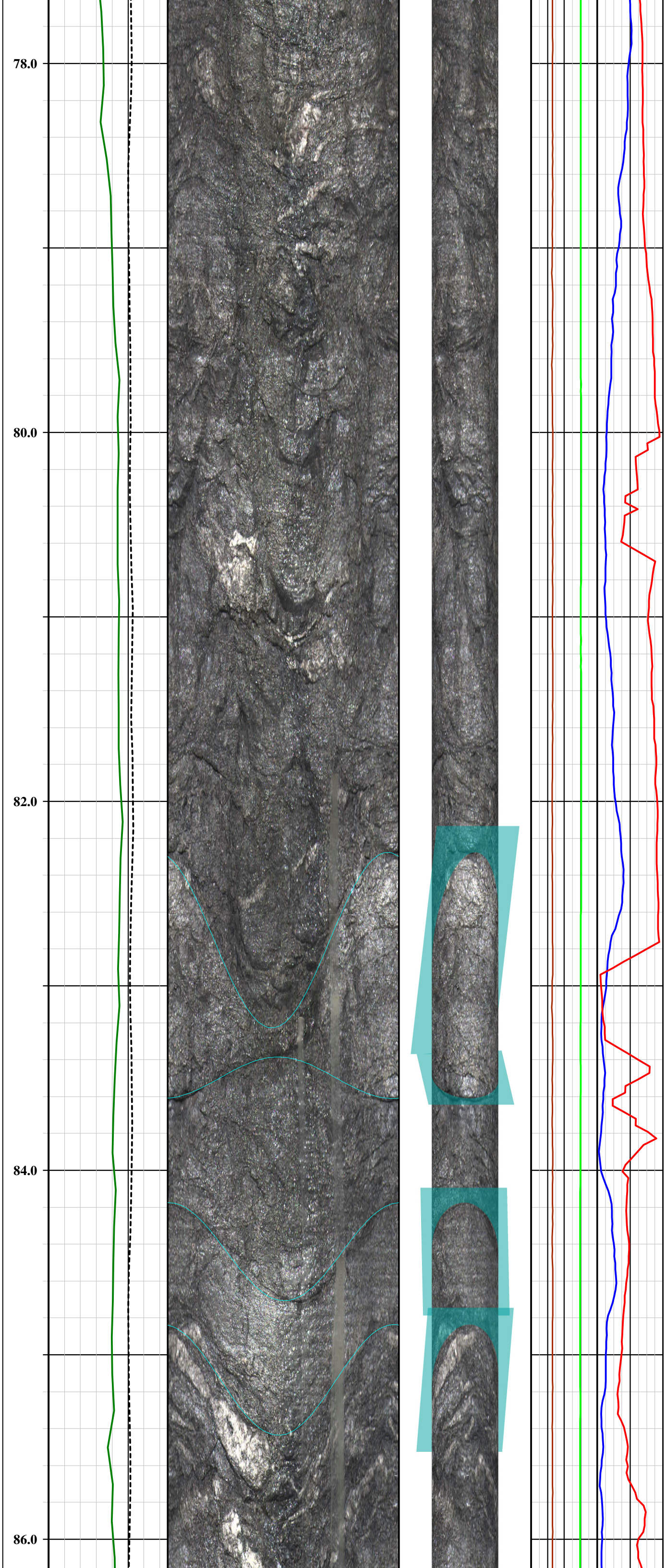

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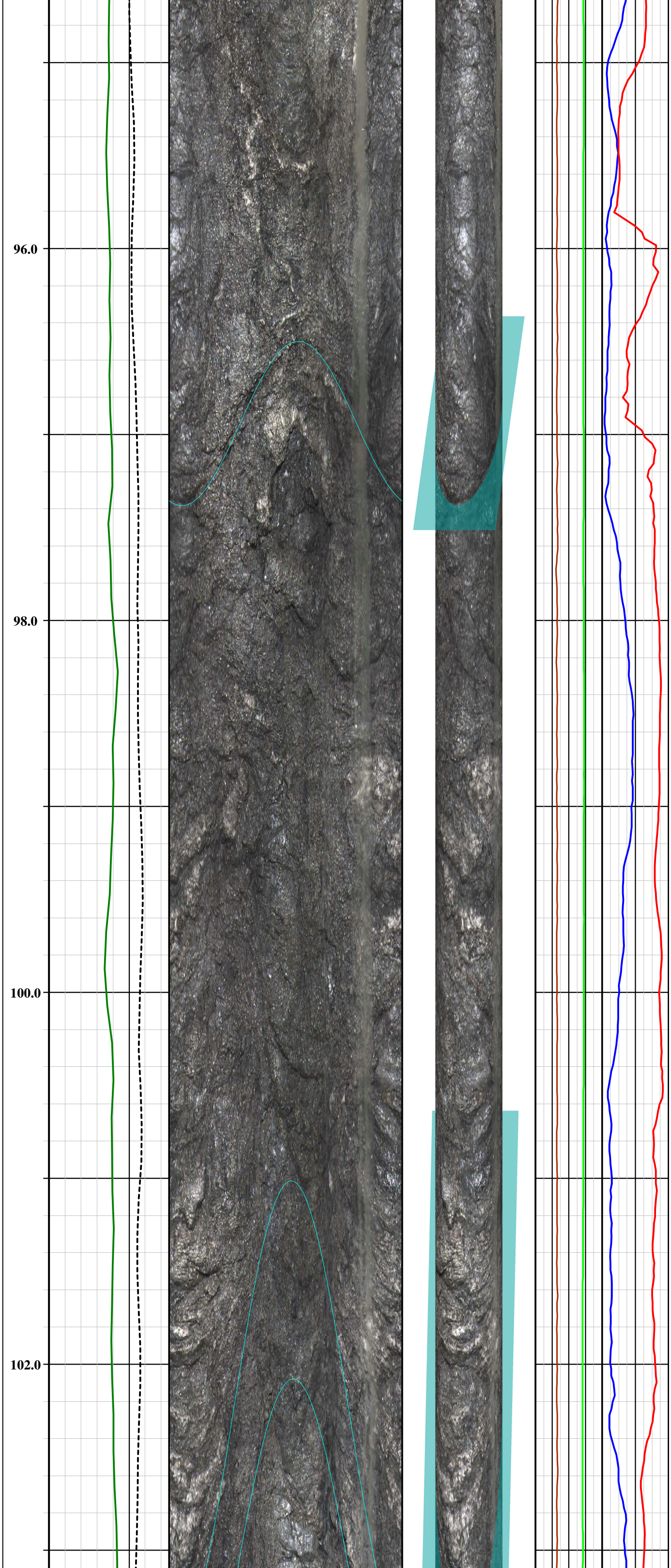

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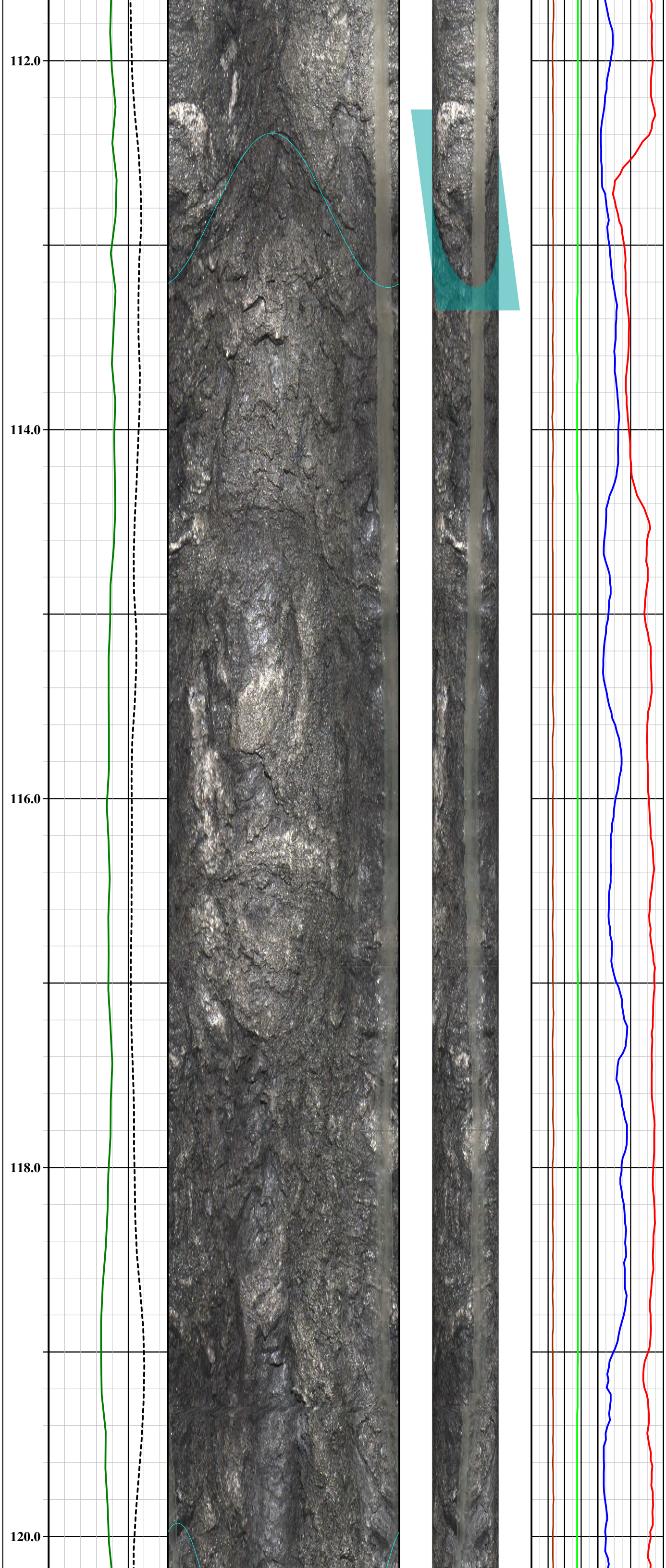

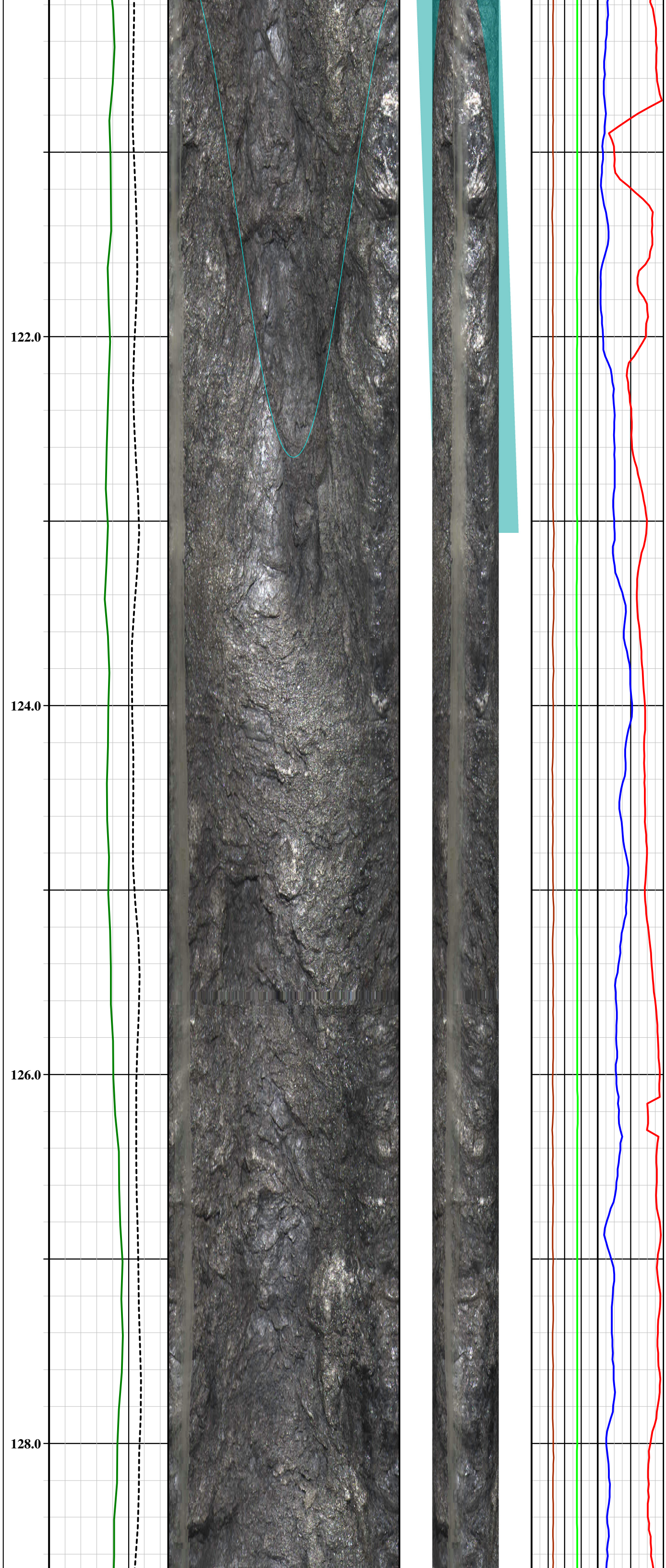
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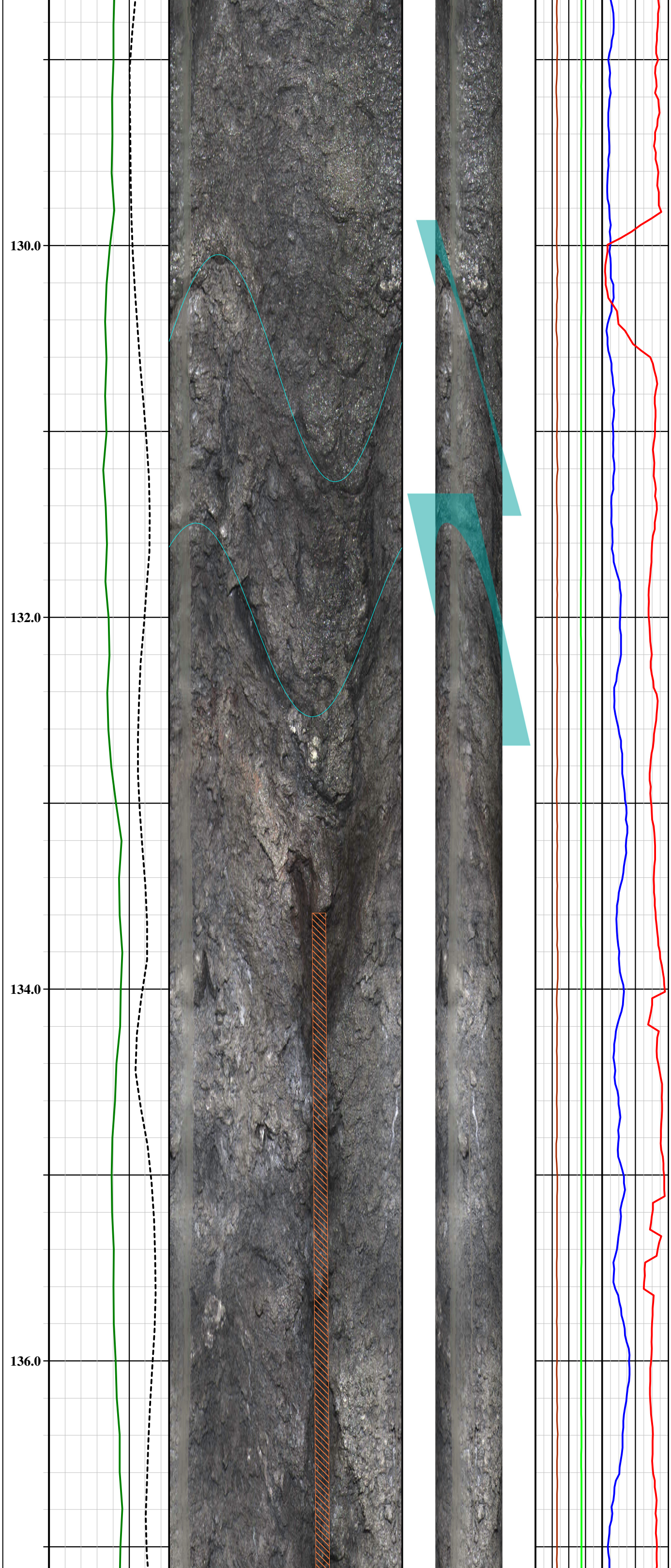

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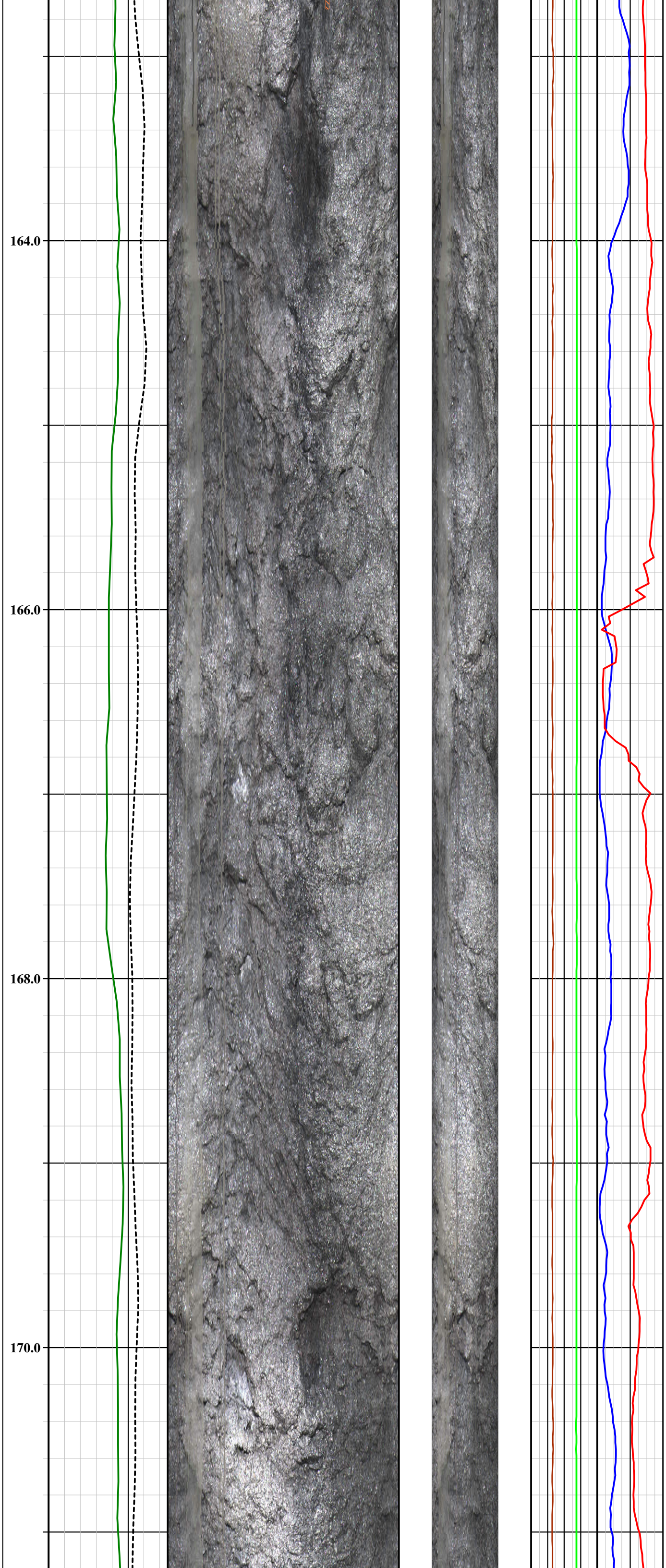

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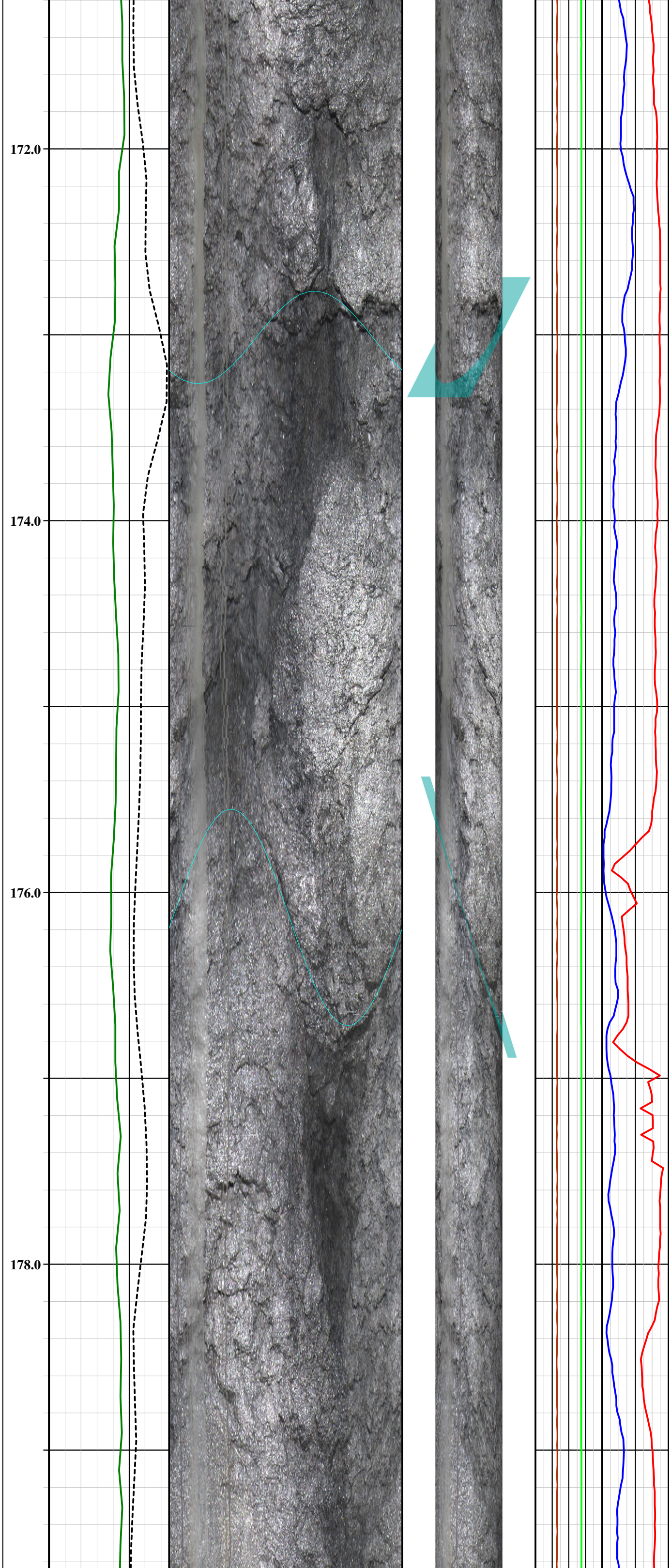

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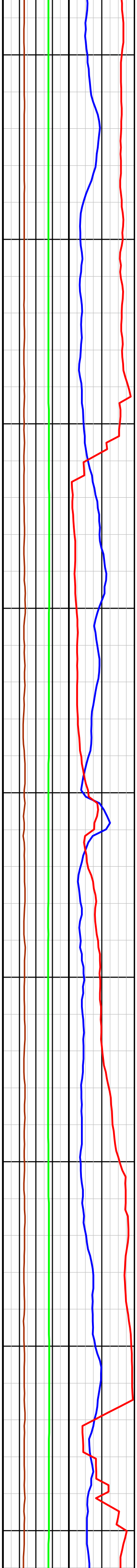

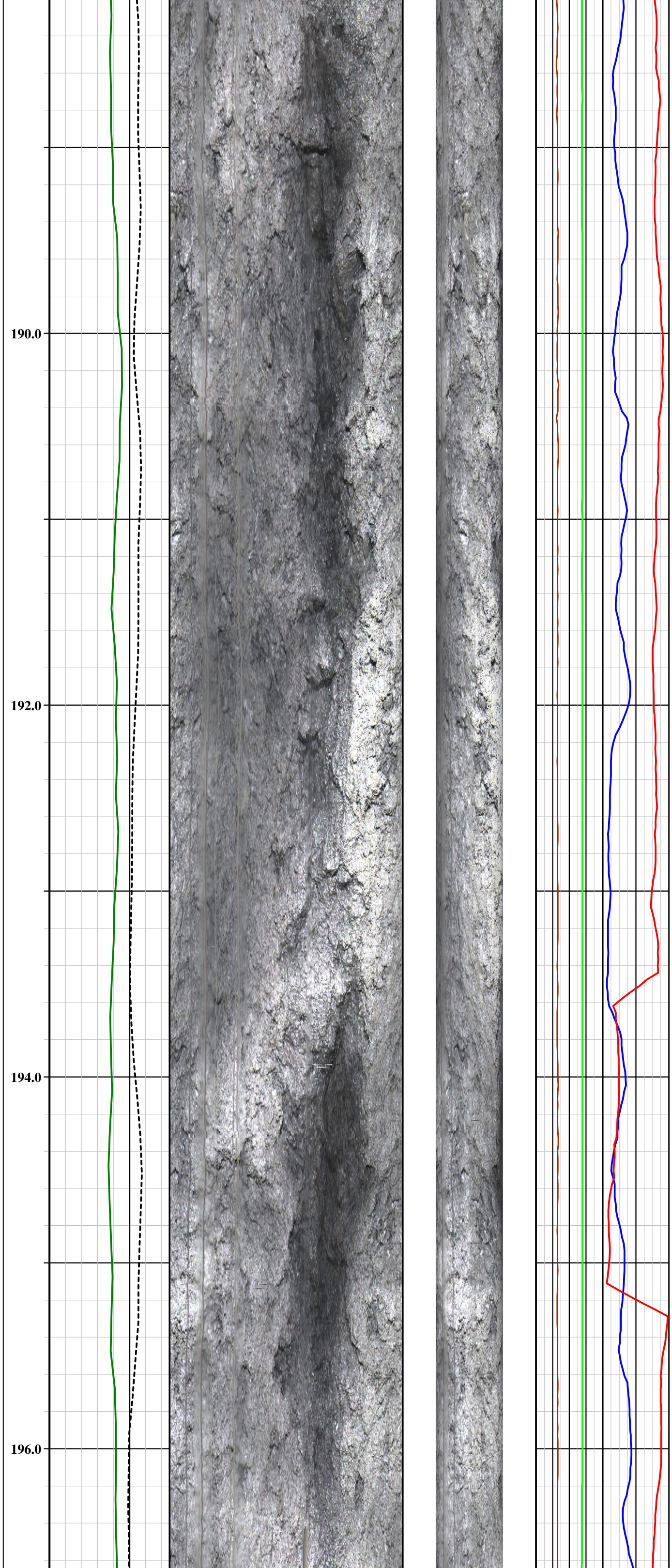
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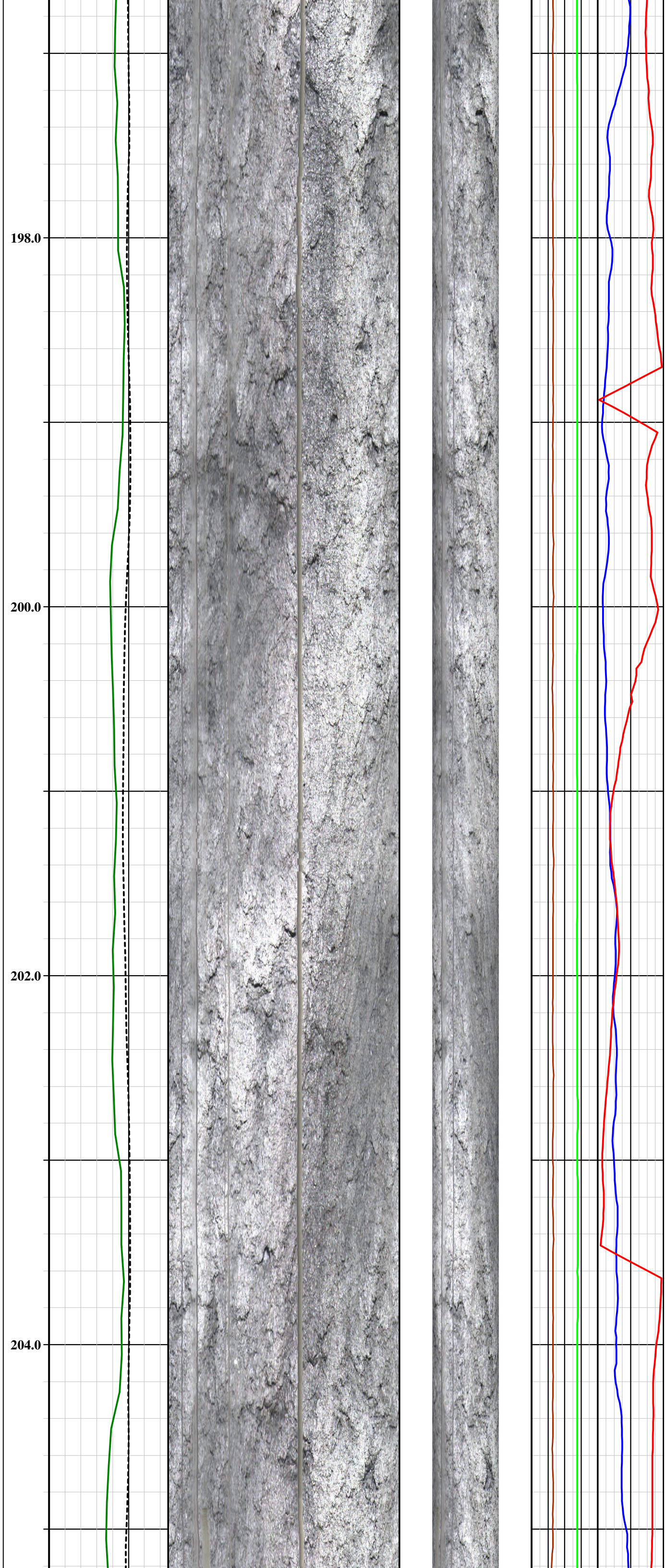
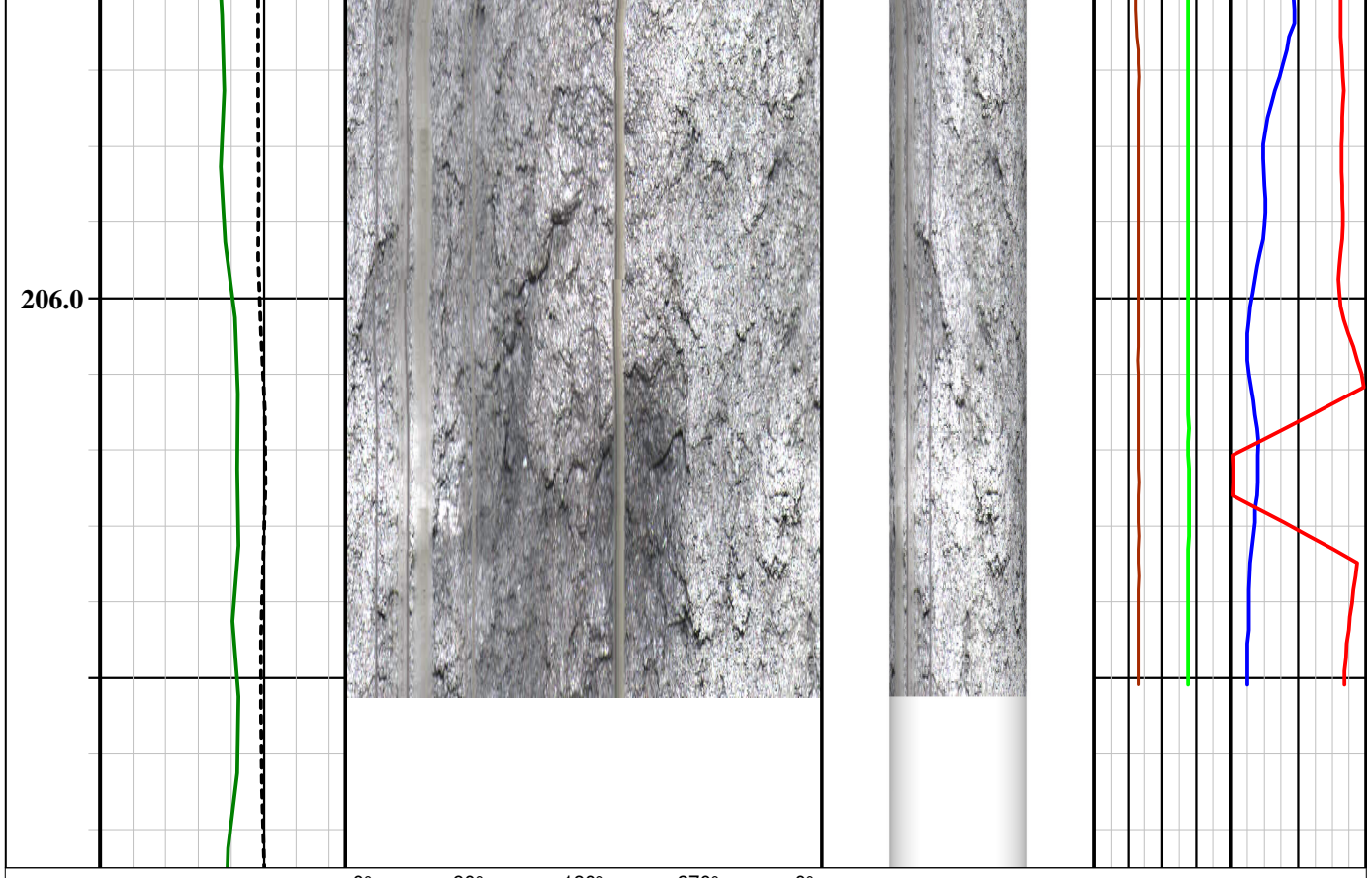




	2 Inches 15	0° 90° 180° 270° 0°			0.9 G 1.2	0 360
	3-Arm Caliper	Breakouts			Gravity	Azim-Edited
	0 API 300	0° 90° 180° 270° 0°	0°		40 uT 60	0 Deg 5
	Nat. Gamma	Image-NM	3-D View		Mag Field	Tilt
1in:0.5ft		DS16-09 (DS-P) OBI40 2G Summary 17.54 to 207.05ft				
Depth						

QL OBI-40 2G Optical Borehole Imager

Probe Top = Depth Ref.

Tool SN: 145010 & 152511



Four Conductor MSI Probe Top

APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.66 m or 5.46 ft

Probe Weight = 5.3 kg or 11.7 lbs

Distance from Optical Image Window to Orientation Sensor = 0.9 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.0 deg

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

External Bow Spring Centralizers

Operates in dry or clear water conditions.

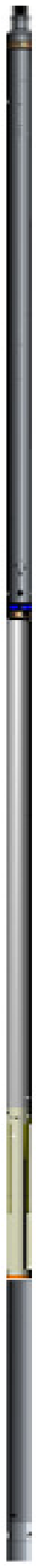


OBI Imaging Window

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-09
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	DS16-10 (DS-H) 55-920080				
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER				OTHER SERVICES	
MORE: 3-ARM CALIPER				OPTICAL TELEVIEWER	
LOCATION				GAMMA	
D(1-11)24dbd				TEMP/FLUID RES	
				E-LOGS	
				SONIC	
				GYRO	
SEC 24	TWP 11 E	RGE 1 S		DUAL INDUCTION	
PERMANENT DATUM		ELEVATION	2,671 FT	K.B.	
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM		D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

DATE	11-11-16	TYPE FLUID IN HOLE		N/A	
RUN No	3 & 7	MUD WEIGHT		N/A	
TYPE LOG	GAMMA - CALIPER - TFR	VISCOSITY		N/A	
DEPTH-DRILLER	540 FT	LEVEL		N/A	
DEPTH-LOGGER	539 FT	MAX. REC. TEMP.		26.64 DEG. C	
BTM LOGGED INTERVAL	539 FT	IMAGE ORIENTED TO:		MAGNETIC NORTH	
TOP LOGGED INTERVAL	230 FT	SAMPLE INTERVAL		0.010 FT	
DRILLER / RIG#	NATIONAL	LOGGING TRUCK		TRUCK #310	
RECORDED BY / Logging Eng.	A. OLSON / E. TURNER	TOOL STRING/SN		ALT QL ABI40 2G SN 143003	
WITNESSED BY	MELISSA - M&A	LOG TIME:ON SITE/OFF SITE		1:15 A.M.	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 1/2 IN	20 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	11-11-16	**Date**	11-11-16	**Date**	11-4-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	WELNAV GYRO	**Tool Model**	ALT QL OBI40 2G	**Tool Model**	MSI COMBO TOOL
Tool SN	187	**Tool SN**	152511	**Tool SN**	4953
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	500 FT.	**To**	335 FT	**To**	539 FT
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	11-10-16	**Operation Check**	11-10-16	**Operation Check**	11-10-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	11-10-16
Time Logged	2:15 A.M.	**Time Logged**	5:15 A.M.	**Time Logged**	7:15 A.M.

Date	11-11-16	**Date**	11-11-16	**Date**	11-11-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT QL DIL	**Tool Model**	ALT 4RX SONIC	**Tool Model**	MSI E-LOG 40GRP
Tool SN	6261	**Tool SN**	4572	**Tool SN**	5514
From	SURFACE	**From**	50 FT.	**From**	SURFACE
To	539 FT	**To**	539 FT	**To**	539 FT
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	11-10-16	**Operation Check**	11-10-16	**Operation Check**	11-10-16
Calibration Check	11-4-16	**Calibration Check**	N/A	**Calibration Check**	11-10-16
Time Logged	7:50 A.M.	**Time Logged**	8:15 A.M.	**Time Logged**	8:50 A.M.

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend

TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-10 (DS-H) ABI/OBI Summary 15.73 to 531.45ft

Depth
1ft:12ft

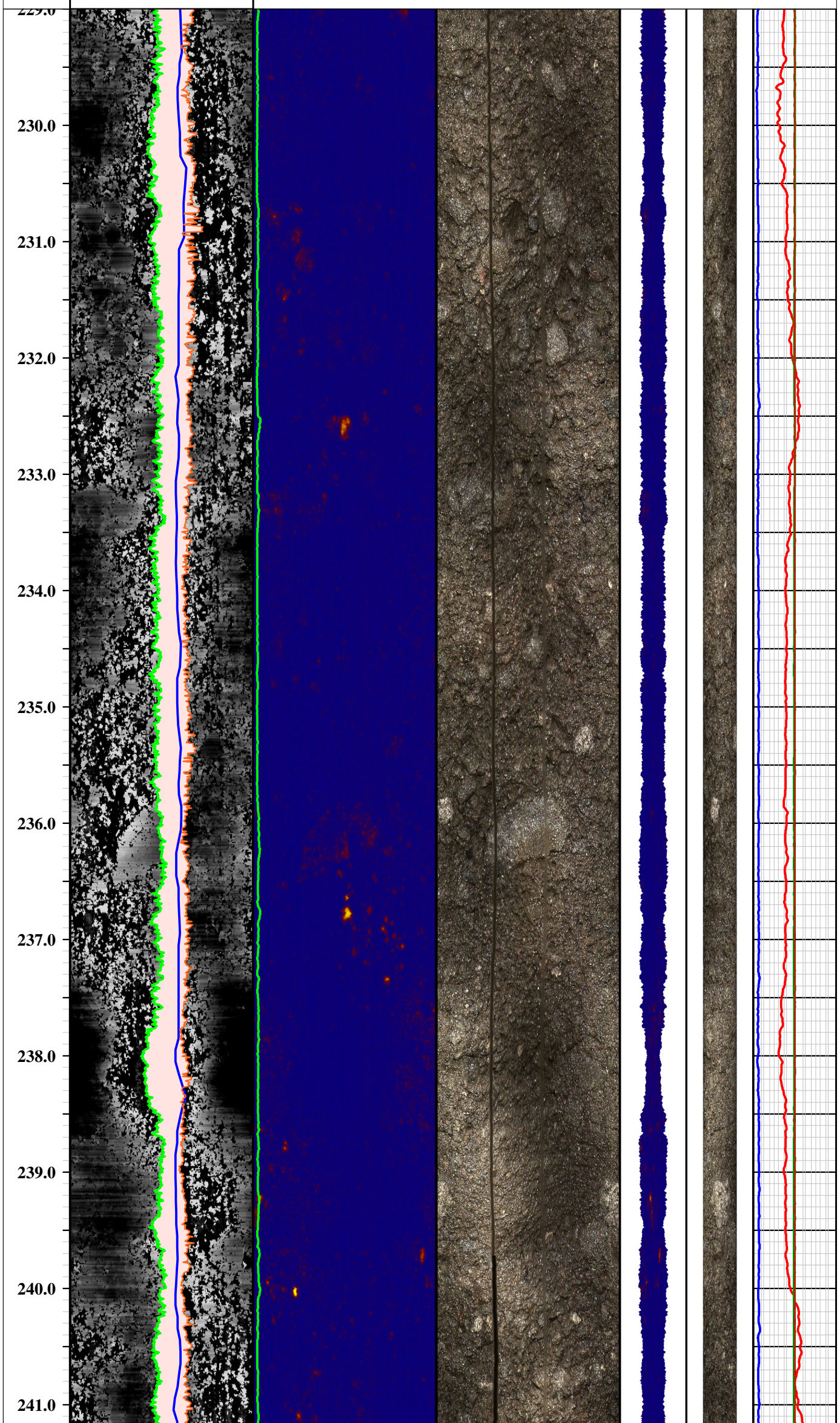
Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°
3-Arm Caliper — 5 Inches 15
Max Acoustic Caliper — 5 in 15
Ave Acoustic Caliper — 5 in 15
Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°
Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°
ARI — 0 2100
Breakout/Tensile — 0° 90° 180° 270° 0°

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°
Structure — 0° 90° 180° 270° 0°
2ft-Diff Temp — -1 1

3-D View — 0°
-D View# — 0°

Tilt — 0 Deg 16
Azimuth — 0 360
Mag Field — 40 uT 60
Gravity — 0.8 G 1.2



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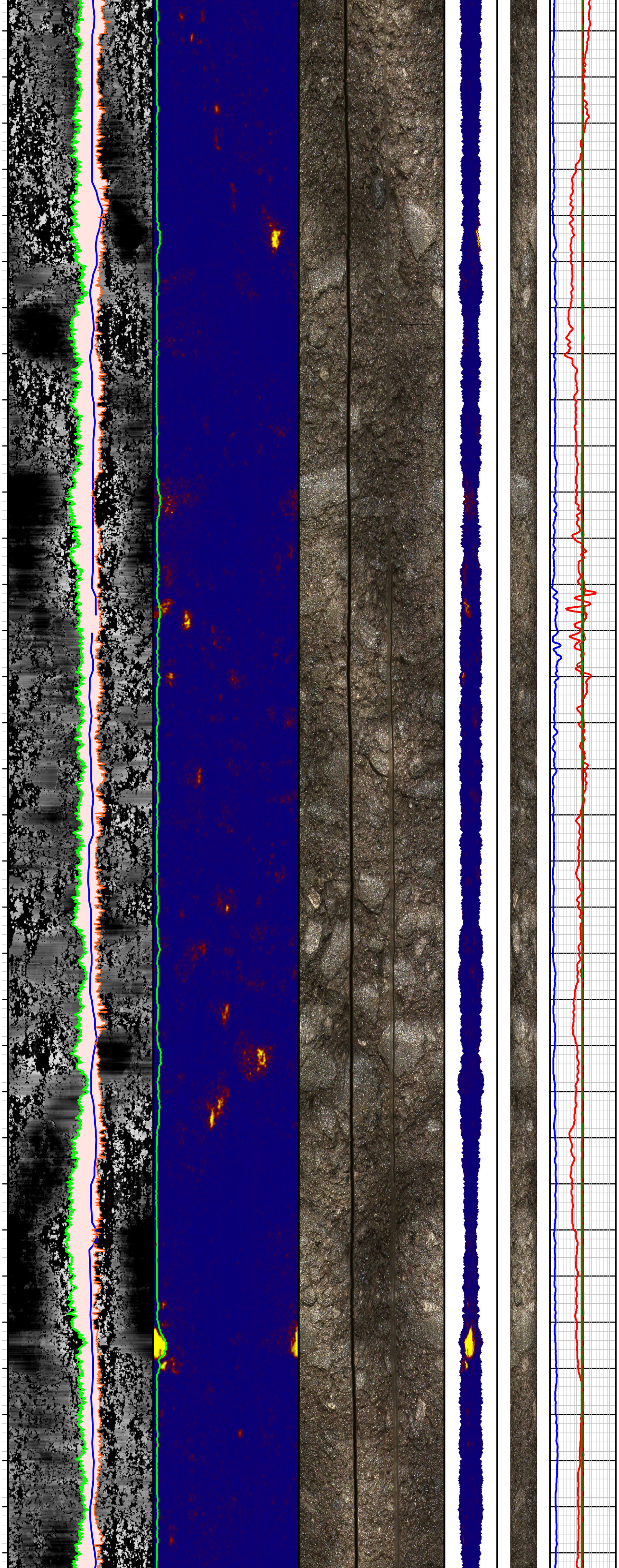

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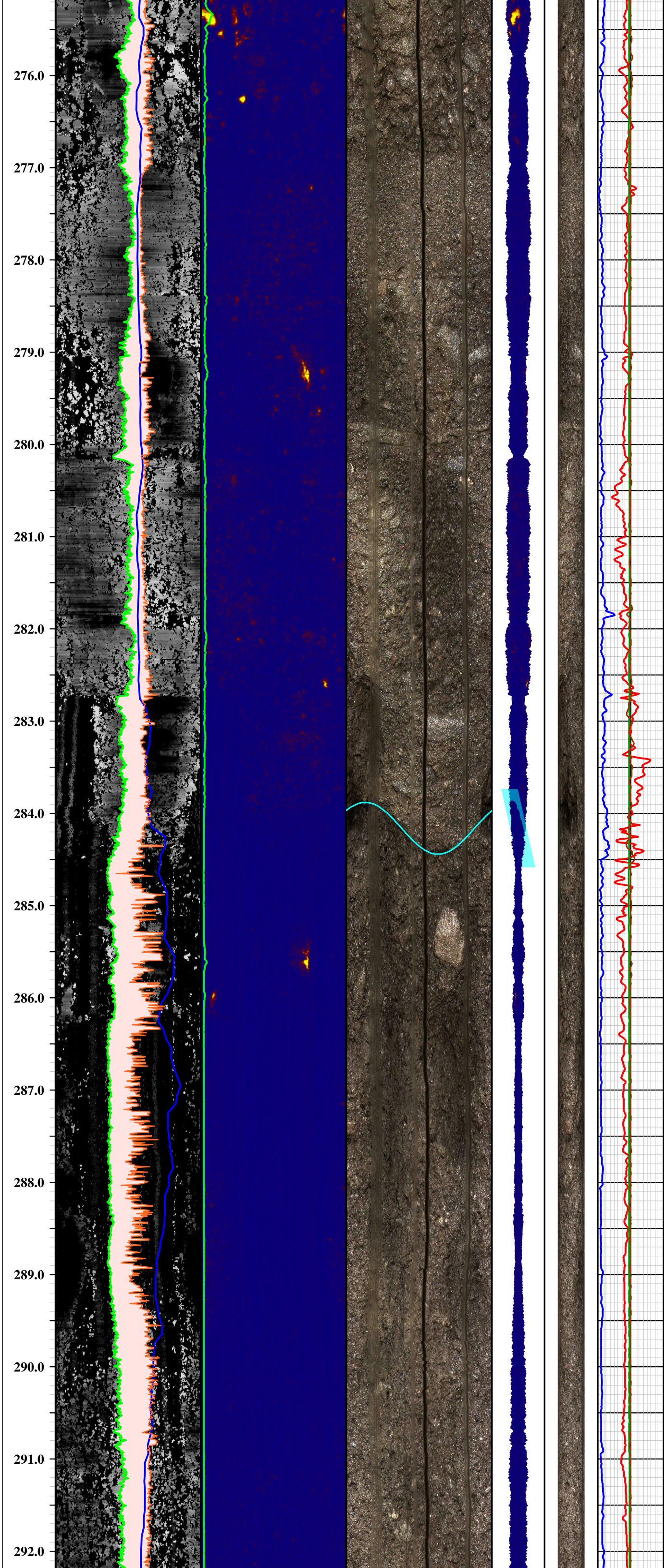
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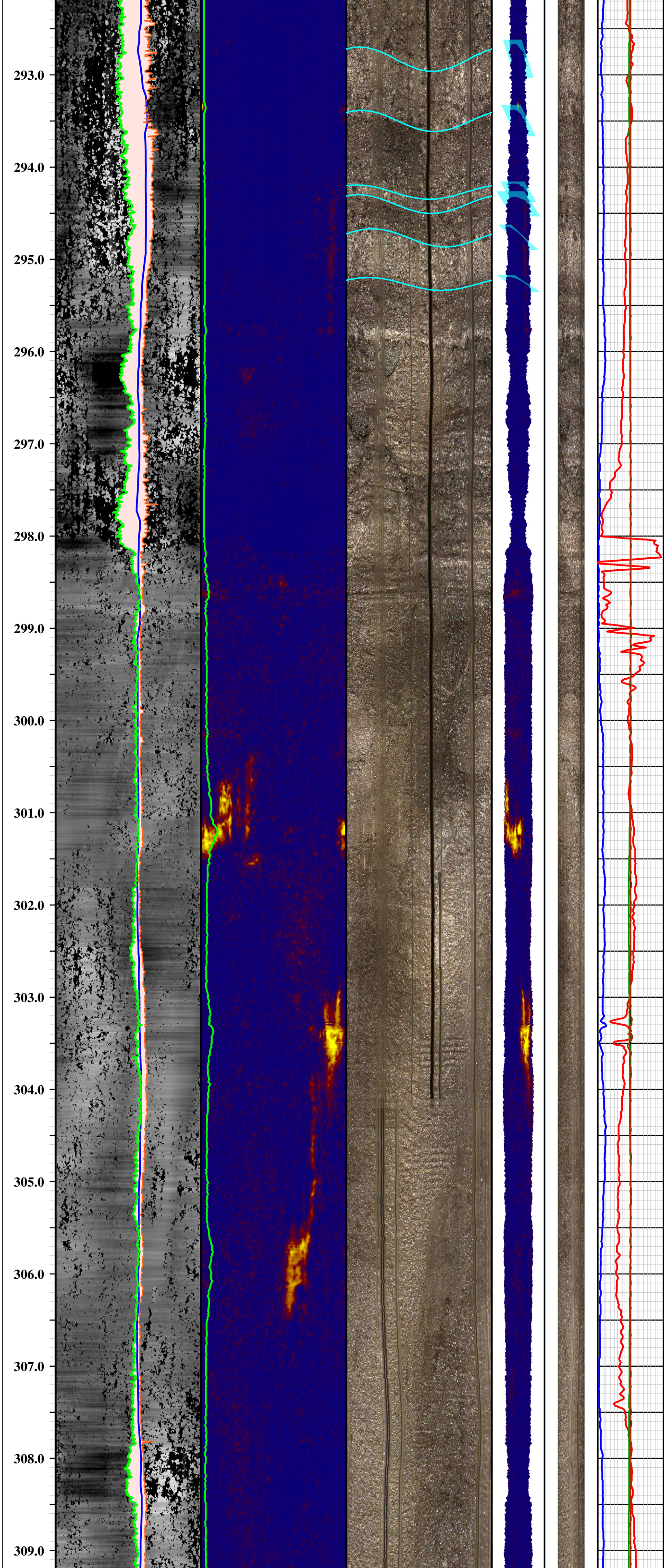
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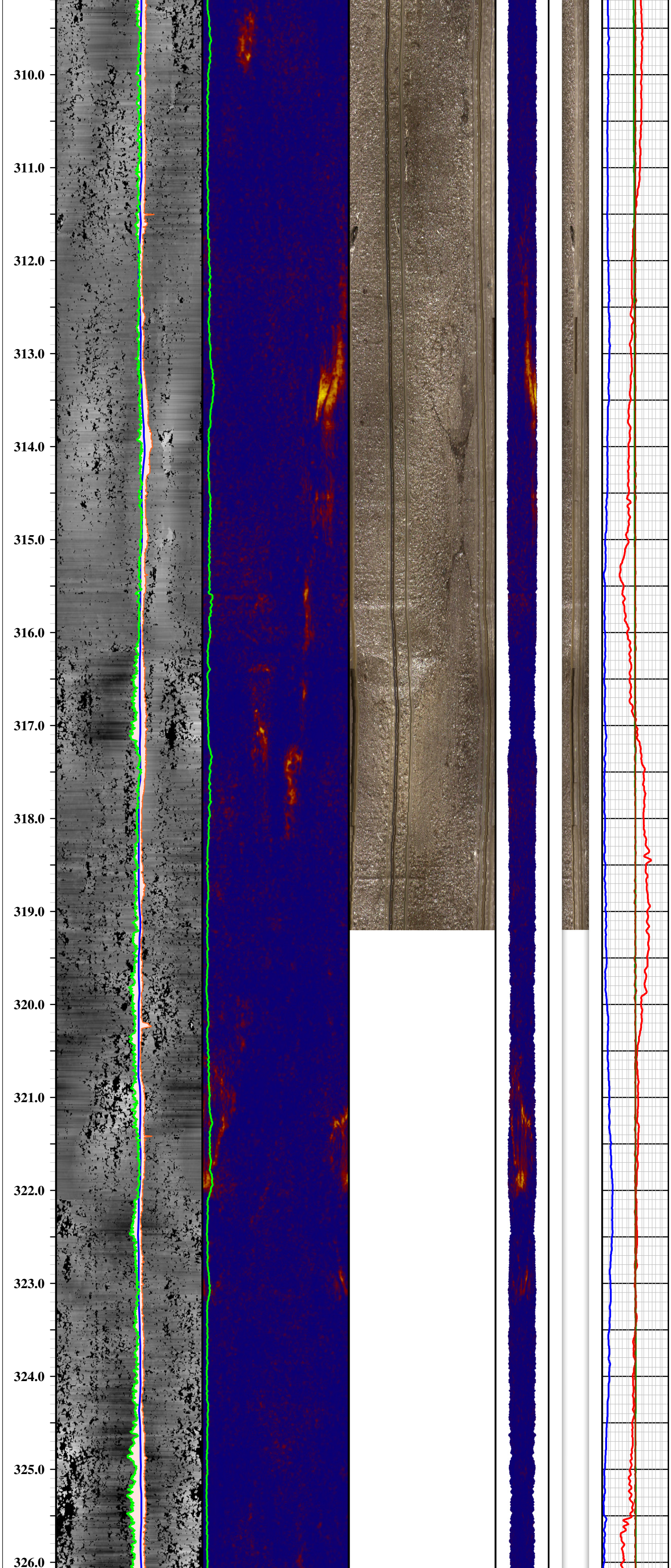
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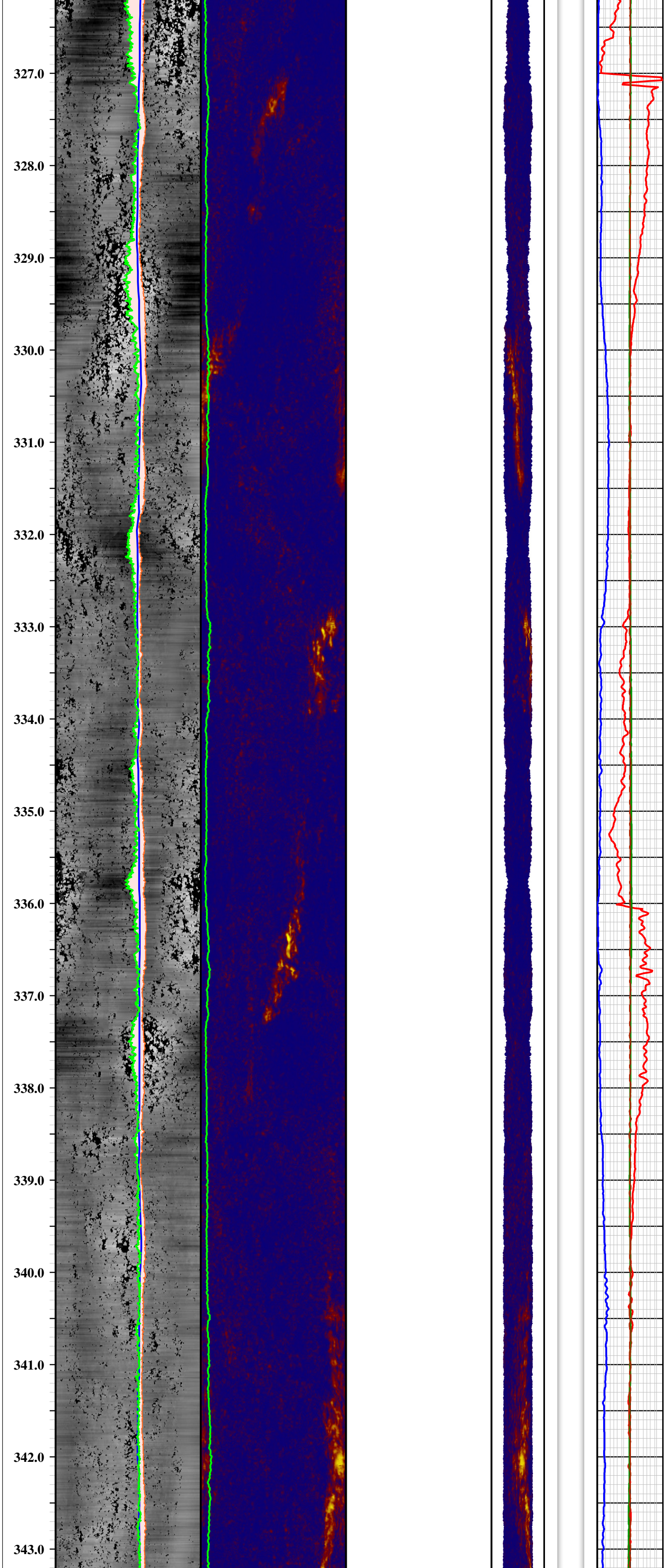
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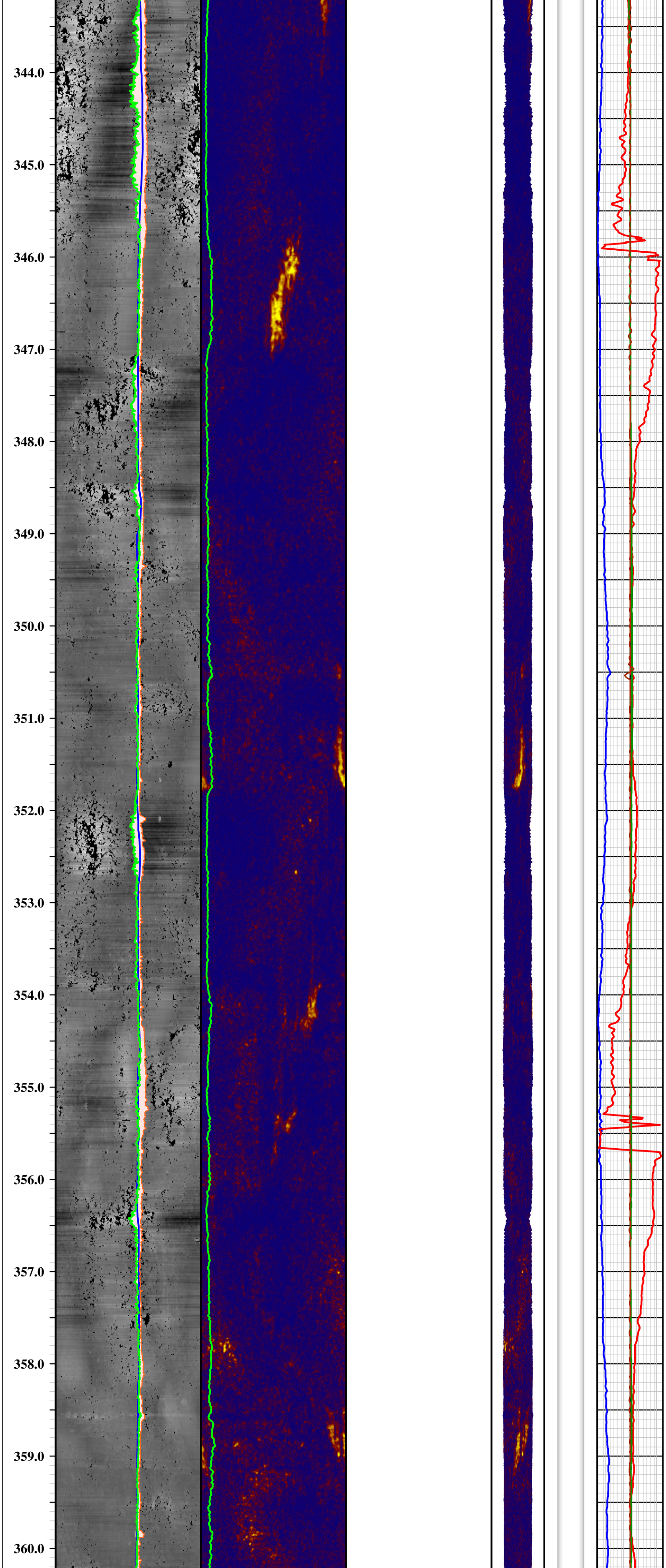
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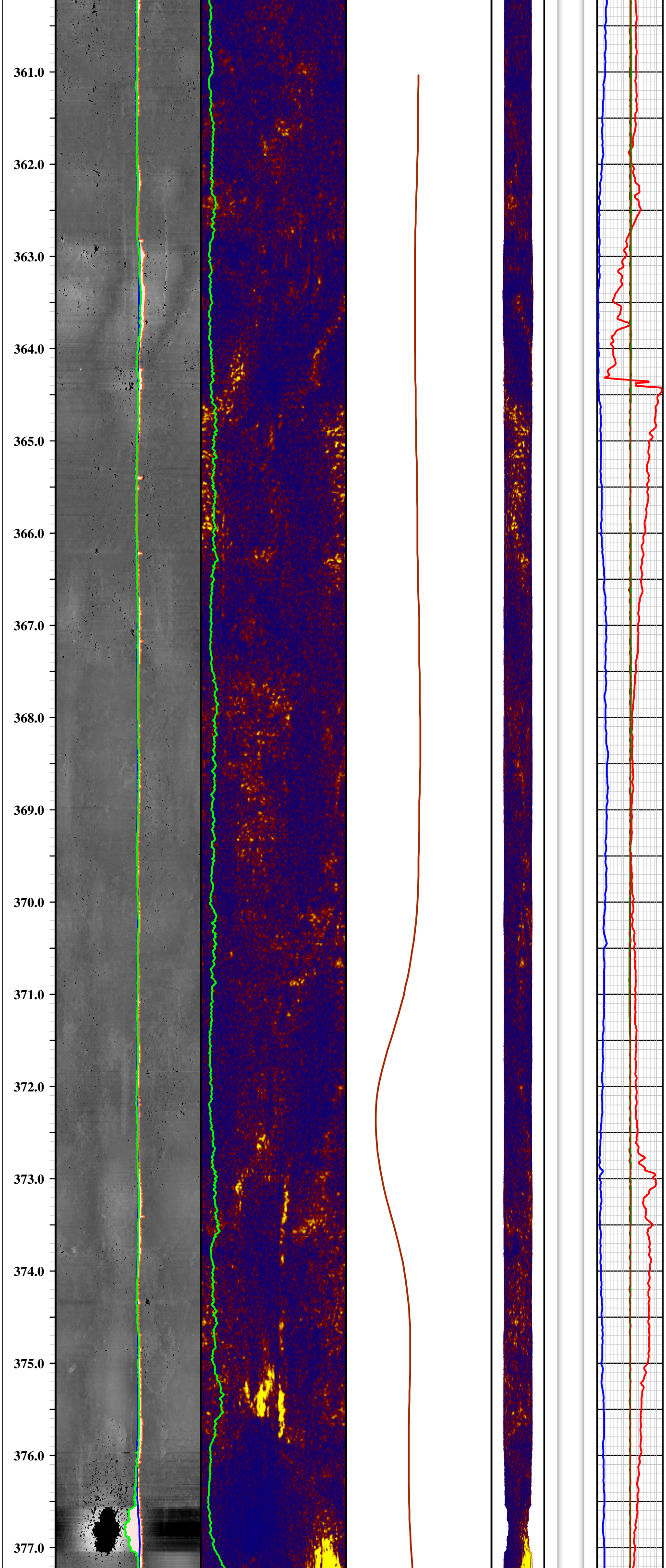
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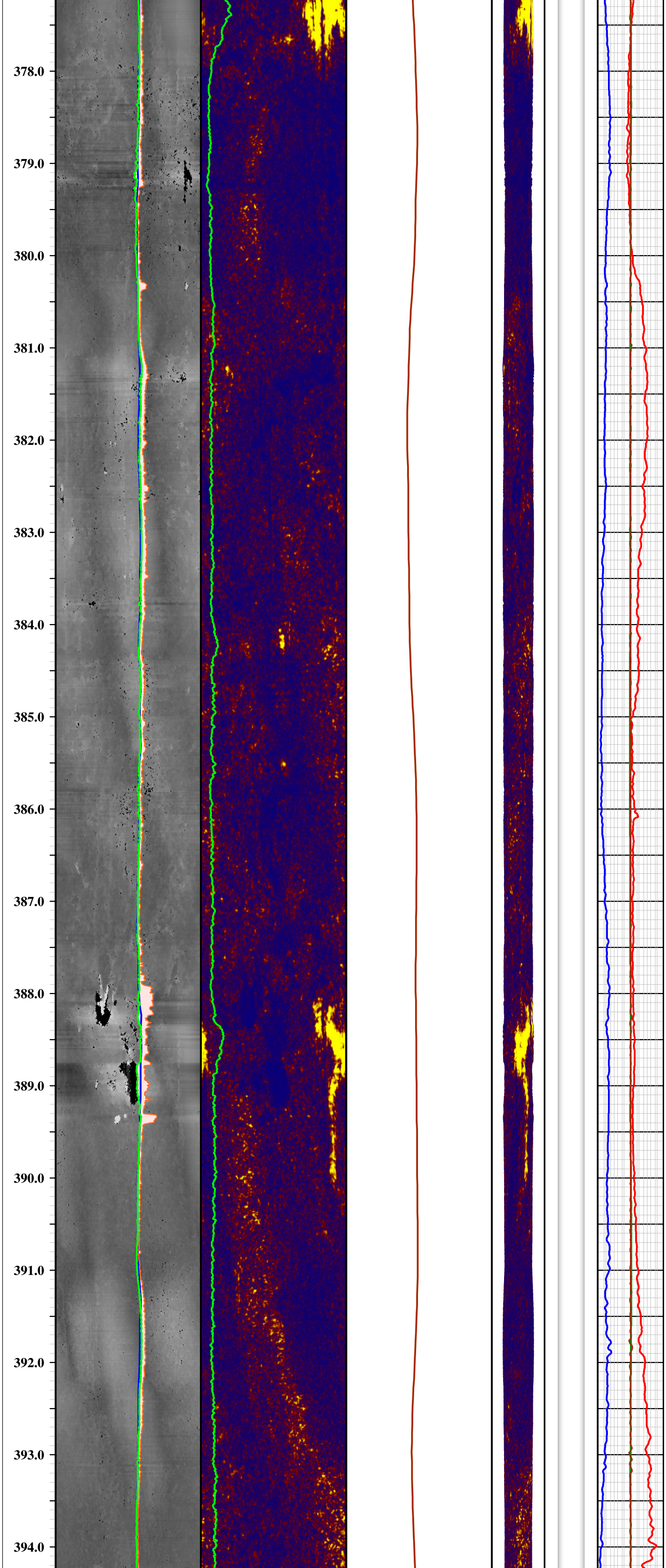
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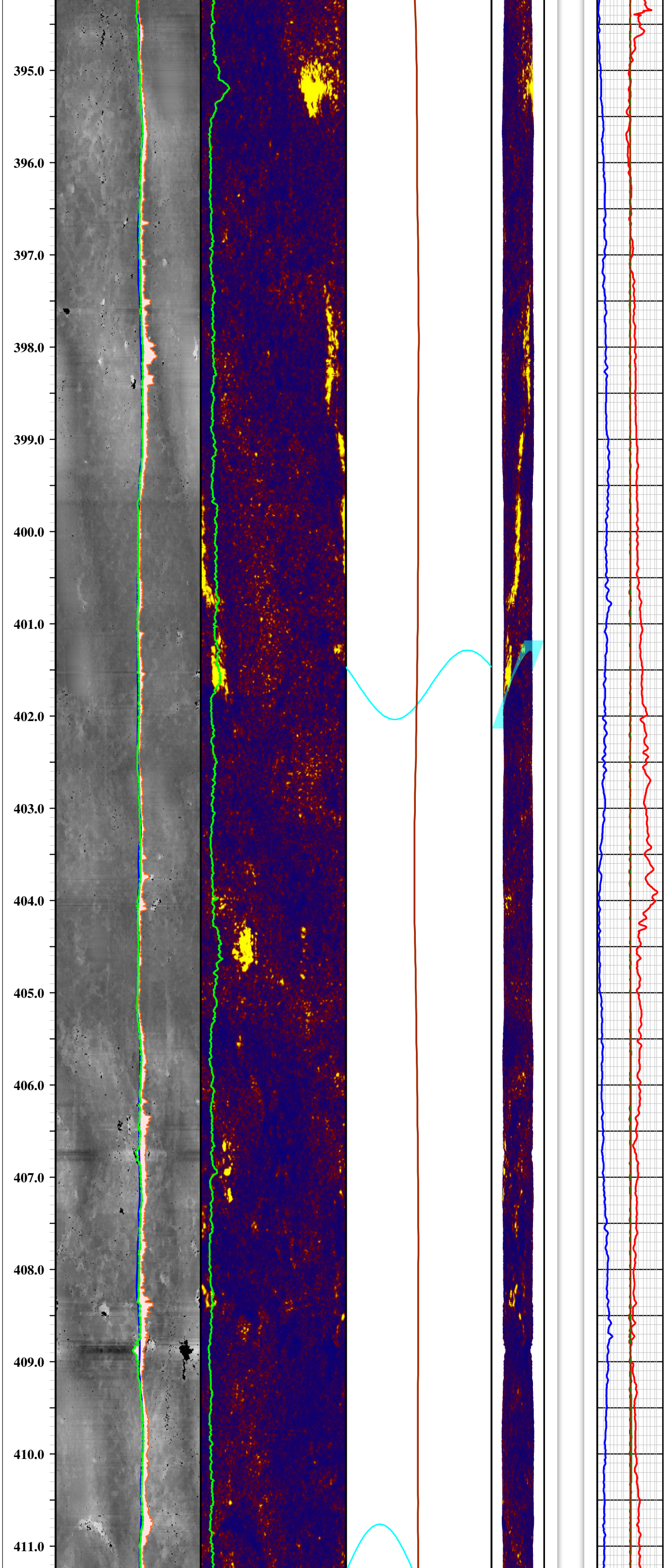
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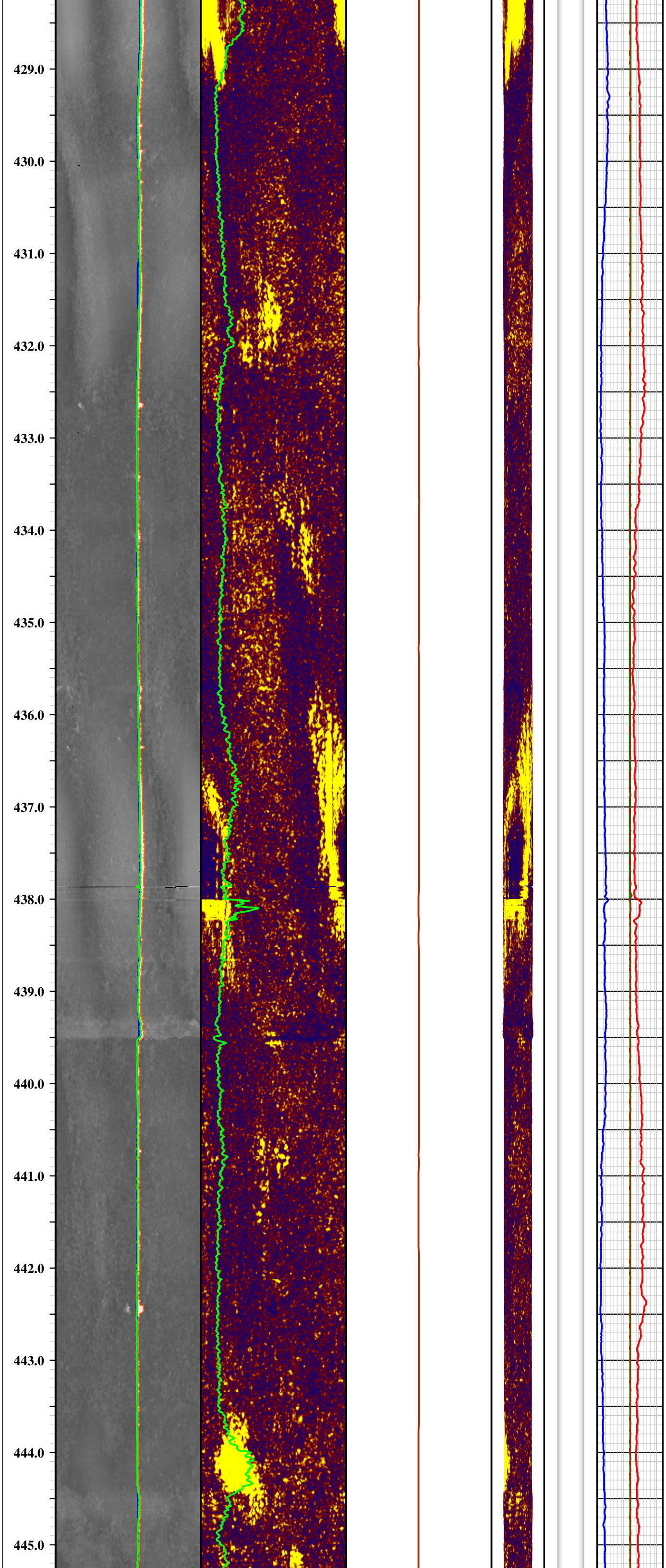
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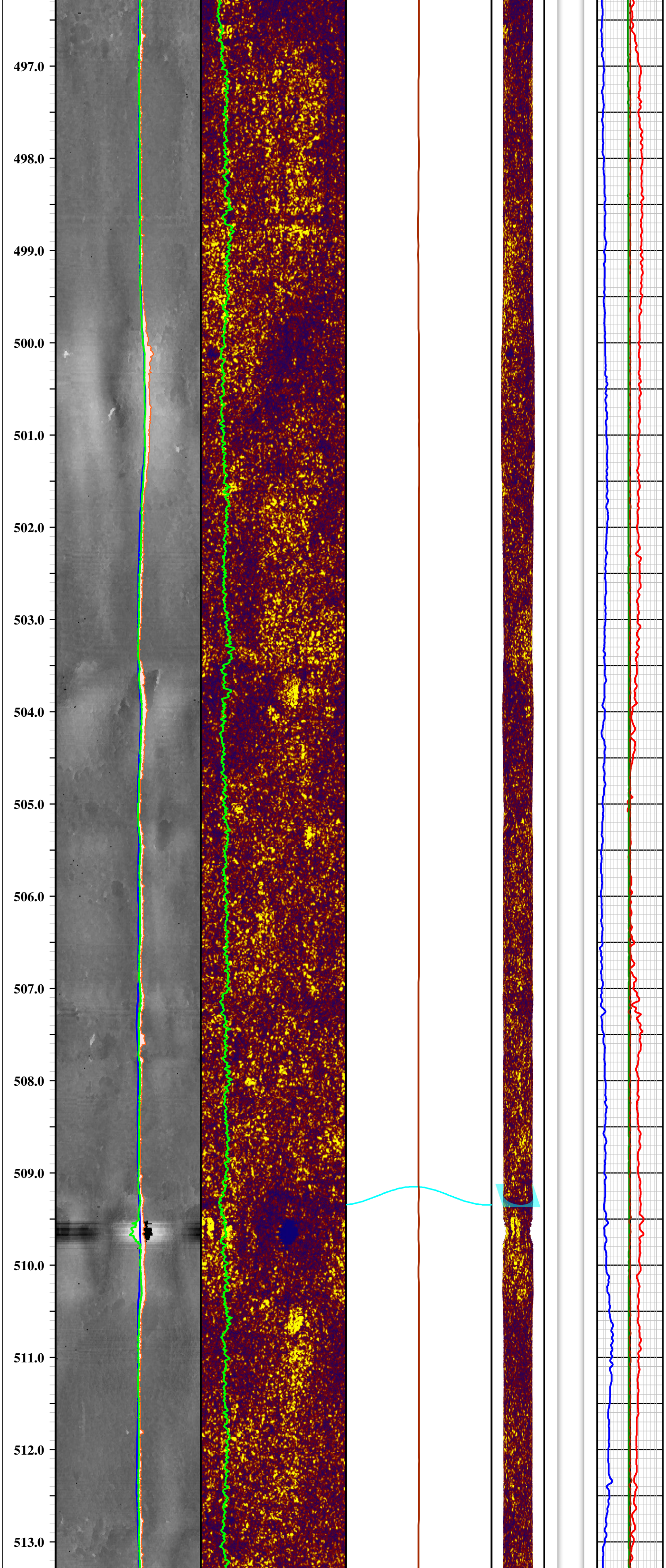
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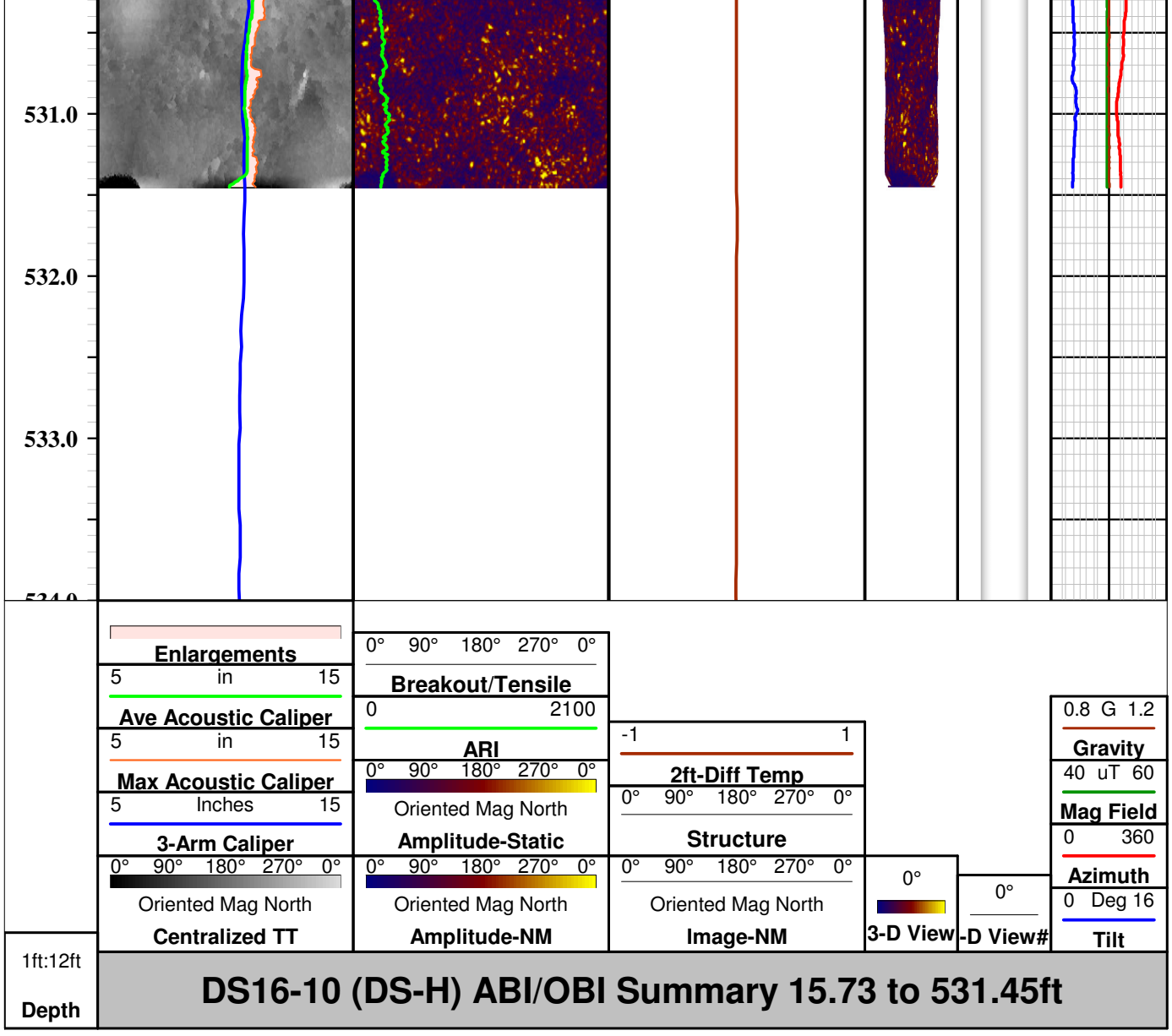


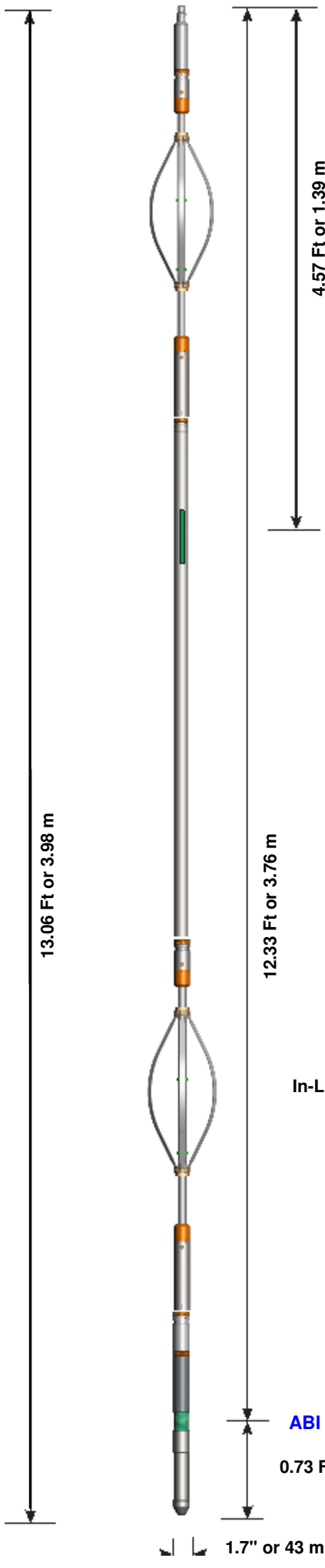
ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

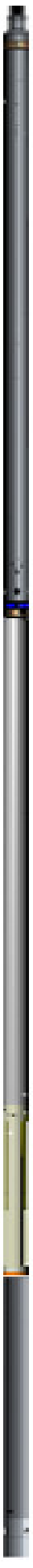
Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-10
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	DS16-11 (DS-J)	55-920077			
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER					OTHER SERVICES
MORE: 3-ARM CALIPER					OPTICAL
					GAMMA
LOCATION					TEMP/FLUID RES
D(1-11)24bac					E-LOGS
					SONIC
					GYRO
SEC 24	TWP 1S		RGE 11E		DUAL INDUCTION

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	11-17-16		TYPE FLUID IN HOLE		N/A
RUN No	3 & 7		MUD WEIGHT		N/A
TYPE LOG	ACOUSTIC TELEVIEWER		VISCOSITY		N/A
DEPTH-DRILLER	640 FT		LEVEL		N/A
DEPTH-LOGGER	638 FT		MAX. REC. TEMP.		25.86 DEG. C
BTM LOGGED INTERVAL	638 FT		IMAGE ORIENTED TO:		MAGNETIC NORTH
TOP LOGGED INTERVAL	450 FT		SAMPLE INTERVAL		0.010 FT
DRILLER / RIG#	NATIONAL		LOGGING TRUCK		TRUCK #310
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES		TOOL STRING/SN		ALT ABI40 2G SN 143003
WITNESSED BY	MELISSA - M&A		LOG TIME:ON SITE/OFF SITE		3:30 P.M.

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 1/2 IN	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	11-17-16	**Date**	11-17-16	**Date**	11-17-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	WELNAV GYRO	**Tool Model**	ALT QL OBI40 2G	**Tool Model**	MSI COMBO TOOL
Tool SN	201	**Tool SN**	152511	**Tool SN**	4953
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	600 FT	**To**	530 FT	**To**	638 FT
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	11-16-16	**Operation Check**	11-16-16	**Operation Check**	11-16-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	11-16-16
Time Logged	4:15 P.M.	**Time Logged**	7:15 P.M.	**Time Logged**	8:40 P.M.

Date	11-17-16	**Date**	11-17-16	**Date**	11-17-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	MSI QL DIL	**Tool Model**	ALT 4RX SONIC	**Tool Model**	MSI E-LOG 40GRP
Tool SN	6261	**Tool SN**	4572	**Tool SN**	5514
From	SURFACE	**From**	115 FT	**From**	SURFACE
To	638 FT	**To**	638 FT	**To**	638 FT
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	11-16-16	**Operation Check**	11-16-16	**Operation Check**	11-16-16
Calibration Check	11-4-16	**Calibration Check**	N/A	**Calibration Check**	11-16-16
Time Logged	9:15 P.M.	**Time Logged**	9:45 P.M.	**Time Logged**	10:30 P.M.

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend

TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-11 (GT-J) ABI/OBI Summary 15.09 to 637.85ft

Depth
1ft:6ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 0 Inches 15

Max Acoustic Caliper — 0 in 15

Ave Acoustic Caliper — 0 in 15

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 2100

Breakout/Tensile — 0° 90° 180° 270° 0°

Structure — 0° 90° 180° 270° 0°

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

2ft-Diff Temp — -1 1

-D View — 0°

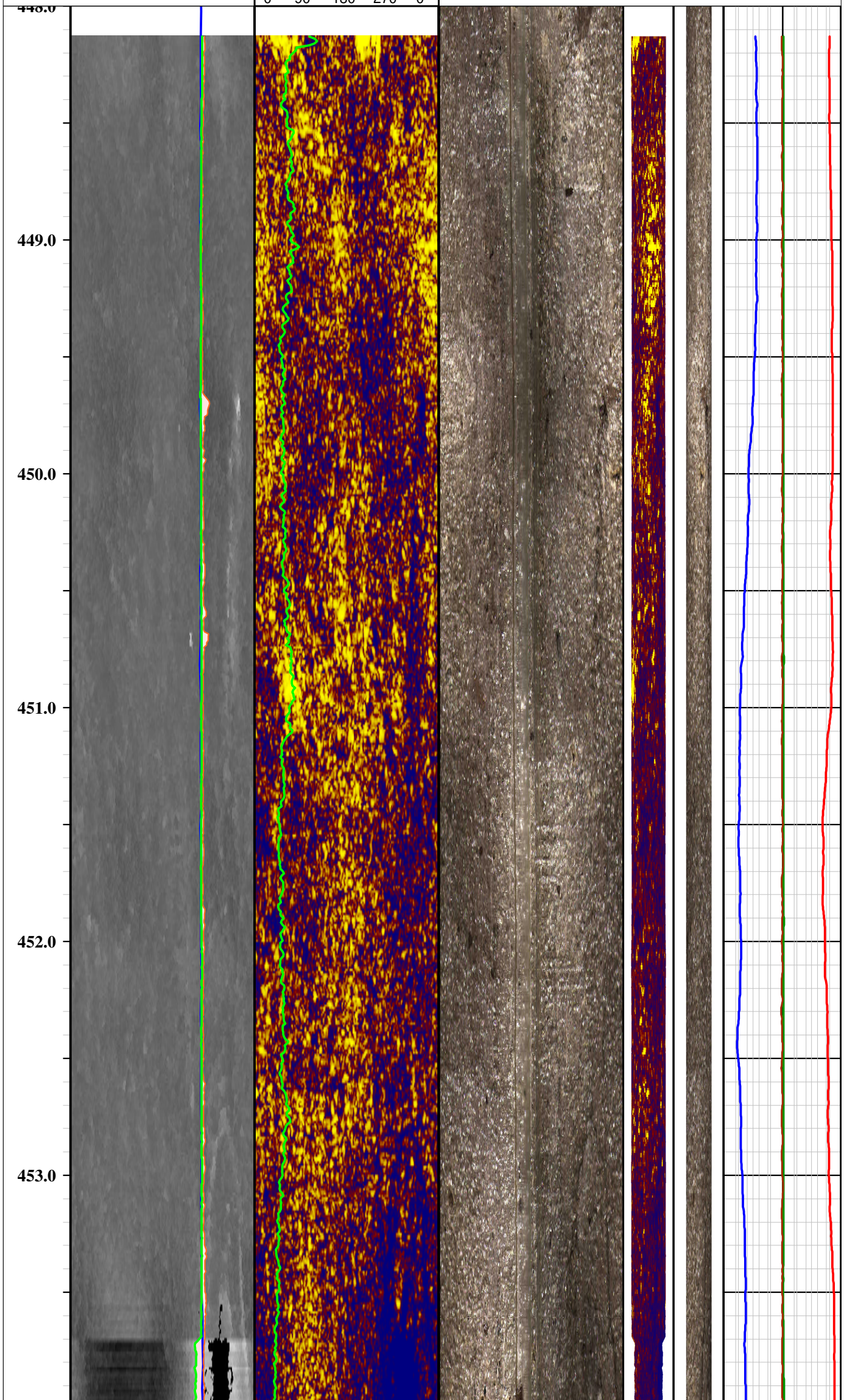
D View — 0°

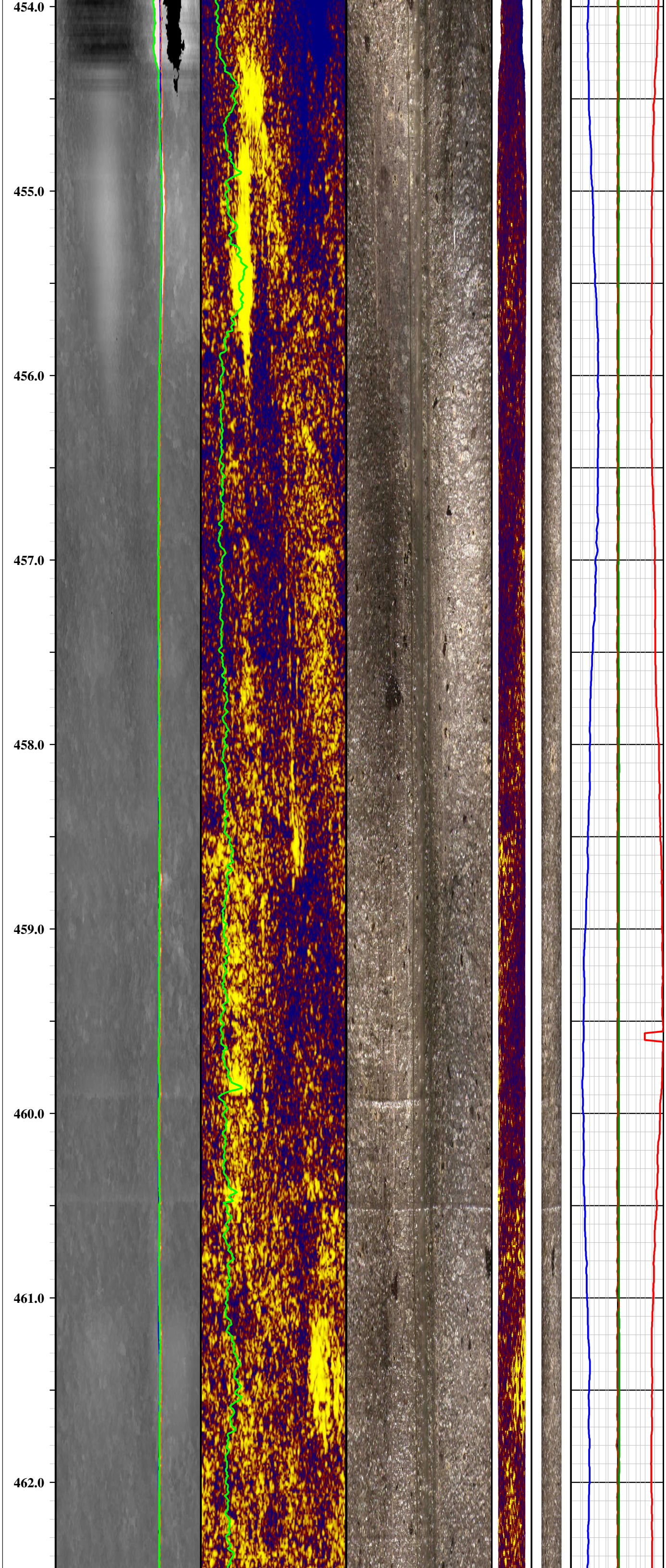
Tilt — 0 Deg 16

Mag Field — 40 uT 60

Azimuth — 0 Deg 360

Gravity — 0.8 G 1.2

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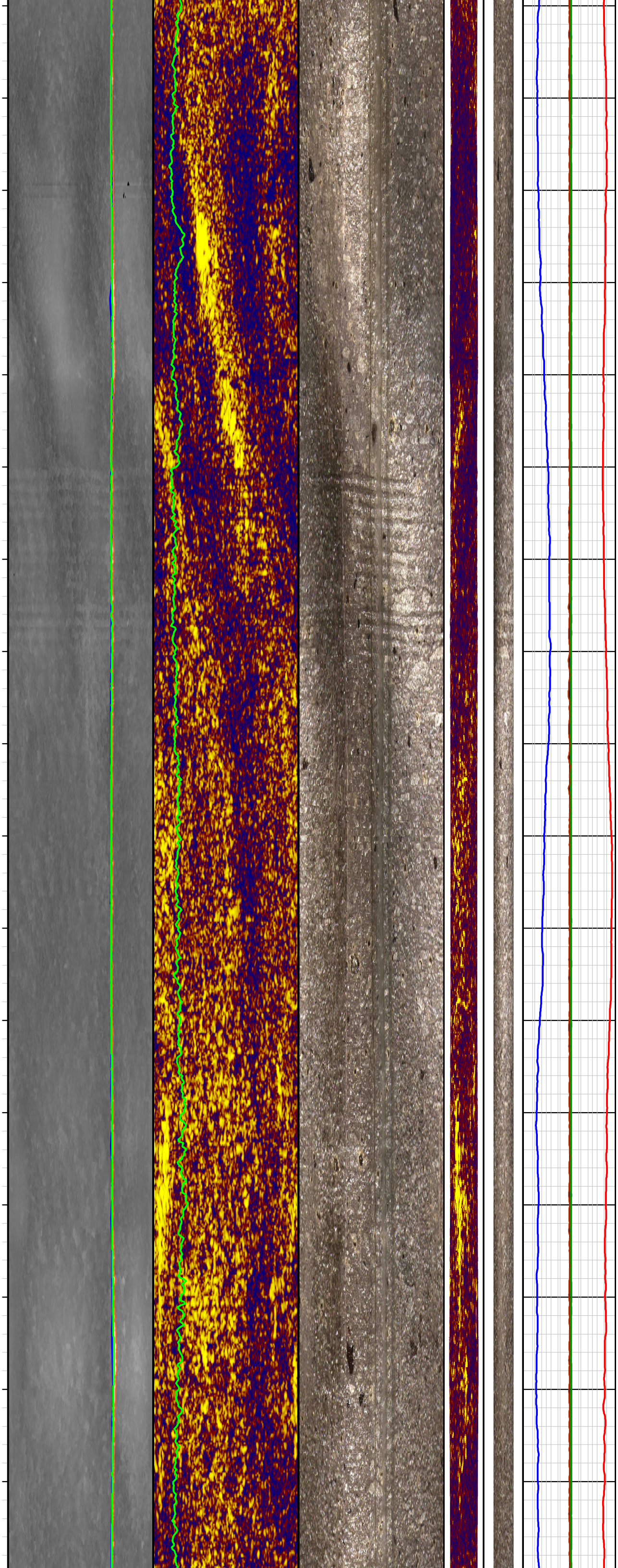

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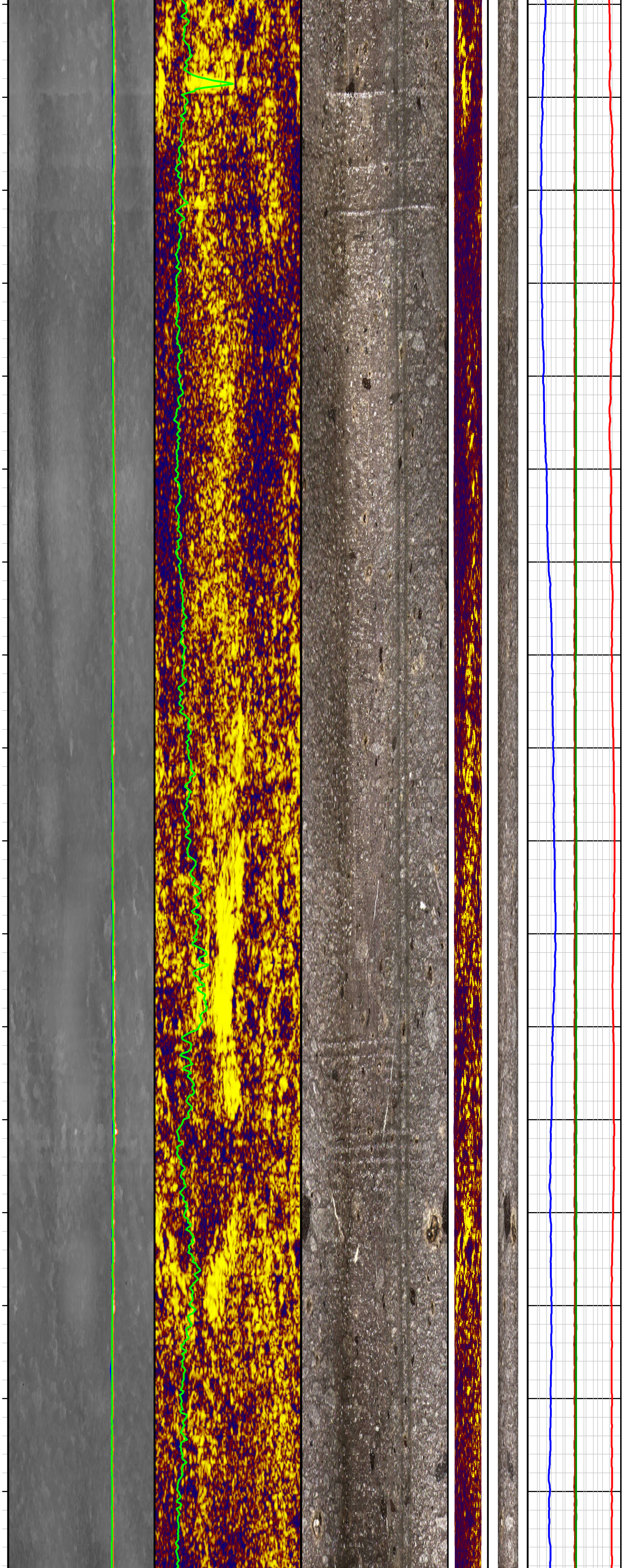

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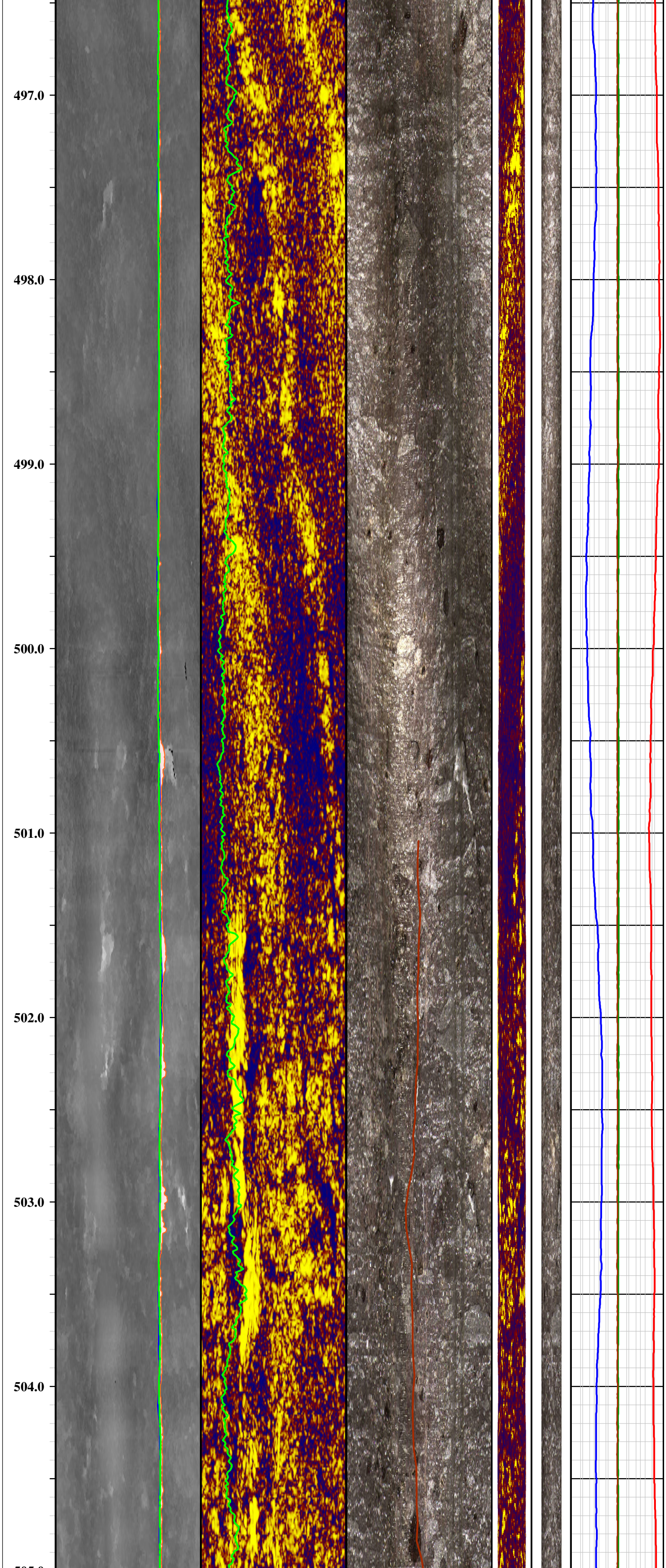
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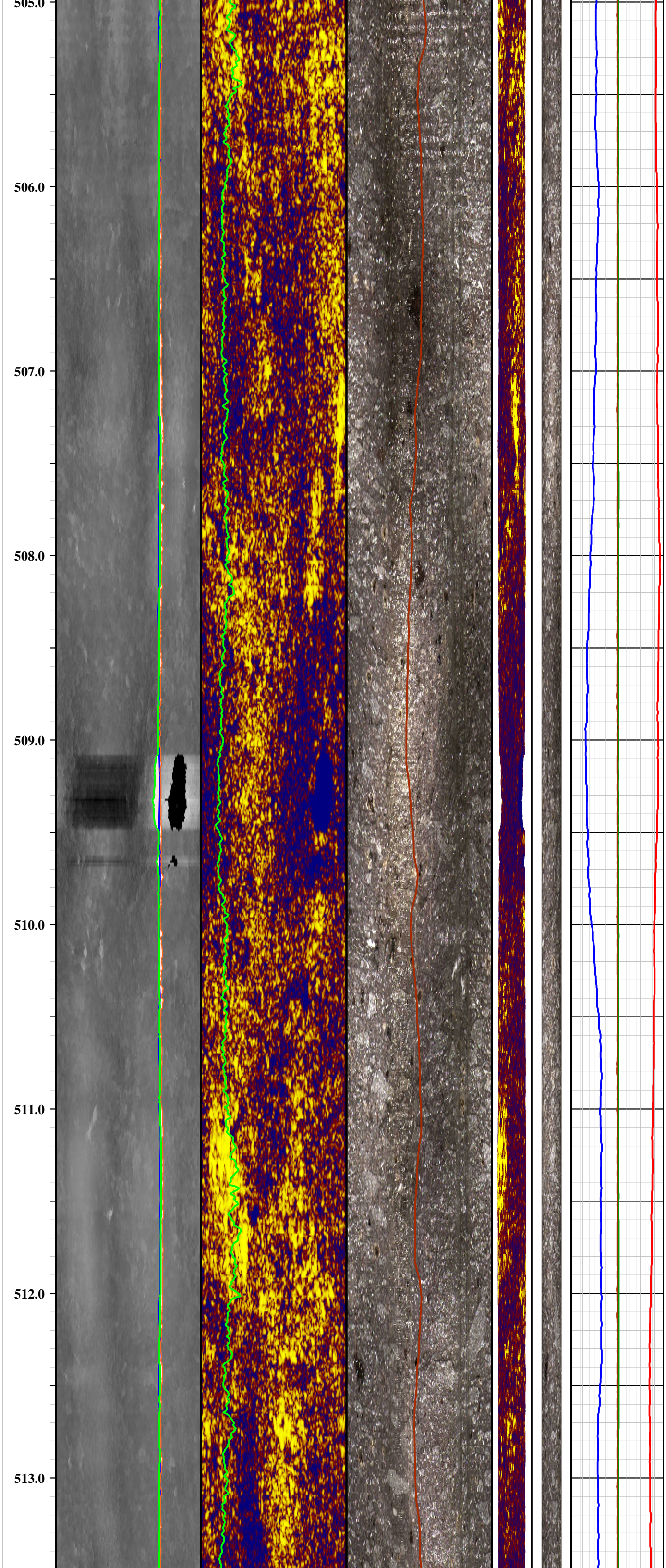
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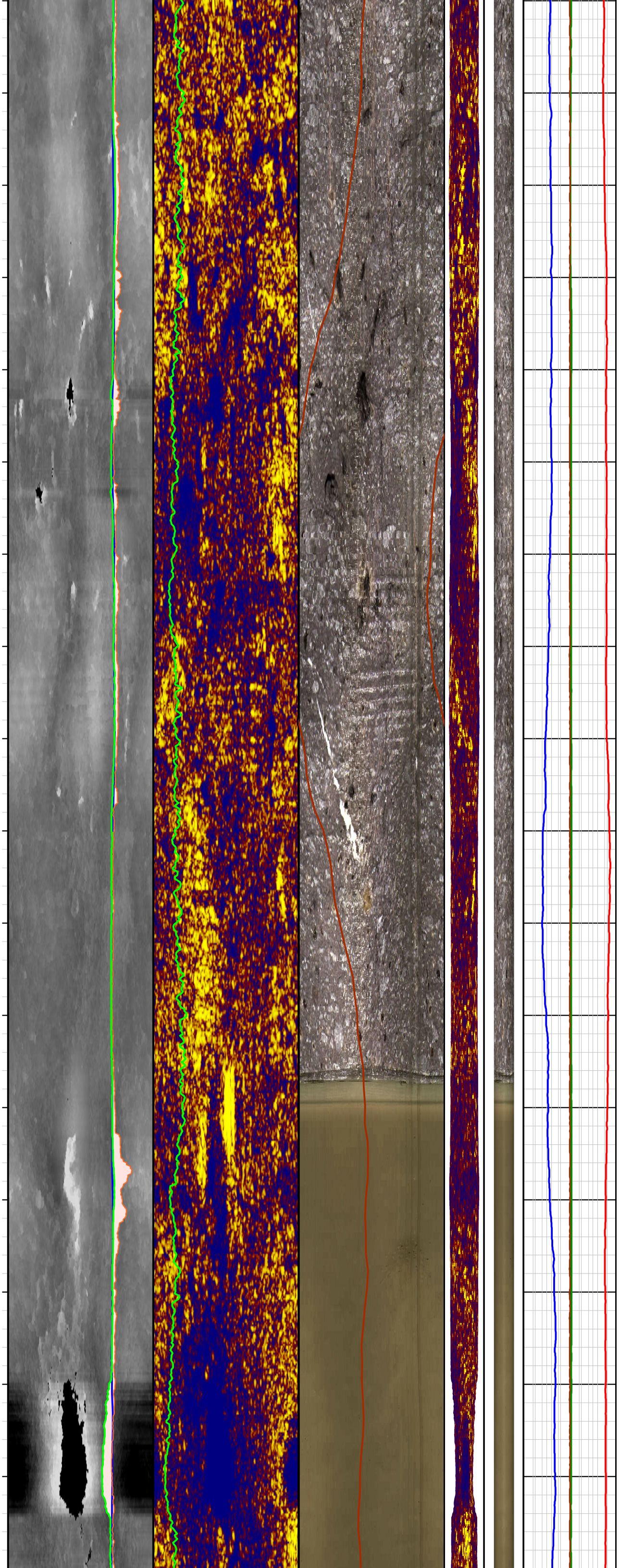

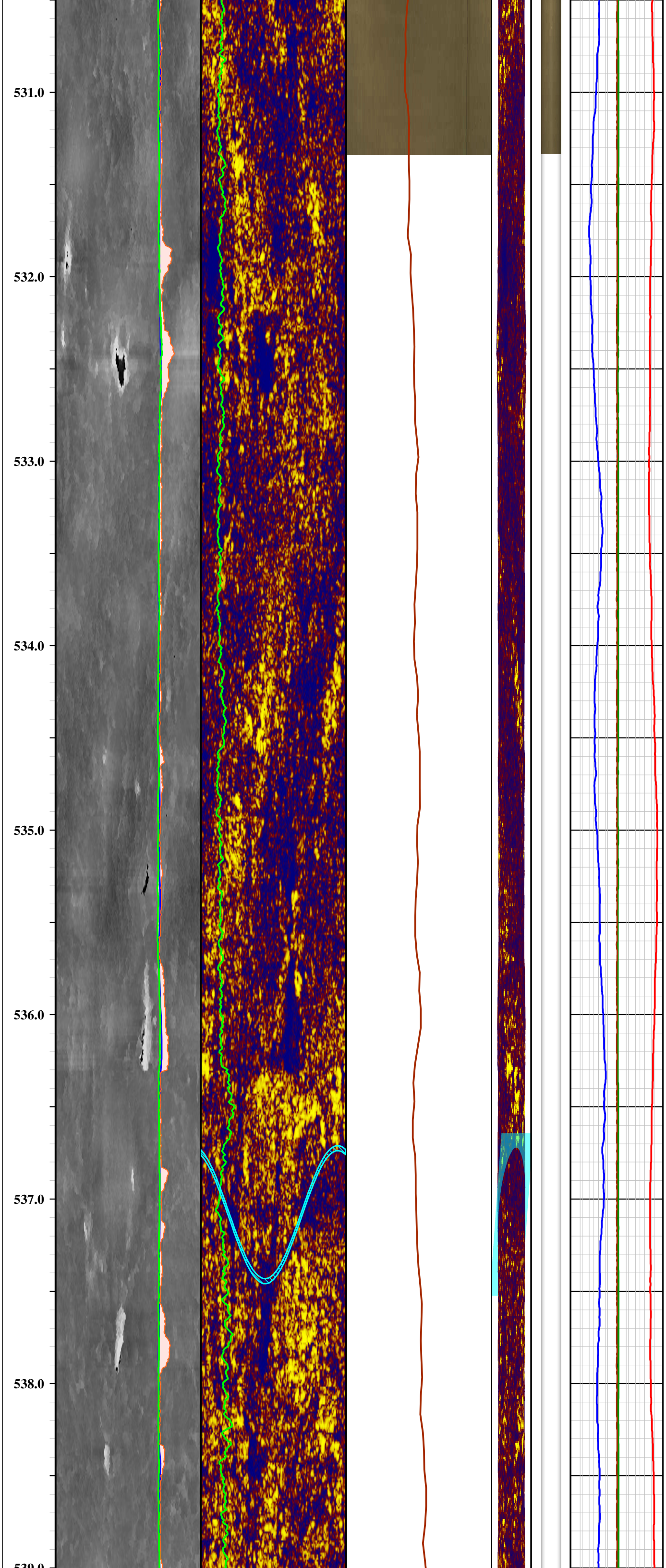
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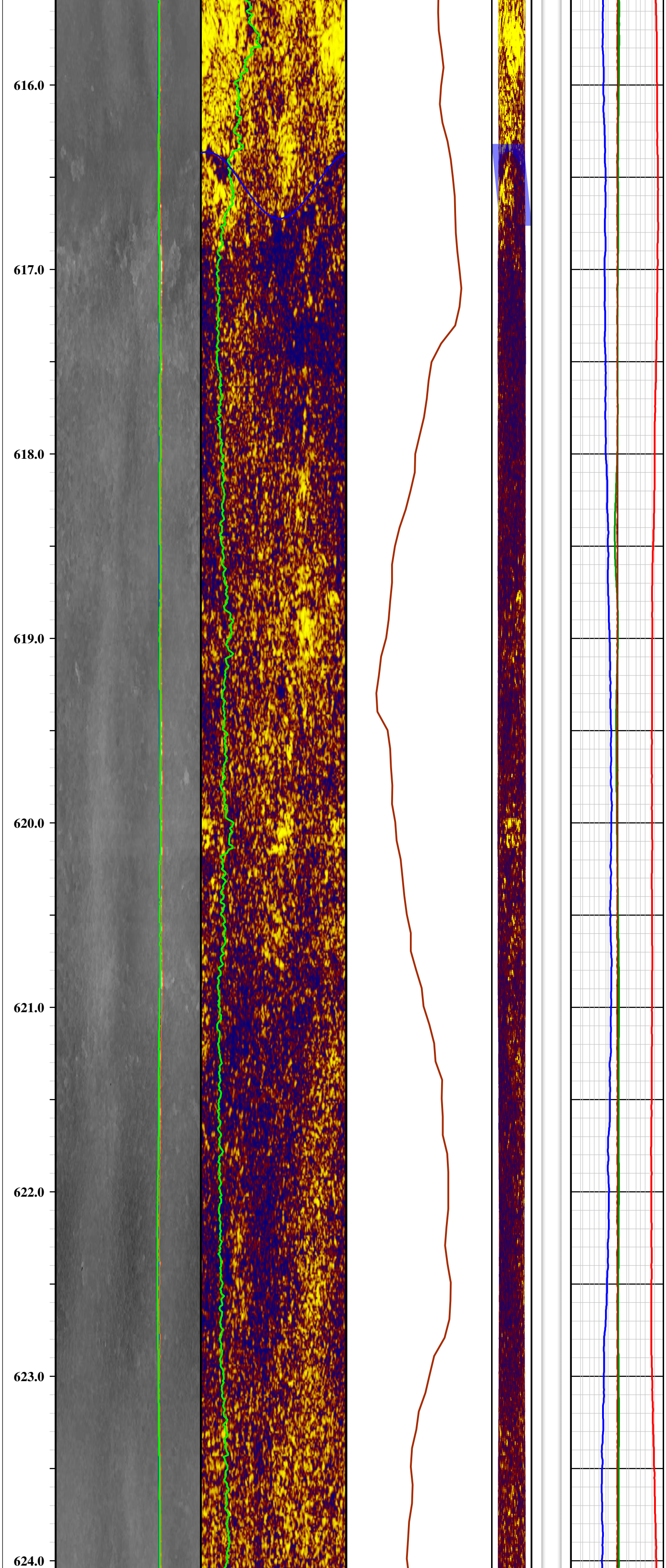
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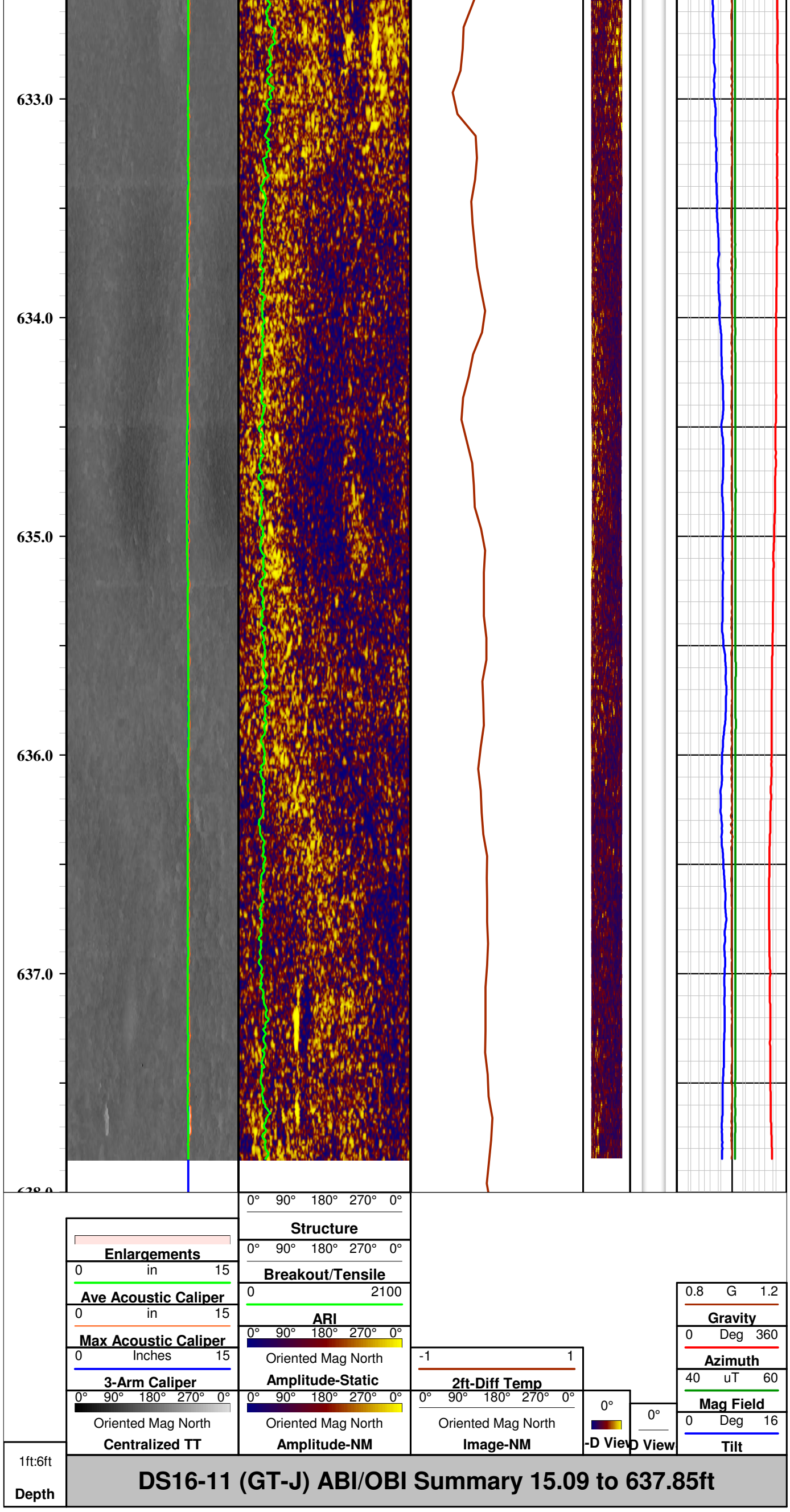


ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



4.57 Ft or 1.39 m

APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

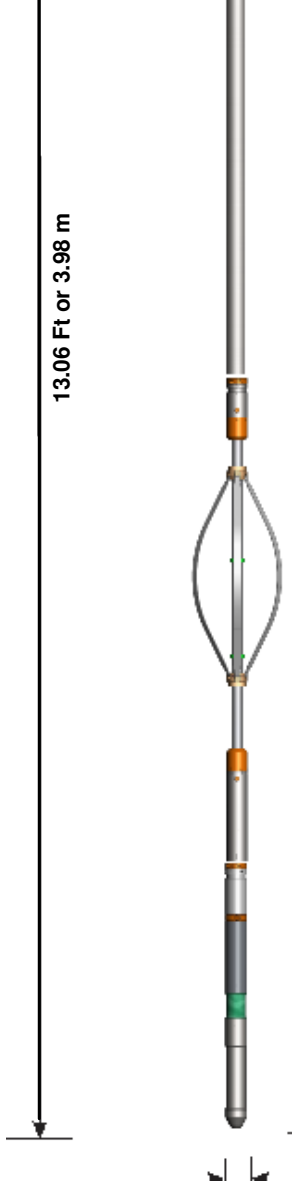
Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

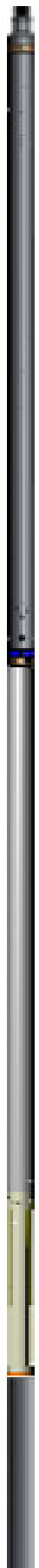
Pressure Rating = 700 bar (10153 psi)



In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)



1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-11
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	DS16-12 (DS-A)	55-920153			
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER				OTHER SERVICES	
MORE: 3-ARM CALIPER				OPTICAL TELEVIEWER	
				GAMMA	
LOCATION				TEMP/FLUID RES	
D(1-12)28aab				E-LOGS	
				SONIC	
				GYRO	
SEC 28	TWP 1S	RGE 12E		DUAL INDUCTION	
PERMANENT DATUM		ELEVATION		K.B.	
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM		D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

DATE	11-24-16	TYPE FLUID IN HOLE	MUD
RUN No	3 & 7	MUD WEIGHT	N/A
TYPE LOG	GAMMA - CALIPER - TFR	VISCOSITY	N/A
DEPTH-DRILLER	340 FT	LEVEL	~ 107 FT
DEPTH-LOGGER	340 FT	MAX. REC. TEMP.	26.96 DEG. C
BTM LOGGED INTERVAL	340 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	65 FT	SAMPLE INTERVAL	0.01 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	A. OLSON / M. QUINONES	TOOL STRING/SN	QL ABI40 2G SN 143003
WITNESSED BY	MELISSA - M&A	LOG TIME:ON SITE/OFF SITE	3:30 P.M.

RUN	BOREHOLE RECORD		CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 1/2 IN	20 FT	TOTAL DEPTH				
3							

COMMENTS:

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Tool Summary:

Date	11-24-16	**Date**	11-24-16	**Date**	11-17-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	WELNAV GYRO	**Tool Model**	ALT QL OBI40 2G	**Tool Model**	MSI COMBO TOOL
Tool SN	201	**Tool SN**	152511	**Tool SN**	4953
From	SURFACE	**From**	SURFACE	**From**	SURFACE
To	300 FT	**To**	110 FT	**To**	340 FT
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	11-23-16	**Operation Check**	11-23-16	**Operation Check**	11-23-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	11-23-16
Time Logged	3:25 P.M.	**Time Logged**	5:20 P.M.	**Time Logged**	5:40 P.M.

Date	11-24-16	**Date**	11-24-16	**Date**	11-24-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	MSI QL DIL	**Tool Model**	ALT 4RX SONIC	**Tool Model**	MSI E-LOG 40GRP
Tool SN	6261	**Tool SN**	4572	**Tool SN**	5514
From	SURFACE	**From**	55 FT	**From**	SURFACE
To	340 FT	**To**	340 FT	**To**	340 FT
Recorded By	A. OLSON	**Recorded By**	A. OLSON	**Recorded By**	A. OLSON
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	11-23-16	**Operation Check**	11-23-16	**Operation Check**	11-23-16
Calibration Check	11-4-16	**Calibration Check**	N/A	**Calibration Check**	11-23-16
Time Logged	6:05 P.M.	**Time Logged**	6:20 P.M.	**Time Logged**	6:45 P.M.

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 & 2,000 OHM-M

Disclaimer:

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Acoustic Image Features Legend

TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-12 (DS-A) ABI/OBI Summary 17.34 to 338.862ft

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 0 Inches 16

Max Acoustic Caliper — 0 in 16

Ave Acoustic Caliper — 0 in 16

Enlargements

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 2100

Breakout/Tensile — 0° 90° 180° 270° 0°

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Structure — 0° 90° 180° 270° 0°

3-D View — 98°

3-D View#1 — 0°

2ft-Diff Temp — -1 1

Tilt — 0 Deg 16

Mag Field — 40 uT 60

Azimuth — 0 Deg 360

Gravity — 0.8 G 1.2

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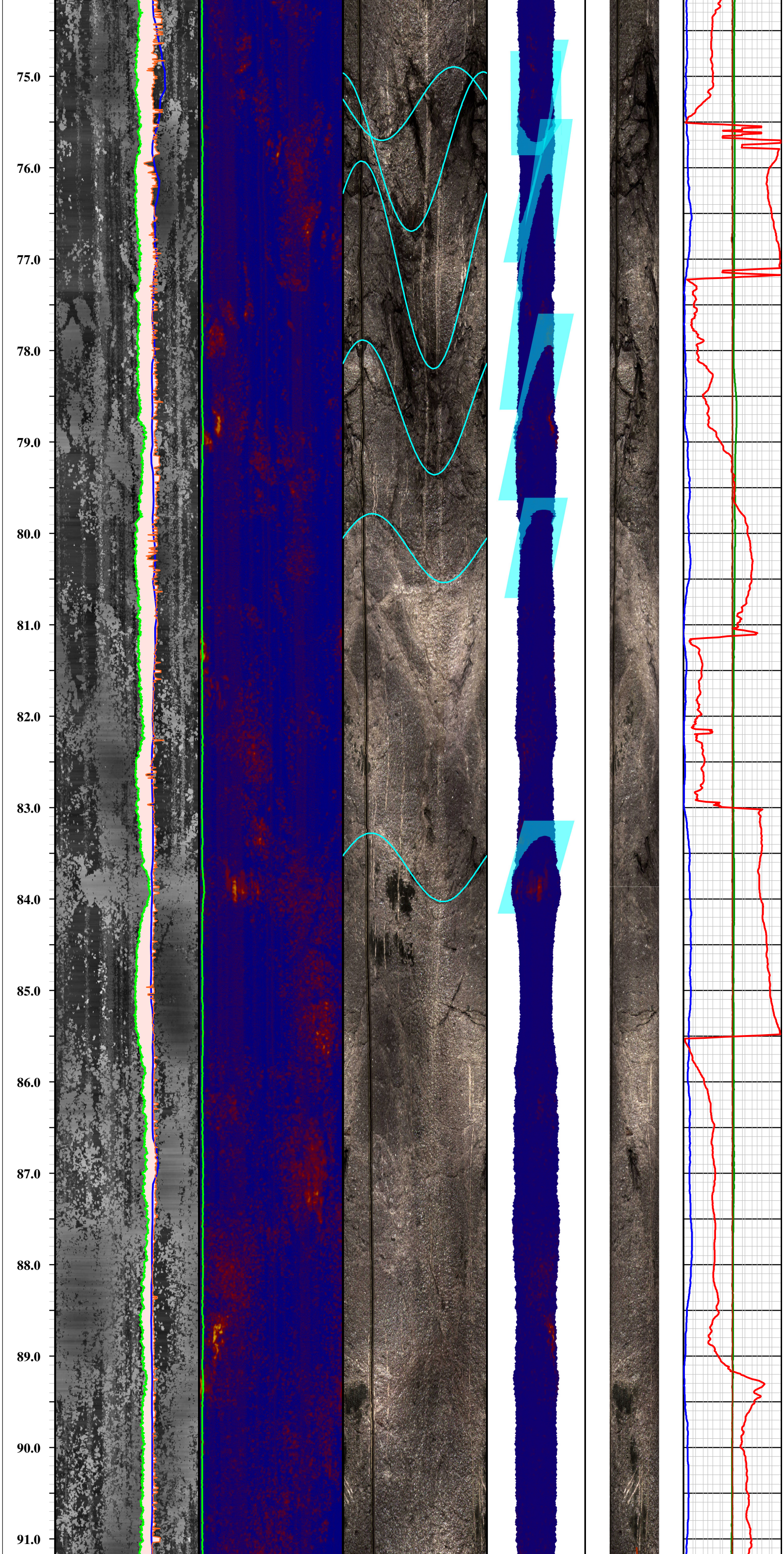
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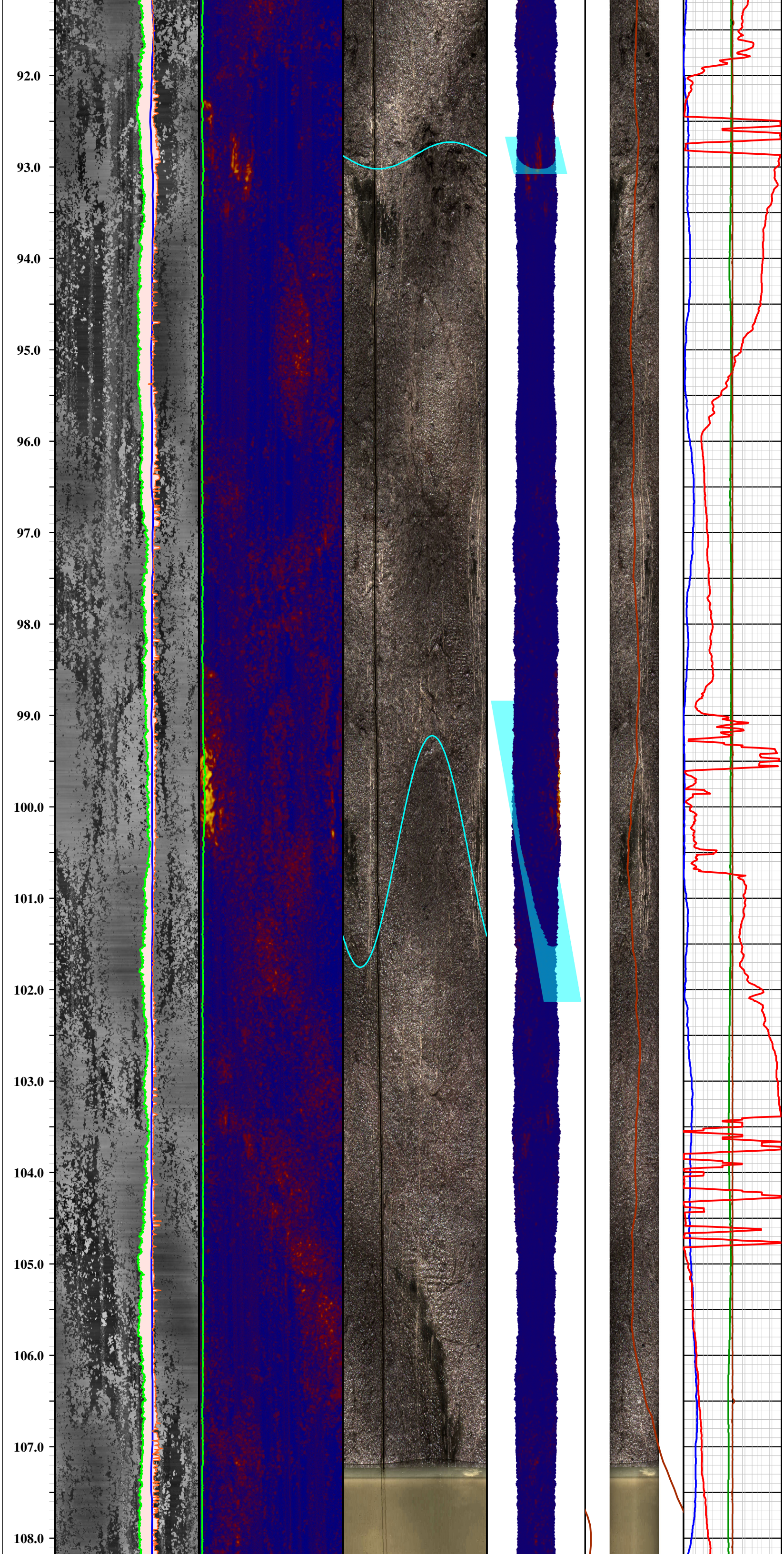
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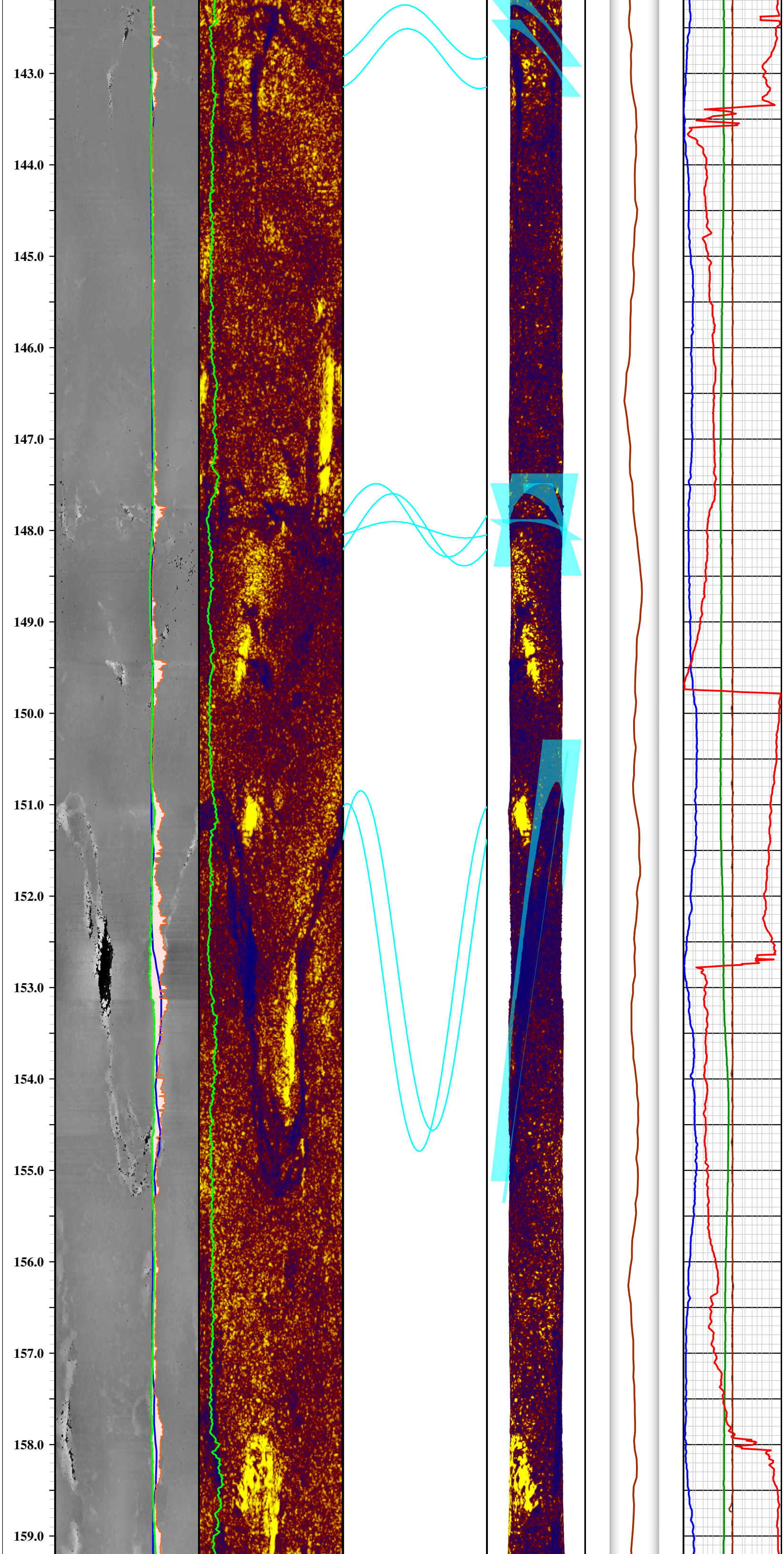
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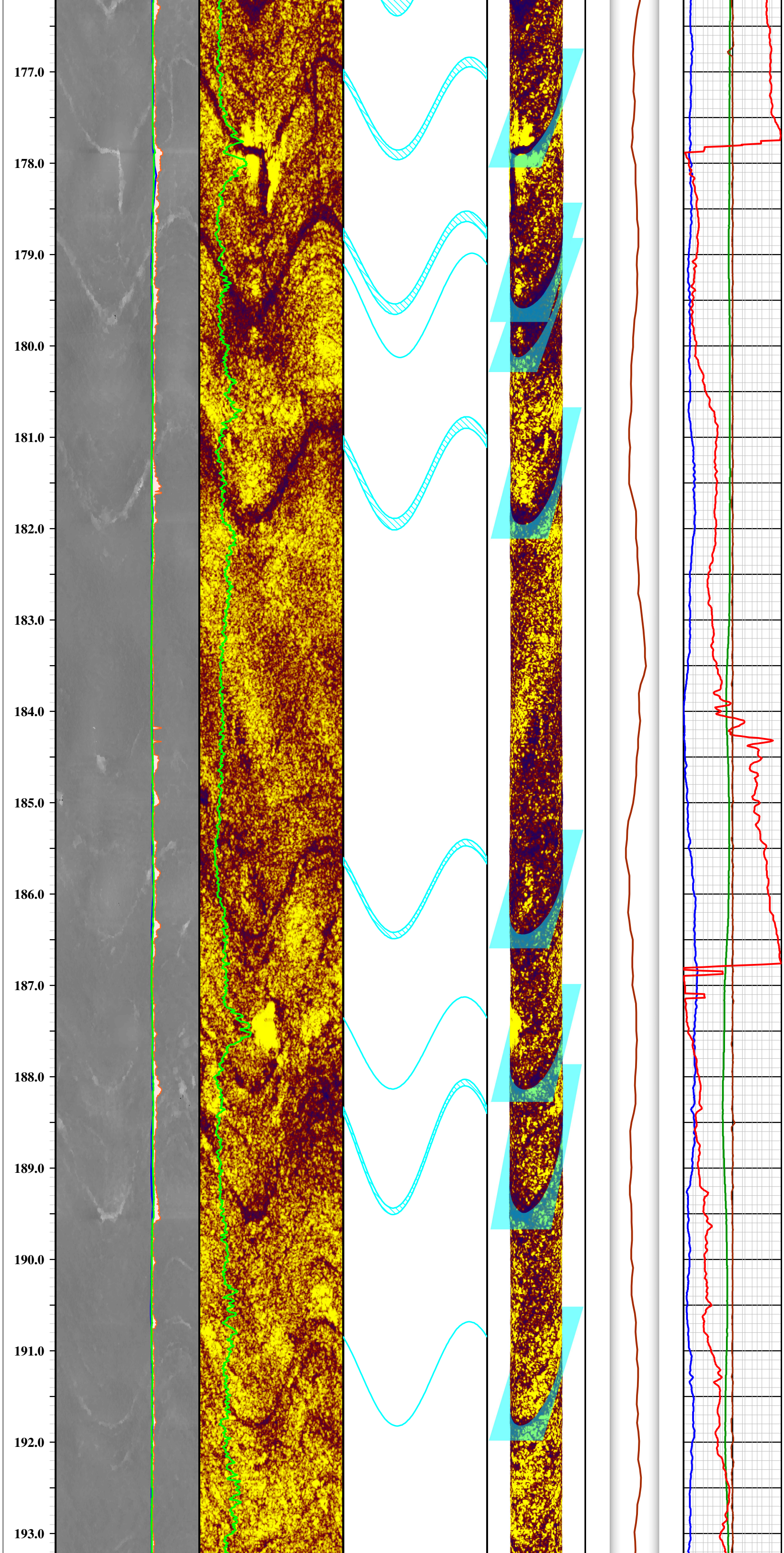
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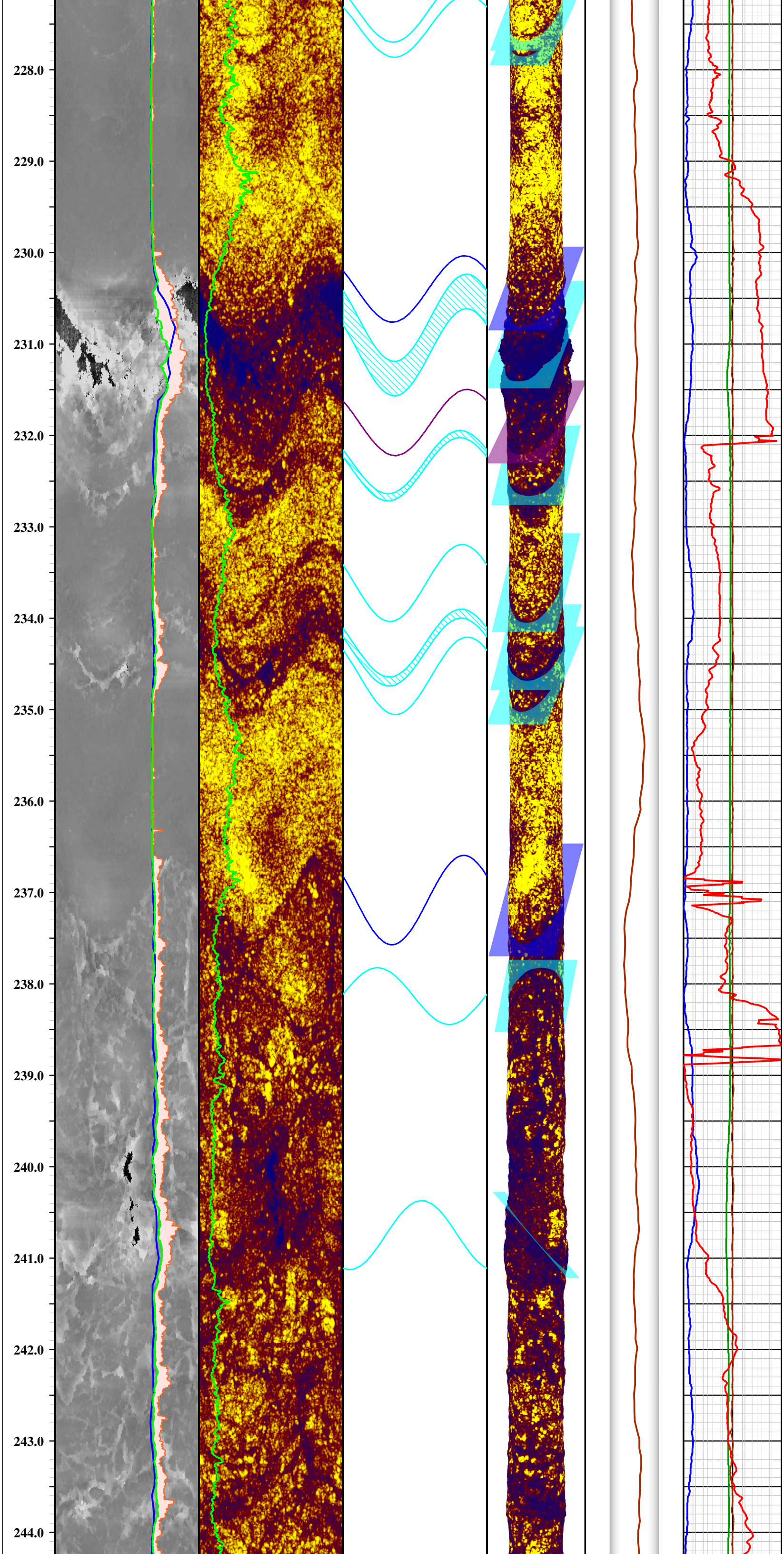
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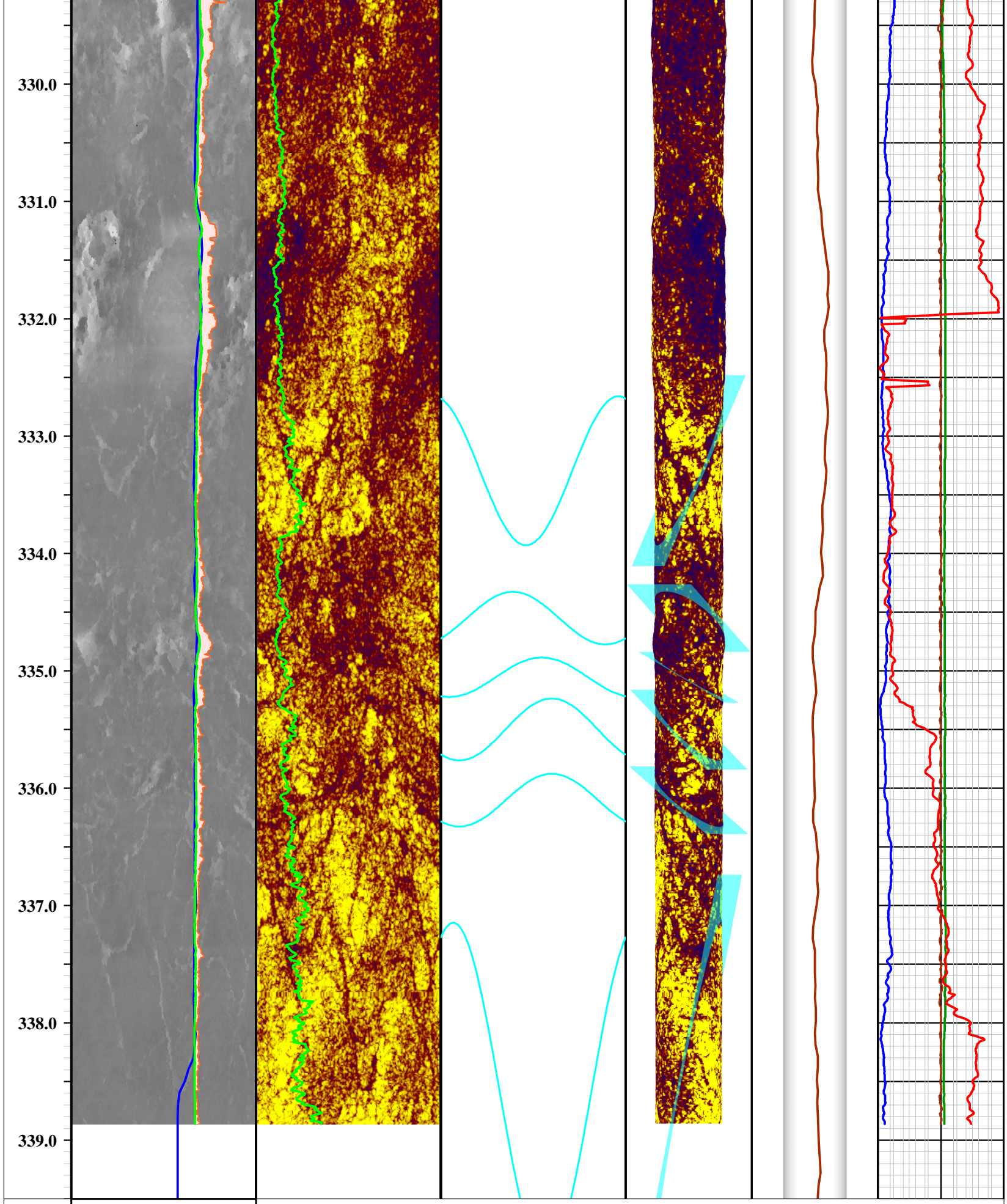


Enlargements
0 in 16
Ave Acoustic Caliper
0 in 16
Max Acoustic Caliper
0 Inches 16
3-Arm Caliper
0° 90° 180° 270° 0°
Oriented Mag North
Centralized TT

0° 90° 180° 270° 0°
Breakout/Tensile
0 2100
ARI
0° 90° 180° 270° 0°
Oriented Mag North
Amplitude-Static
0° 90° 180° 270° 0°
Oriented Mag North
Amplitude-NM

0° 90° 180° 270° 0°
Structure
0° 90° 180° 270° 0°
Oriented Mag North
Image-NM

98°
3-D View

-1 1
2ft-Diff Temp
0°
3-D View#1

0.8 G 1.2
Gravity
0 Deg 360
Azimuth
40 uT 60
Mag Field
0 Deg 16
Tilt

1in:1ft
Depth

DS16-12 (DS-A) ABI/OBI Summary 17.34 to 338.862ft

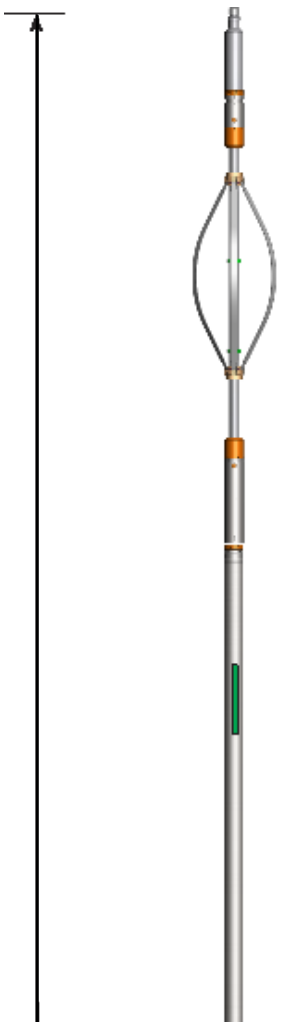
ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

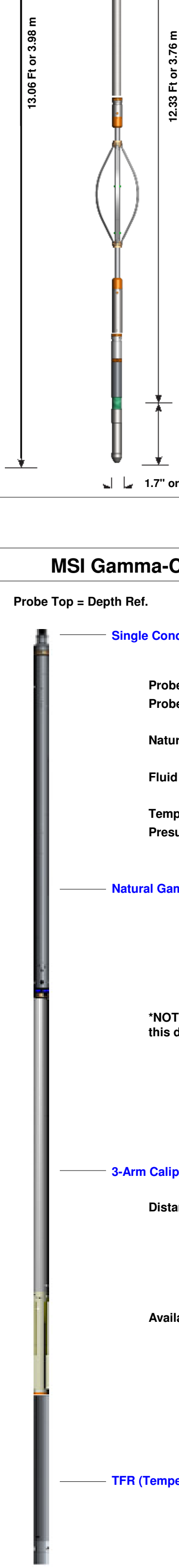
Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)



MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-12
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING
WELL ID	DS16-13 (DS-B) 55-920154
FIELD	NEAR WEST
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: ACOUSTIC TELEVIEWER
MORE: CALIPER

LOCATION
D(1-12)28cab

SEC 28 TWP 1S RGE 12E

OTHER SERVICES
GAMMA
TEMP/FLUID RES
E-LOGS
SONIC
GYRO

PERMANENT DATUM		ELEVATION	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	12-02-16	TYPE FLUID IN HOLE	MUD
RUN No	5	MUD WEIGHT	N/A
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	540.0 FT	LEVEL	~ 107 FT
DEPTH-LOGGER	540.0 FT	MAX. REC. TEMP.	23.4 DEG. C
BTM LOGGED INTERVAL	540.0 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	30.0 FT	SAMPLE INTERVAL	0.010 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	E. BEAM / D. ECKMAN	TOOL STRING/SN	ALT QL ABI40 2G SN 143003
WITNESSED BY	MATT- M&A	LOG TIME:ON SITE/OFF SITE	6:45 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 1/2 IN	20 FT	408 FT				
3	9 7/8 IN	480 FT	TOTAL DEPTH				

COMMENTS:

.

Tool Summary:

Date	12-01-16	12-02-16	12-02-16	12-02-16	12-02-16	12-02-16	12-02-16	12-02-16	12-02-16
Run No.	1	2	3	4	5	6			
Tool Model	SPT CONT. GYRO	MSI COMBO TOOL	MSI E-LOG 40GRP	ALT 4 RX SONIC	ALT QL ABI40 2G				
Tool SN	1413	4953	5514	4572	143003				
From	SURFACE	SURFACE	SURFACE	SURFACE	30.0 FT				
To	450.0 FT	540.0 FT	540.0 FT	540.0 FT	540.0 FT				
Recorded By	E. BEAM	E. BEAM	E. BEAM	E. BEAM	E. BEAM				
Truck No	310	310	310	310	310				
Operation Check	11-20-16	11-29-16	11-29-16	11-29-16	11-29-16				
Calibration Check	11-20-16	11-29-16	11-29-16	N/A	N/A				
Time Logged	7:30 AM	6:50 AM	7:30 AM	8:00 AM	8:20 AM				

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 4" & 12"

E-Log Calibration Range: 0.5 - 2,000 OHM-M **Calibration Points:** 0.5 OHM-M & 2000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend

TV StrucTop
TV Struc discrete
TV Struc Bot

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-13 (DS-B) ABI40 2G Summary 31.81 to 540.24ft

Depth
1in:1ft

Centralized TT
Oriented Mag North
0° 90° 180° 270° 0°

3-Arm Caliper
7 Inches 17

Max Acoustic Caliper
7 in 17

Ave Acoustic Caliper
7 in 17

Enlargements

Amplitude-NM
Oriented Mag North
0° 90° 180° 270° 0°

Amplitude-Static
Oriented Mag North
0° 90° 180° 270° 0°

Structure
0° 90° 180° 270° 0°

3-D View
0°

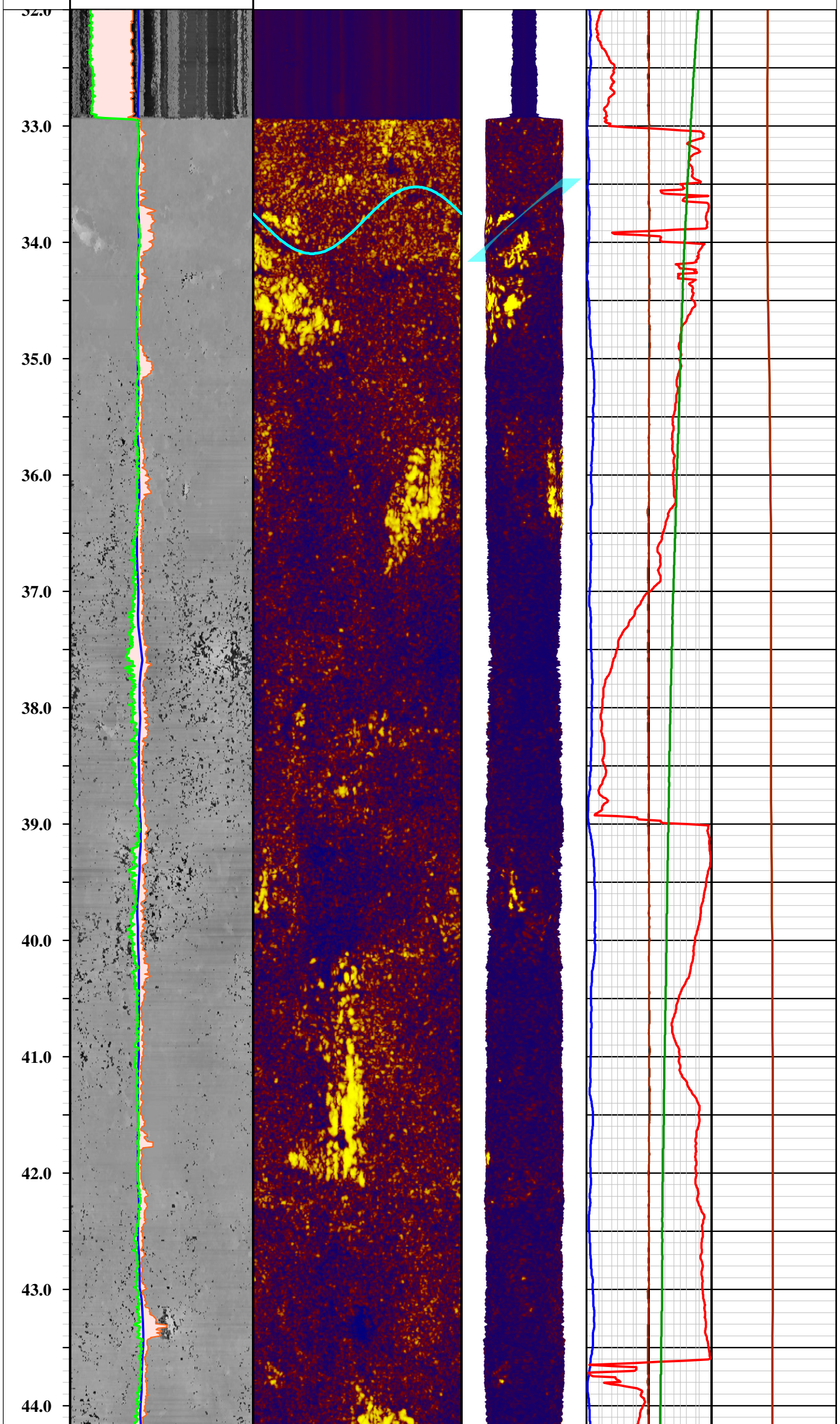
Tilt
0 Deg 16

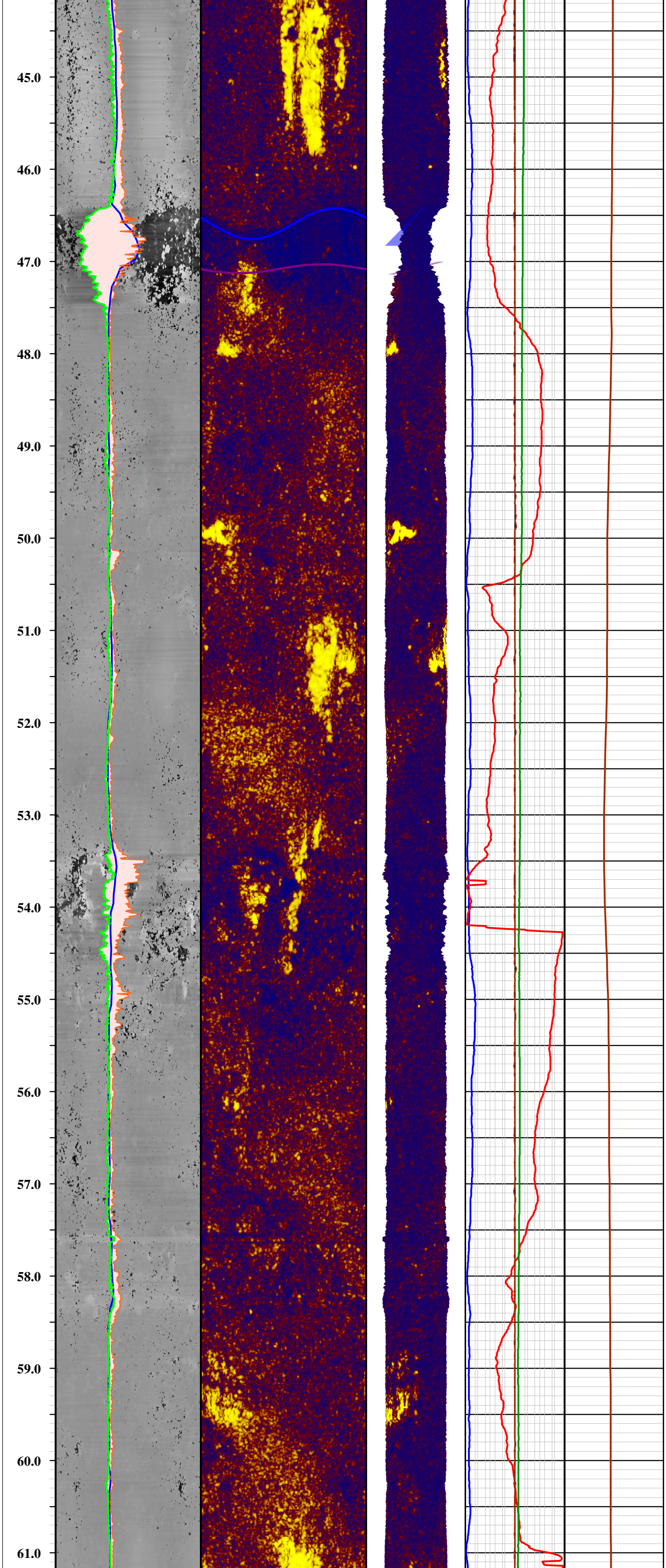
Azimuth
0 Deg 360

Mag Field
40 uT 60

Gravity
0.8 G 1.2

2ft-Diff Temp
-1 1

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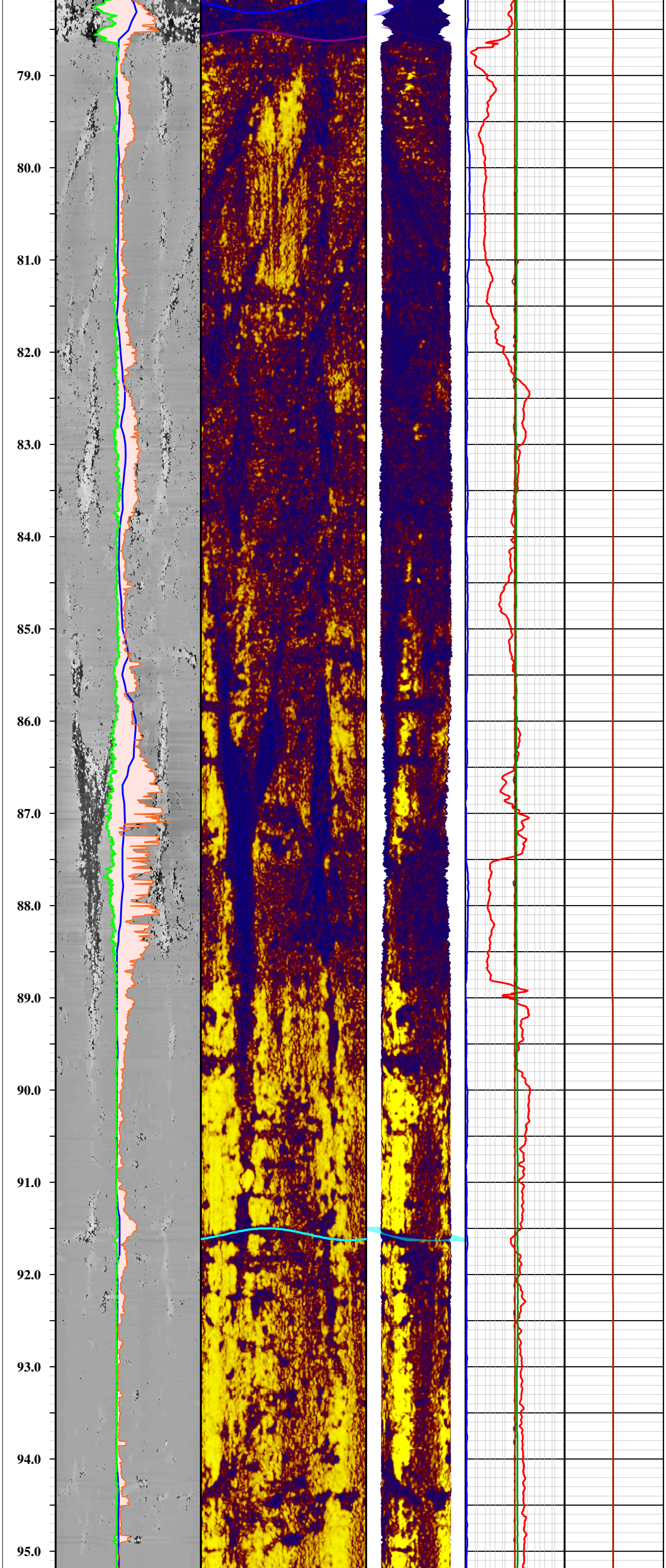
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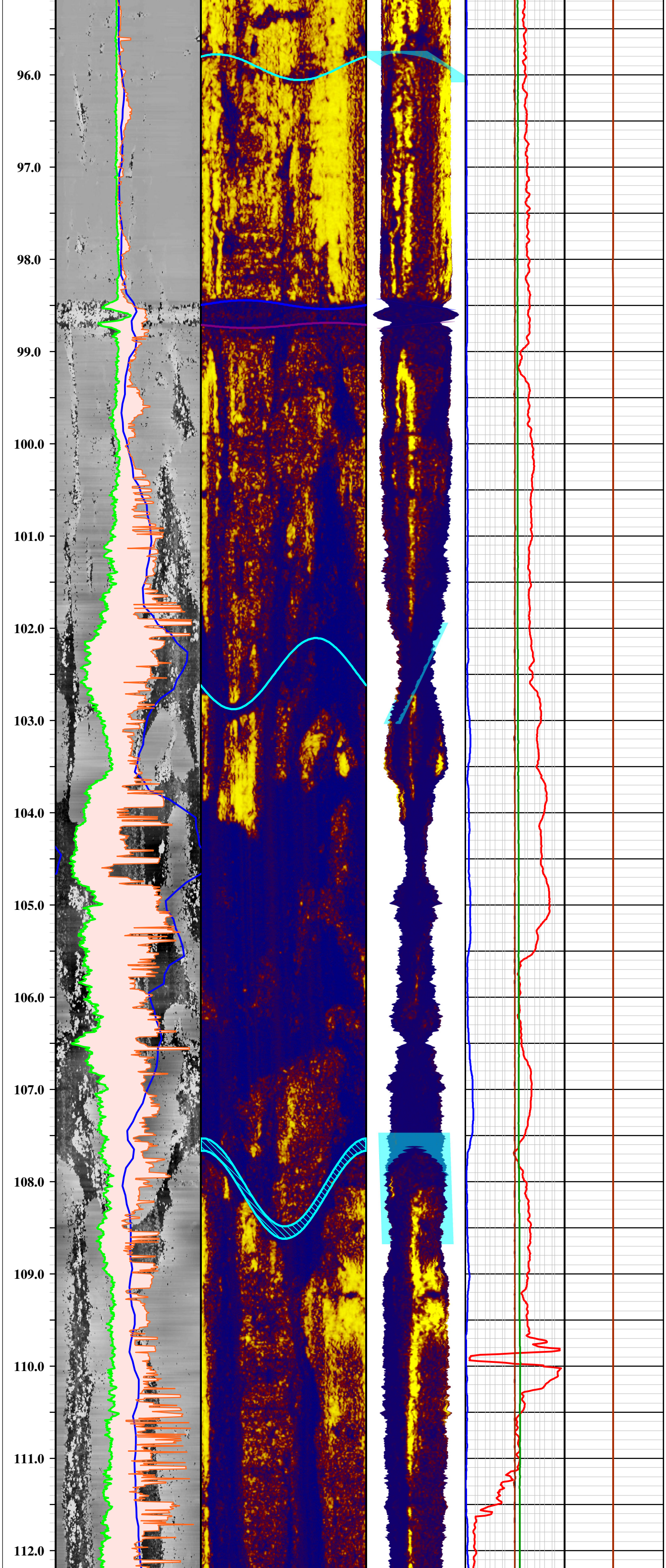
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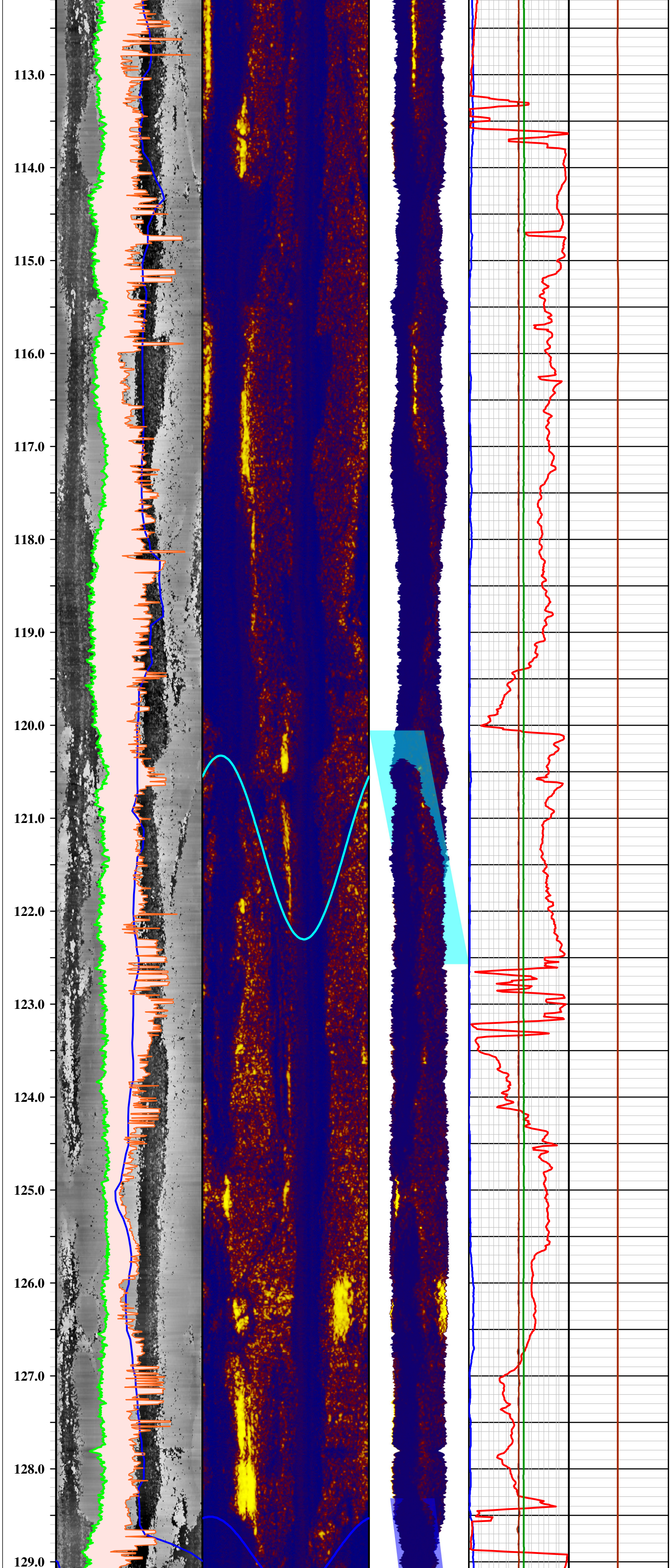
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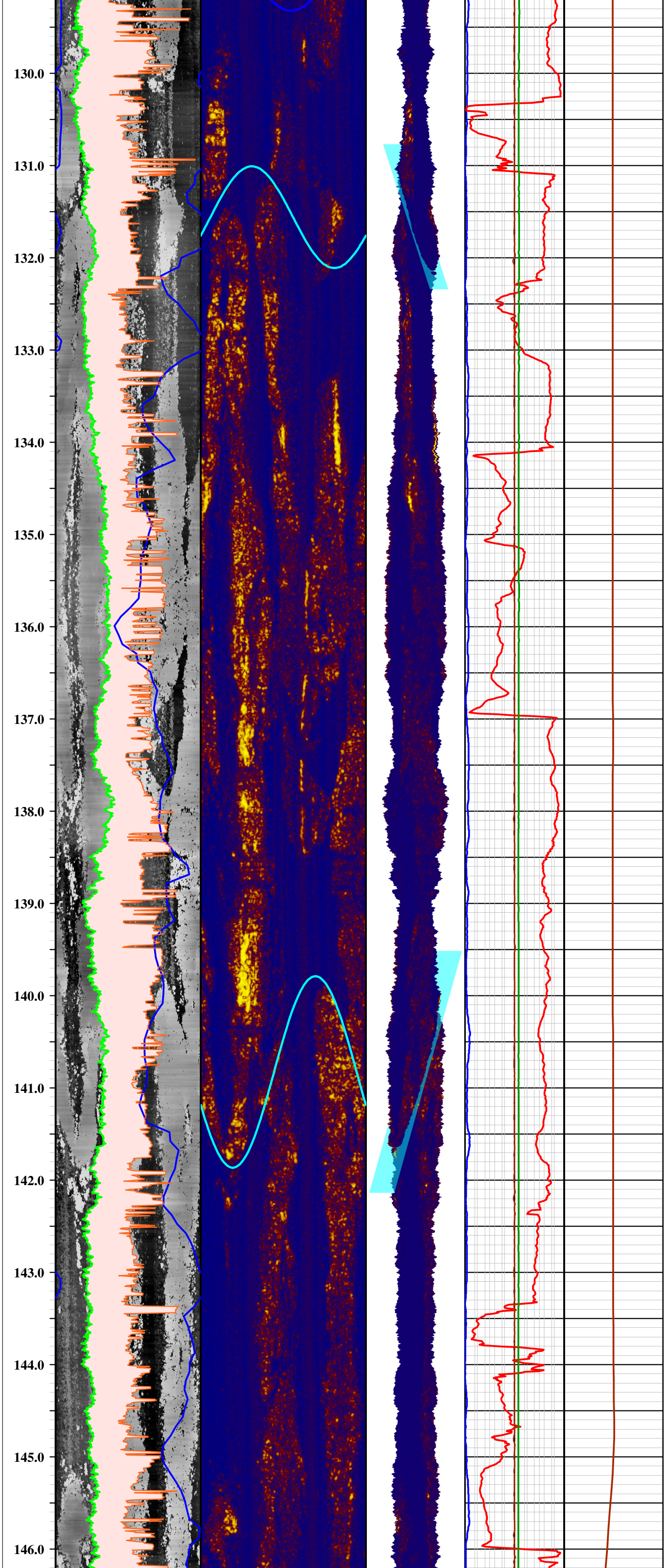
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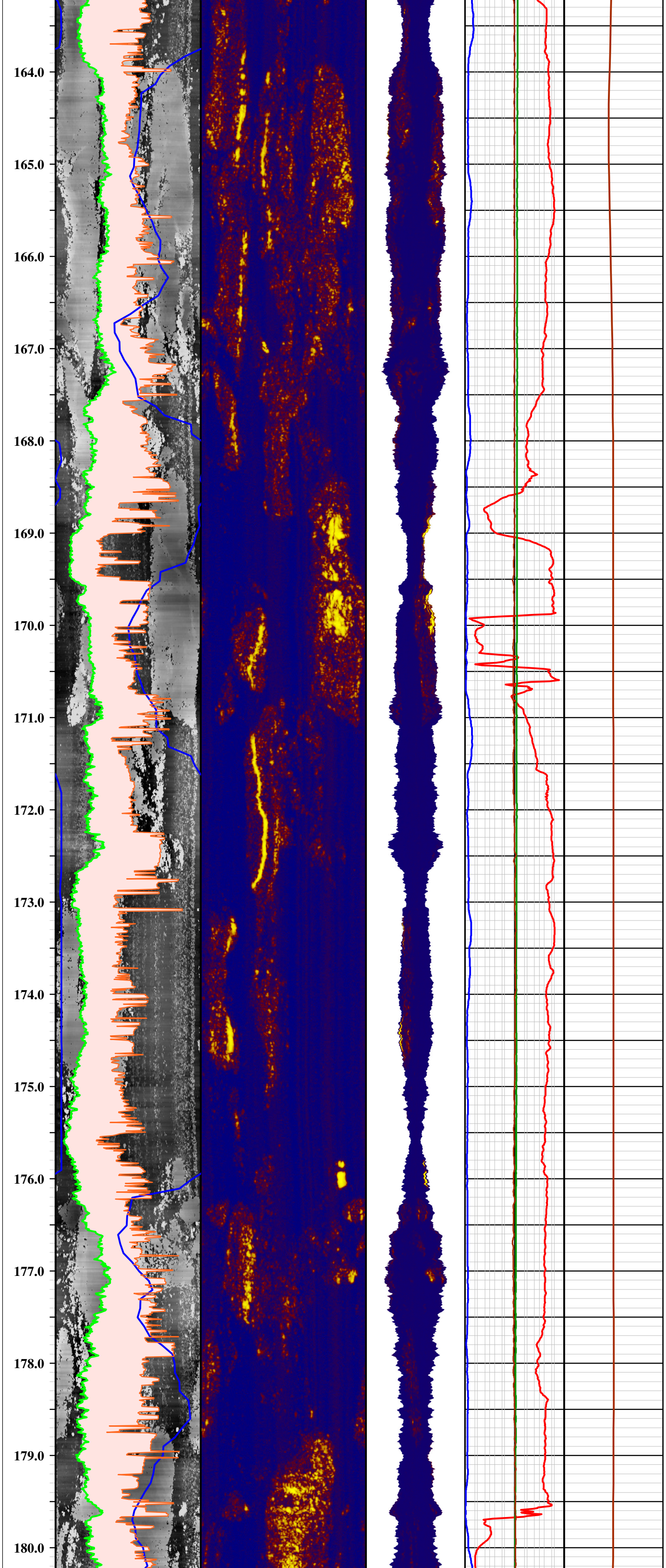
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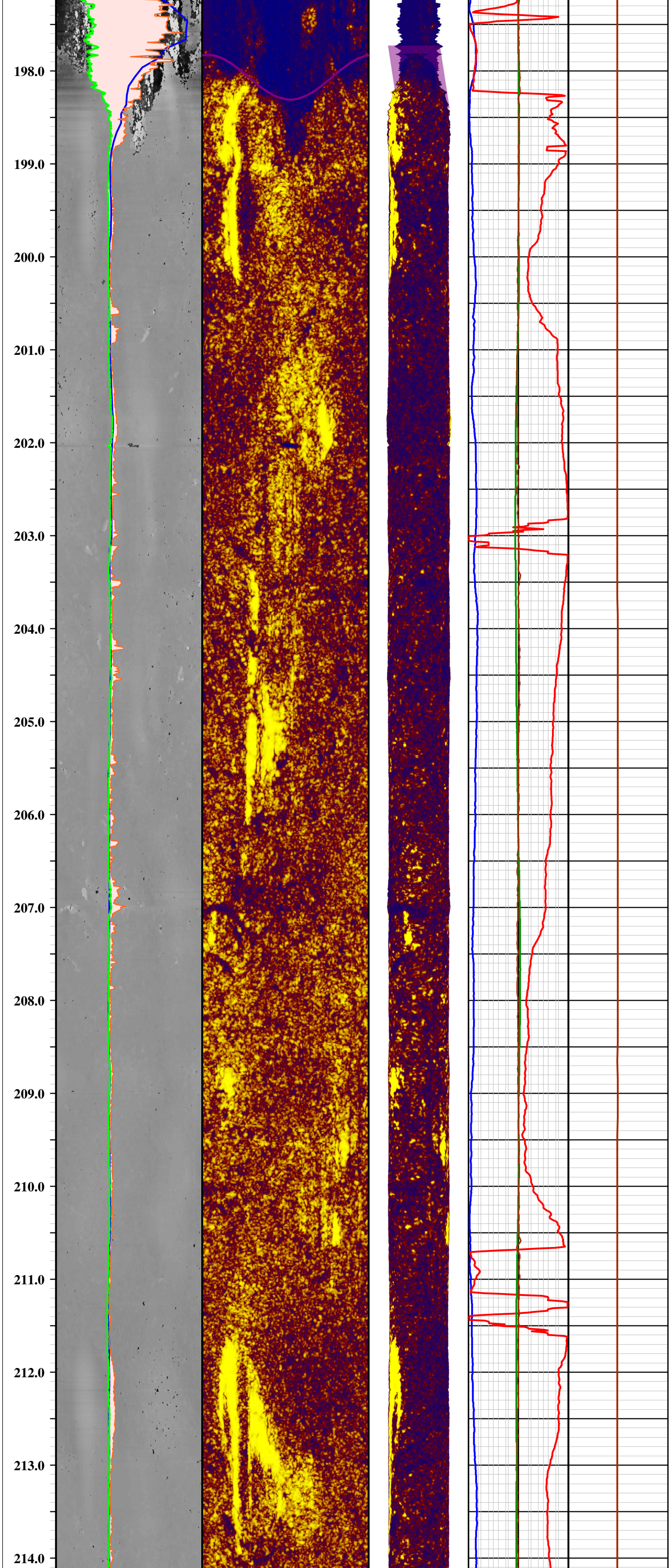
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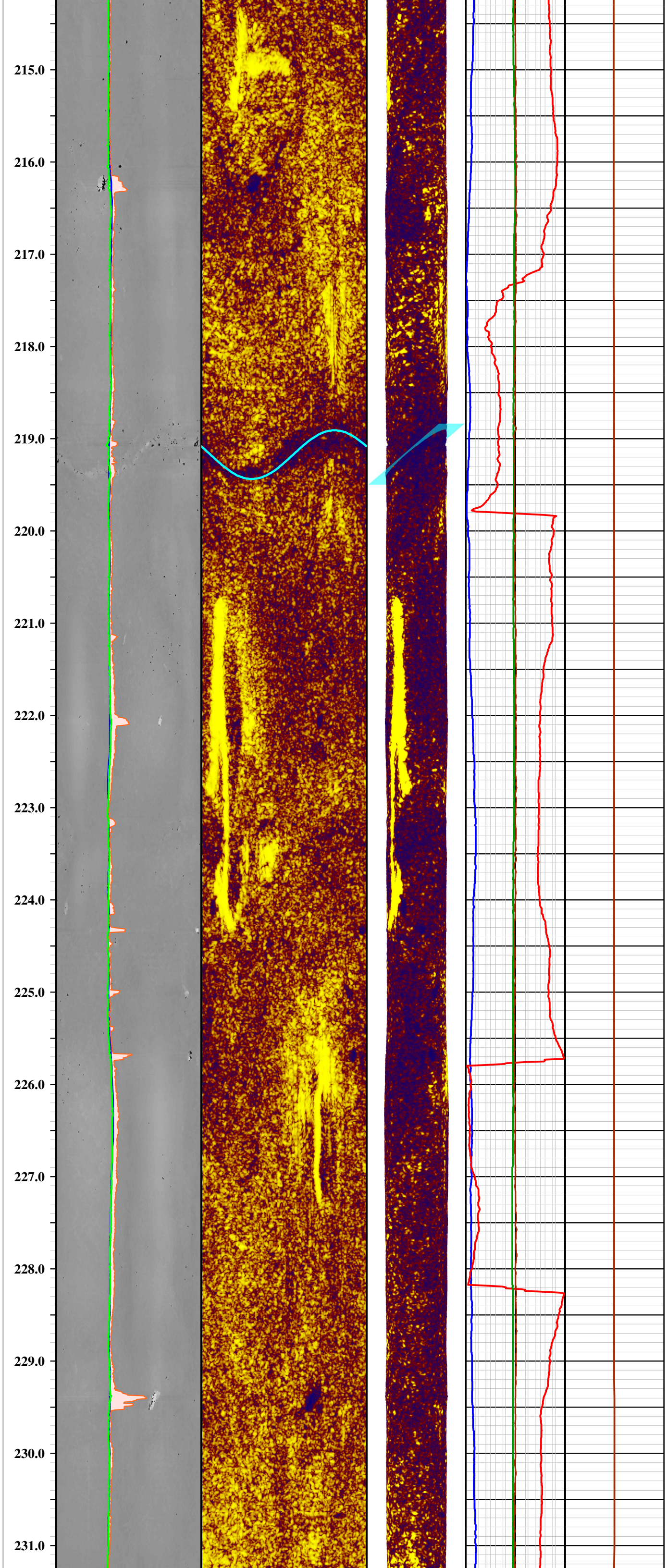
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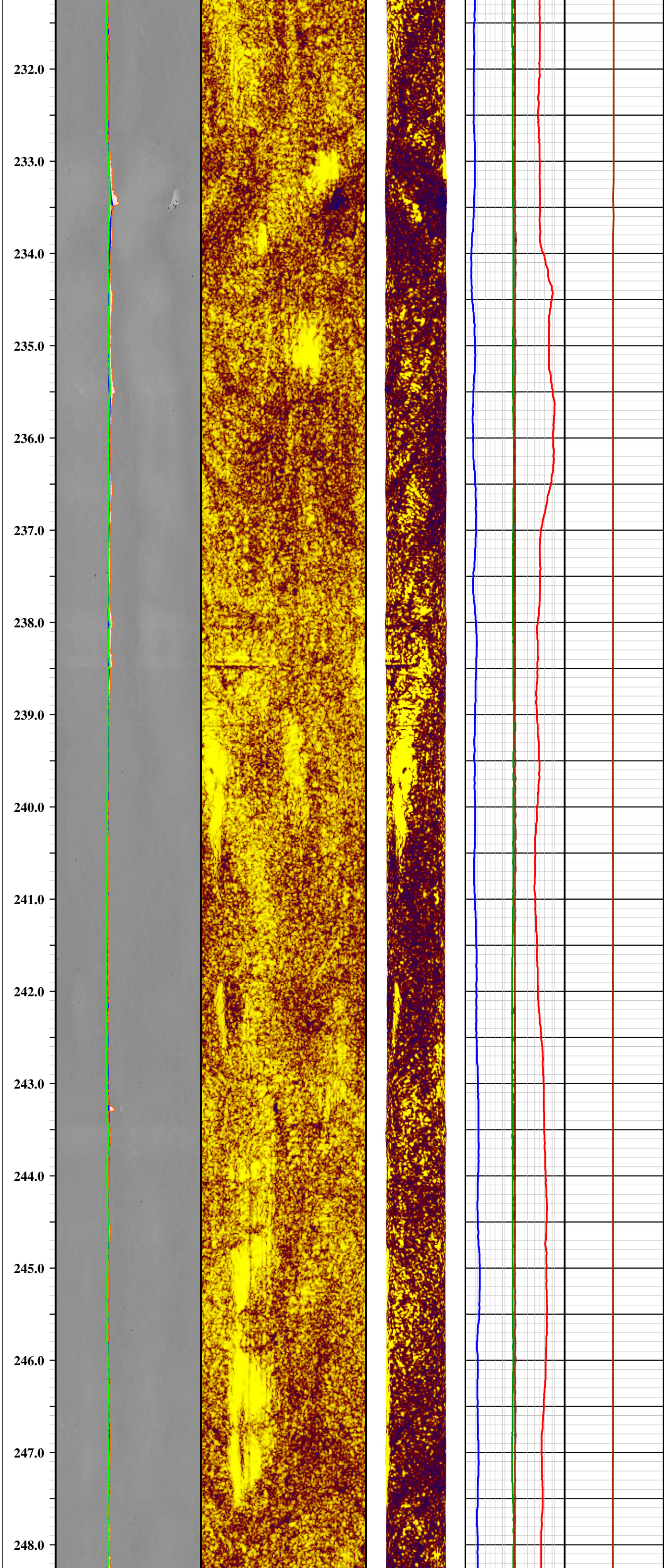
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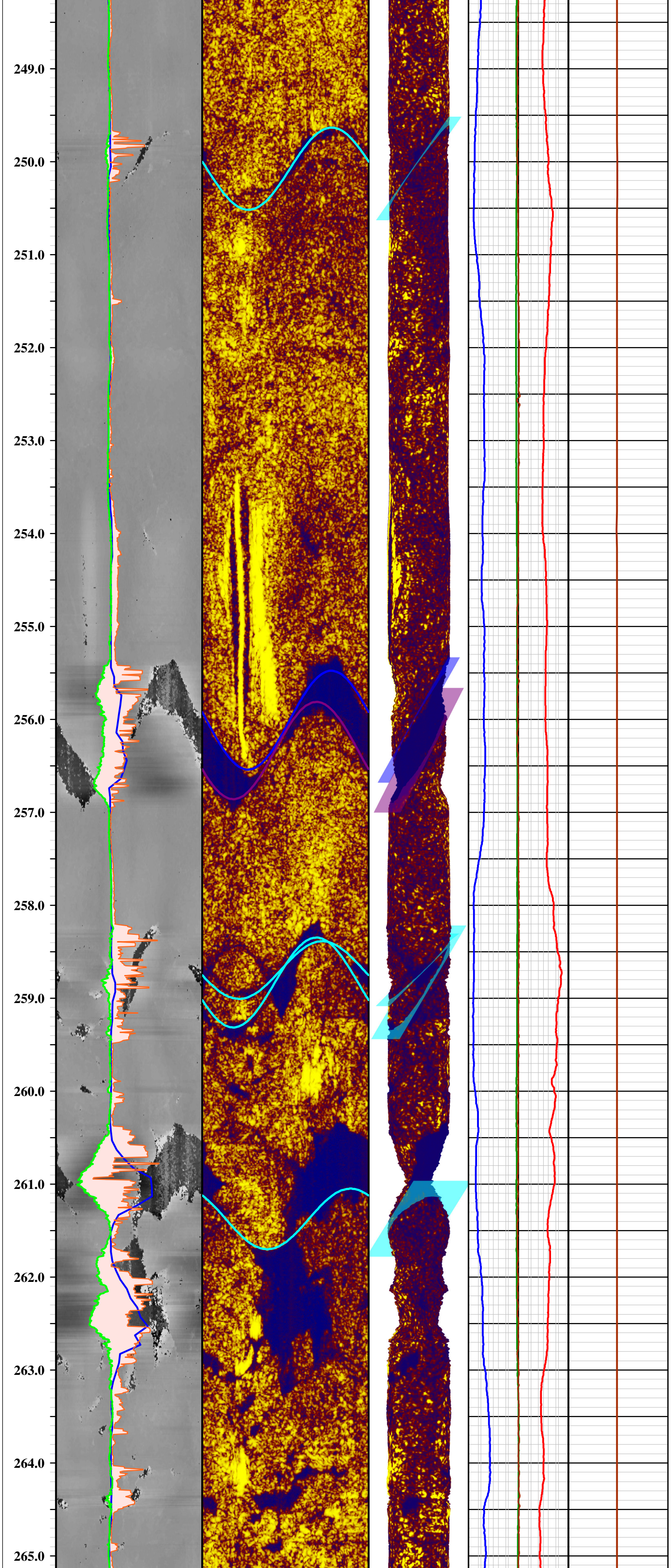
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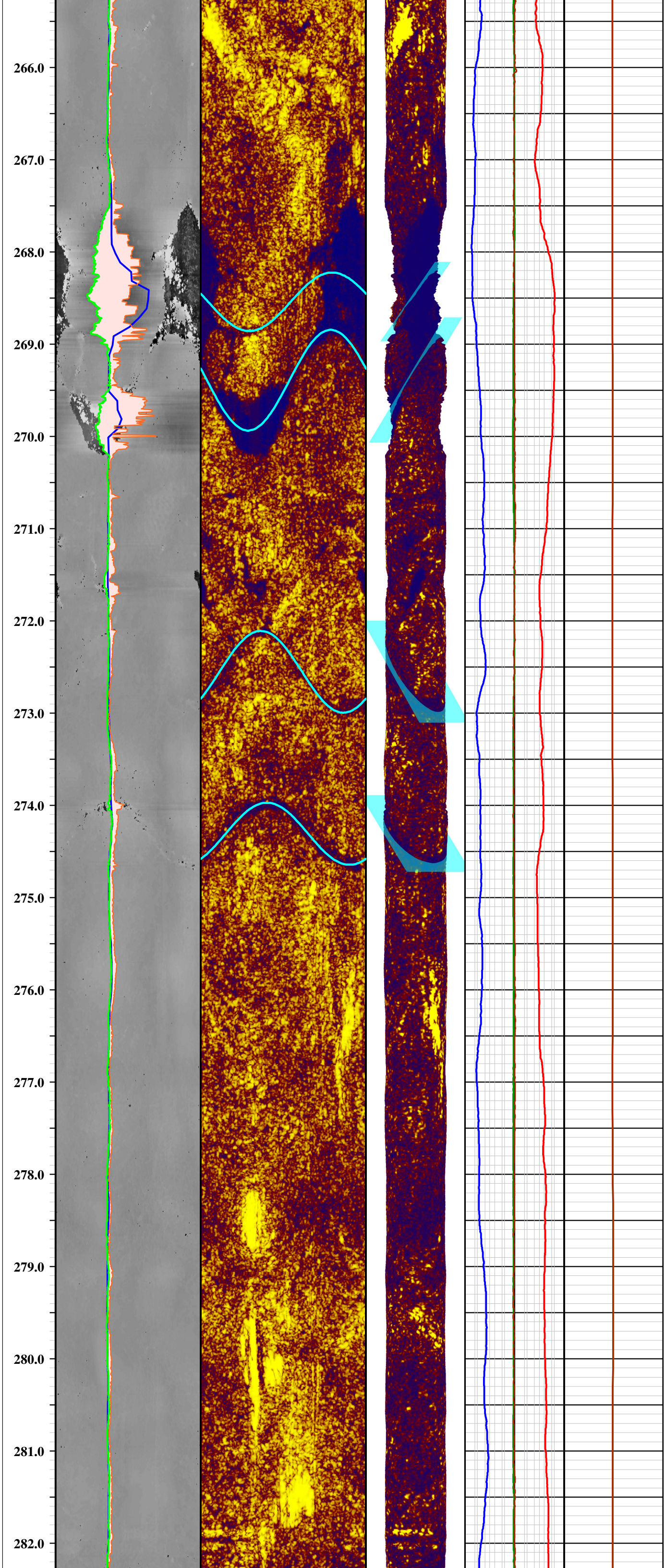
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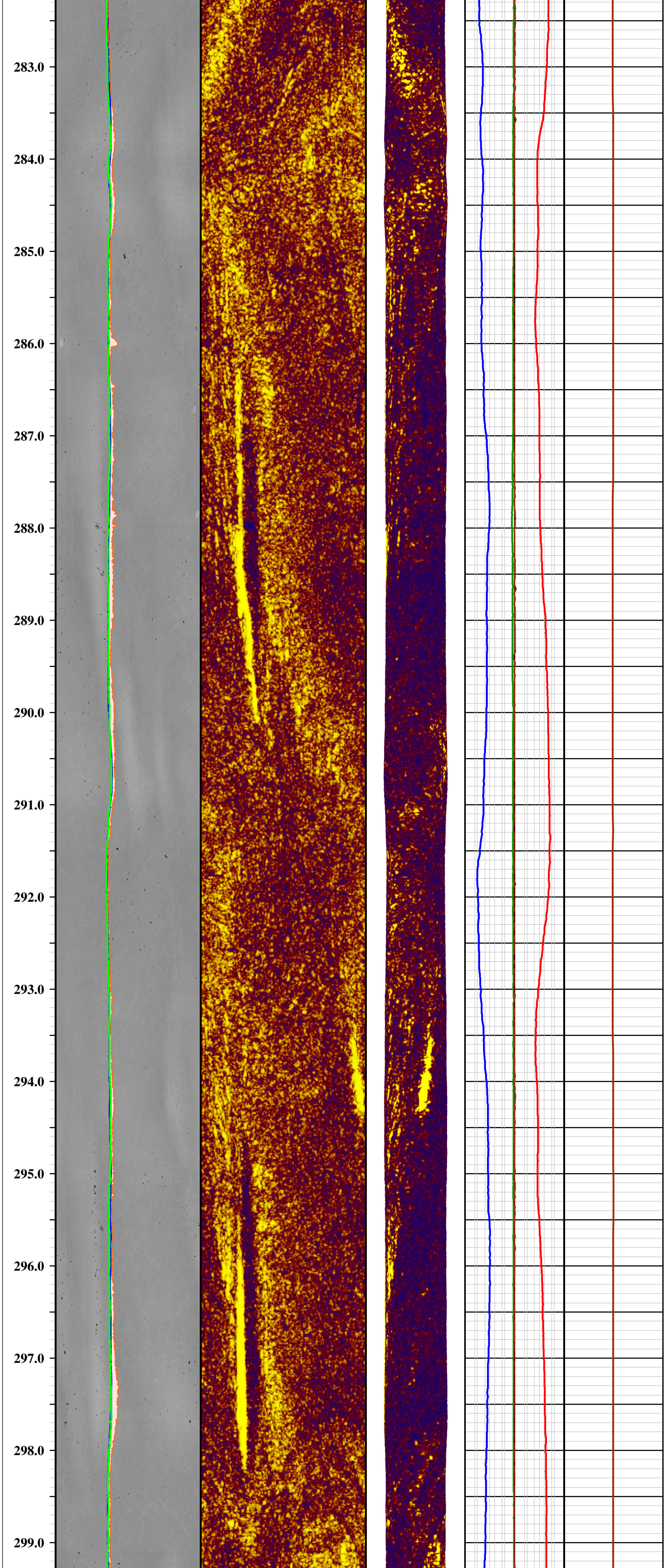
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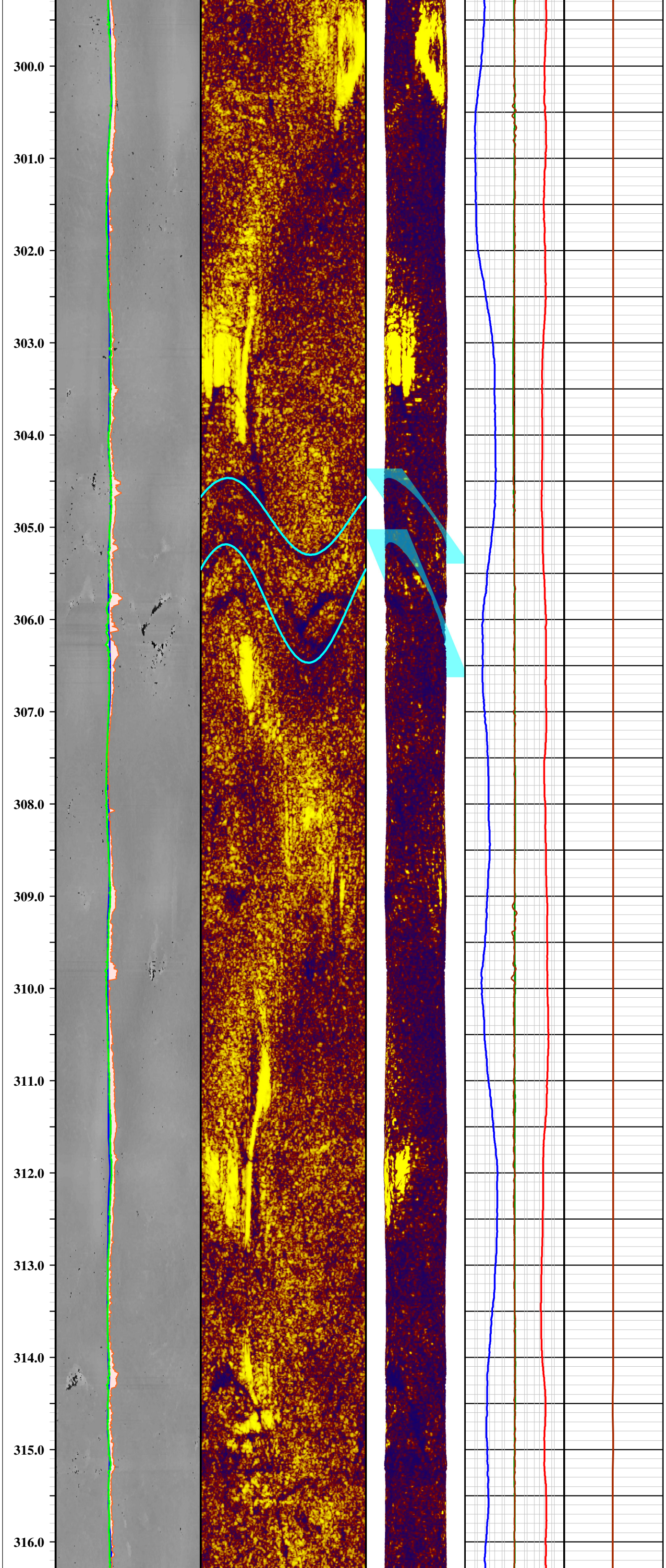
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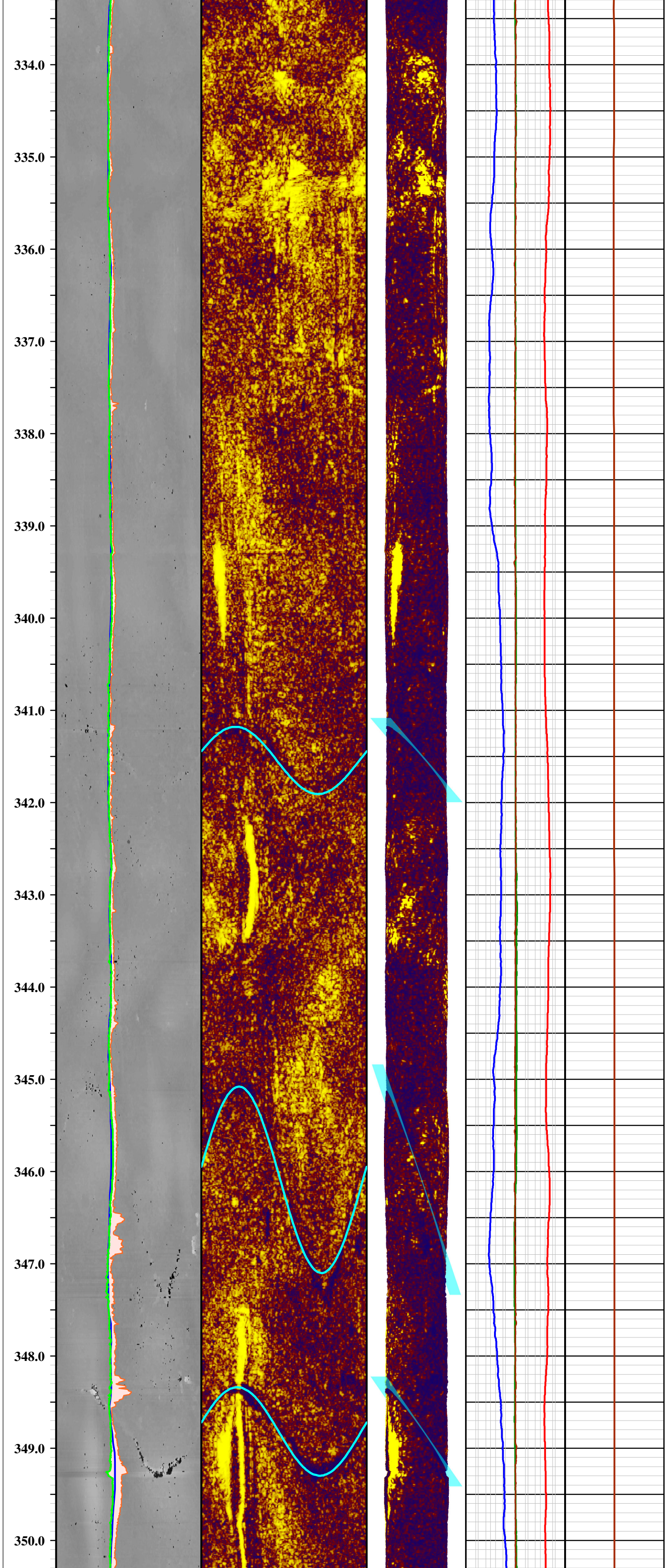
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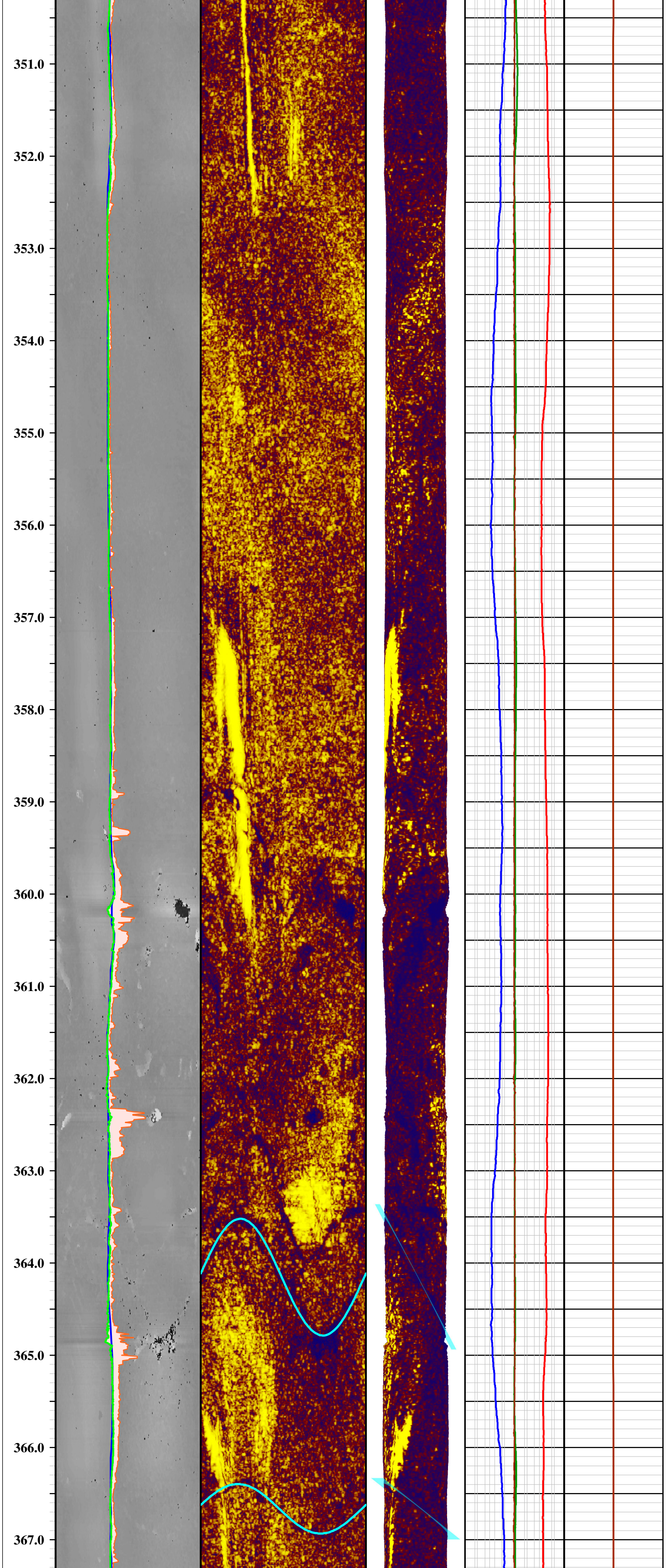
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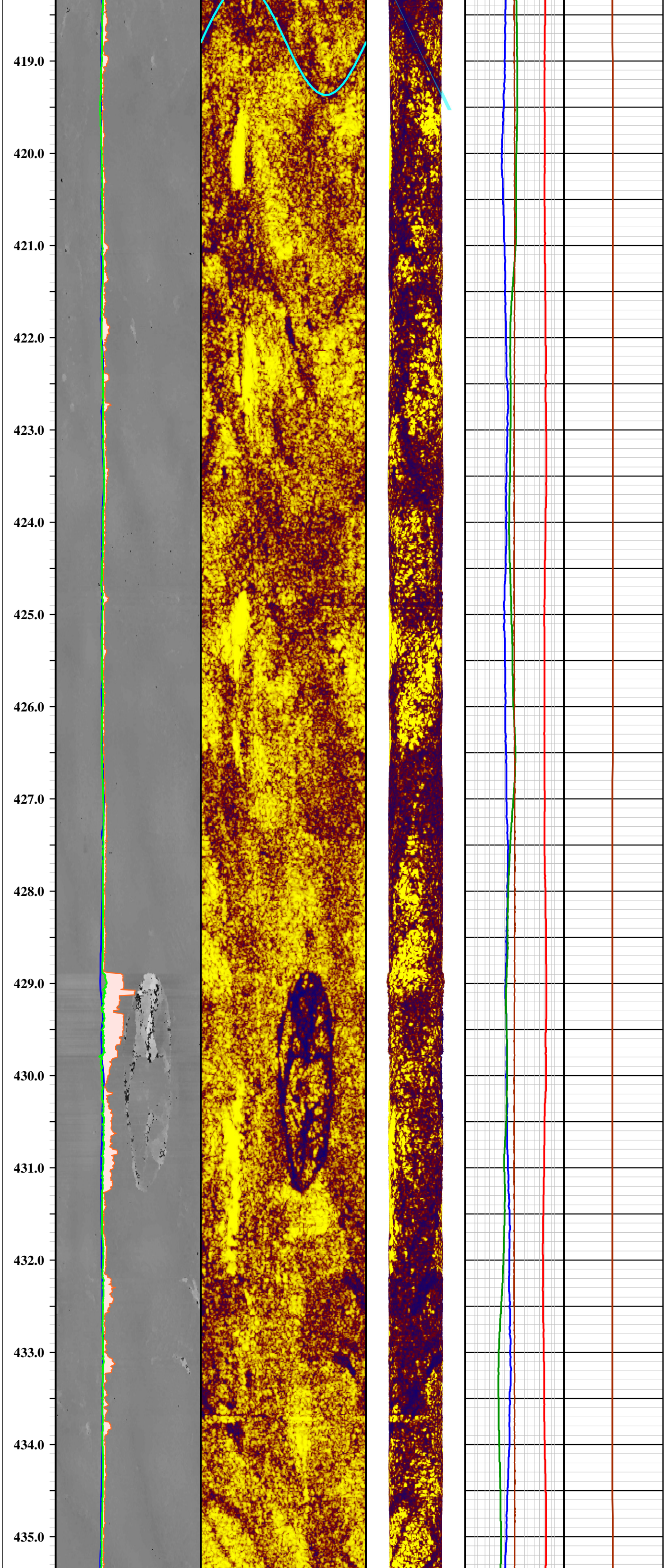
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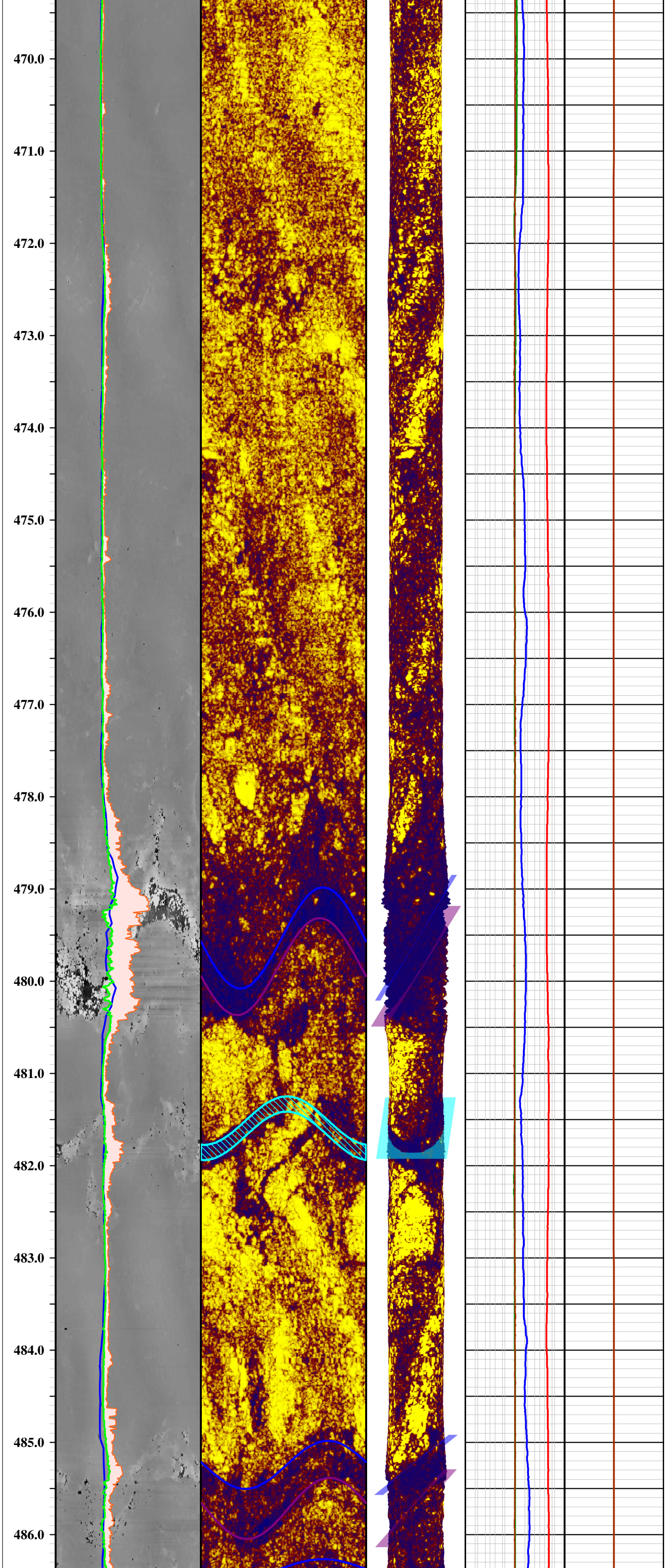
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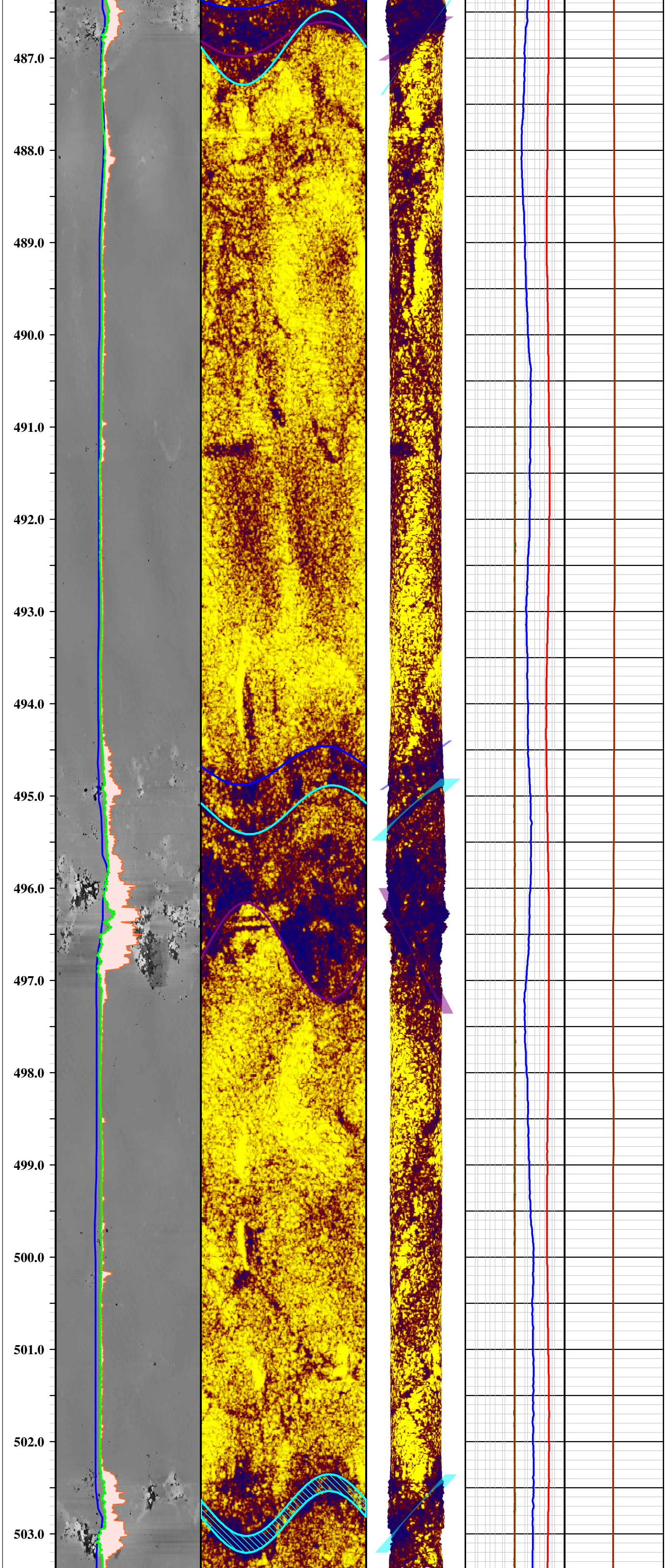
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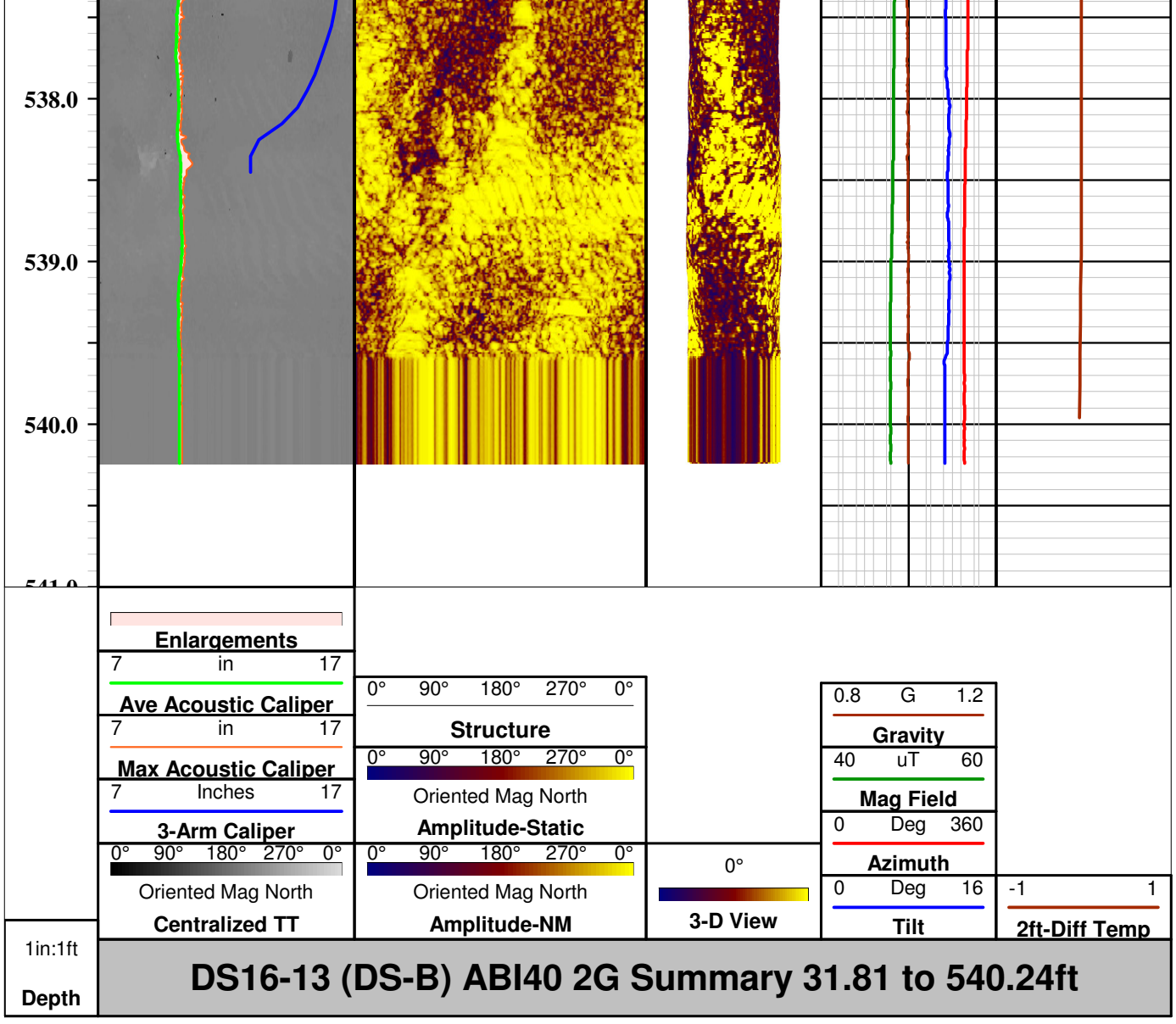
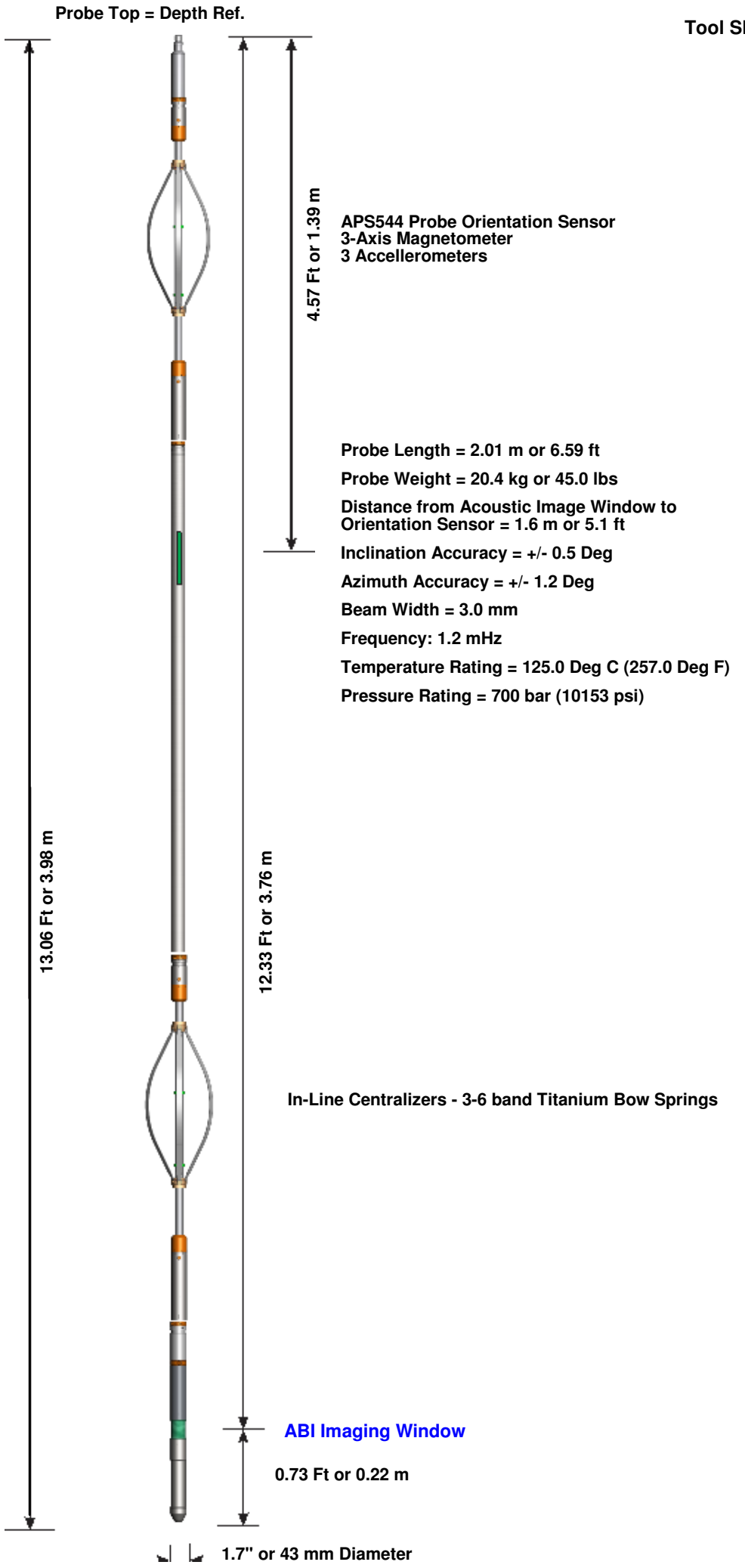


ABI Legend

Mnemonics	Description

ABI-43 Acoustic Borehole Imager



Tool SN: 111801 & 091601

APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers

Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

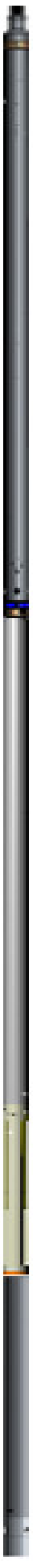
Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-13
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING				
WELL ID	DS16-14 (DS-C)	55-920155			
FIELD	NEAR WEST				
COUNTY	PINAL			STATE	ARIZONA
TYPE OF LOGS: ACOUSTIC TELEVIEWER				OTHER SERVICES	OPTICAL TELEVIEWER
MORE: CALIPER					E-LOGS
LOCATION D(1-12)33caa					TEMP / FLUID RES.
					SONIC
					GYRO
SEC 33	TWP 1S	RGE 12E			
PERMANENT DATUM		ELEVATION		K.B.	
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM		D.F.	
DRILLING MEAS. FROM	GROUND LEVEL			G.L.	

DATE	12-15-16	TYPE FLUID IN HOLE		MUD	
RUN No	2 & 5	MUD WEIGHT		N/A	
TYPE LOG	ACOUSTIC TELEVIEWER	VISCOSITY		N/A	
DEPTH-DRILLER	897 FT	LEVEL		~ 56 FT	
DEPTH-LOGGER	897 FT	MAX. REC. TEMP.		21.24 Deg C	
BTM LOGGED INTERVAL	897 FT	IMAGE ORIENTED TO:		MAGNETIC NORTH	
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL		0.01 FT	
DRILLER / RIG#	NATIONAL	LOGGING TRUCK		TRUCK #310	
RECORDED BY / Logging Eng.	M. QUINONES / E. TURNER	TOOL STRING/SN		ALT QL ABI40 2G SN 143003	
WITNESSED BY	JUSTIN - M & A	LOG TIME:ON SITE/OFF SITE		11:00 AM	

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	20 FT	12 IN	STEEL	SURFACE	20 FT
2	10 1/2 IN	20 FT	410 FT				
3	9 7/8 IN	410 FT	TOTAL DEPTH				

COMMENTS:

.

Tool Summary:

Date	12-15-16	**Date**	12-15-16	**Date**	12-15-16
Run No.	1	**Run No.**	2	**Run No.**	3
Tool Model	WELNAV GYRO	**Tool Model**	MSI COMBO TOOL	**Tool Model**	QL E-LOG 40GRP
Tool SN	201	**Tool SN**	4953	**Tool SN**	5514
From	SURFACE	**From**	SURFACE	**From**	20 FT
To	800 FT	**To**	897 FT	**To**	897 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	12-15-16	**Operation Check**	12-15-16	**Operation Check**	12-15-16
Calibration Check	N/A	**Calibration Check**	12-15-16	**Calibration Check**	12-15-16
Time Logged	12:00 PM	**Time Logged**	4:00 PM	**Time Logged**	4:50 PM

Date	12-15-16	**Date**	12-15-16	**Date**	12-15-16
Run No.	4	**Run No.**	5	**Run No.**	6
Tool Model	ALT 4RX SONIC	**Tool Model**	ALT QL ABI40 2G	**Tool Model**	ALT QL OBI40 2G
Tool SN	4572	**Tool SN**	143003	**Tool SN**	152511
From	SURFACE	**From**	56 FT	**From**	20 FT
To	897 FT	**To**	897 FT	**To**	58 FT
Recorded By	M. QUINONES	**Recorded By**	M. QUINONES	**Recorded By**	M. QUINONES
Truck No	310	**Truck No**	310	**Truck No**	310
Operation Check	12-15-16	**Operation Check**	12-15-16	**Operation Check**	12-15-16
Calibration Check	N/A	**Calibration Check**	N/A	**Calibration Check**	N/A
Time Logged	5:25 PM	**Time Logged**	6:30 PM	**Time Logged**	9:35 PM

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 1 - 1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

Acoustic Image Features Legend

TV StrucTop **TV Struc discrete** **TV Struc Bot**

Breakout Legend

Breakout Legend

- Broken Zone / Undifferentiated
- Major Breakout
- Minor Breakout
- Tensile Fracture
- Open NVJnt
- Filled NVJnt

DS16-14 (DS-C) ABI/OBI Summary 19.23 to 893.56ft

Depth 1in:1ft

Centralized TT — Oriented Mag North — 0° 90° 180° 270° 0°

3-Arm Caliper — 5 Inches 15

Max Acoustic Caliper — 5 in 15

Ave Acoustic Caliper — 5 in 15

Enlargements

Structure — 0° 90° 180° 270° 0°

Amplitude-NM — Oriented Mag North — 0° 90° 180° 270° 0°

Amplitude-Static — Oriented Mag North — 0° 90° 180° 270° 0°

ARI — 0 2100

Breakout/Tensile — 0° 90° 180° 270° 0°

Image-NM — Oriented Mag North — 0° 90° 180° 270° 0°

3D View ABI — 0°

3D View OBI — 0°

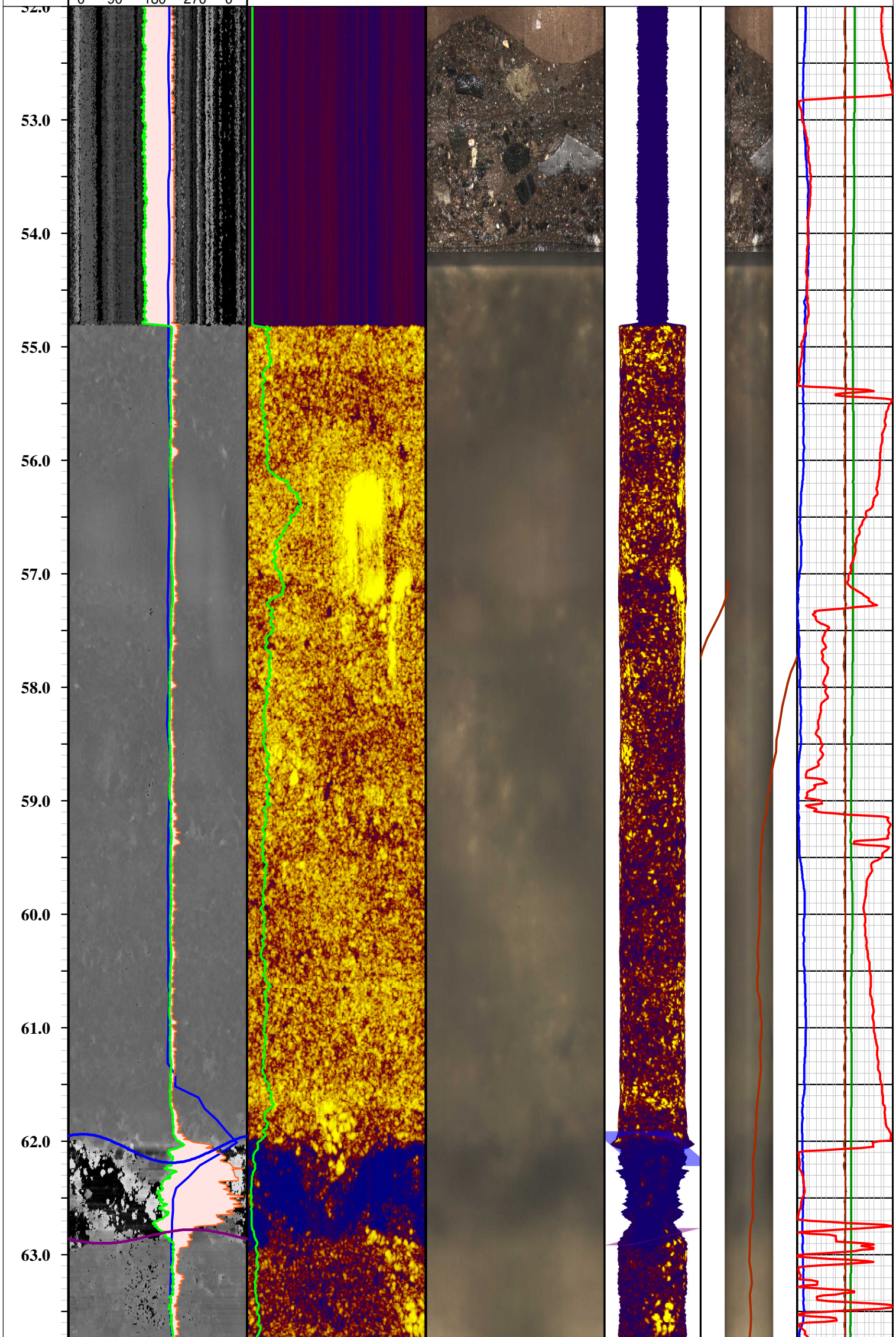
2ft-Diff Temp — -1 1

Tilt — 0 Deg 16

Mag Field — 40 uT 60

Azimuth — 0 Deg 360

Gravity — 0.8 G 1.2



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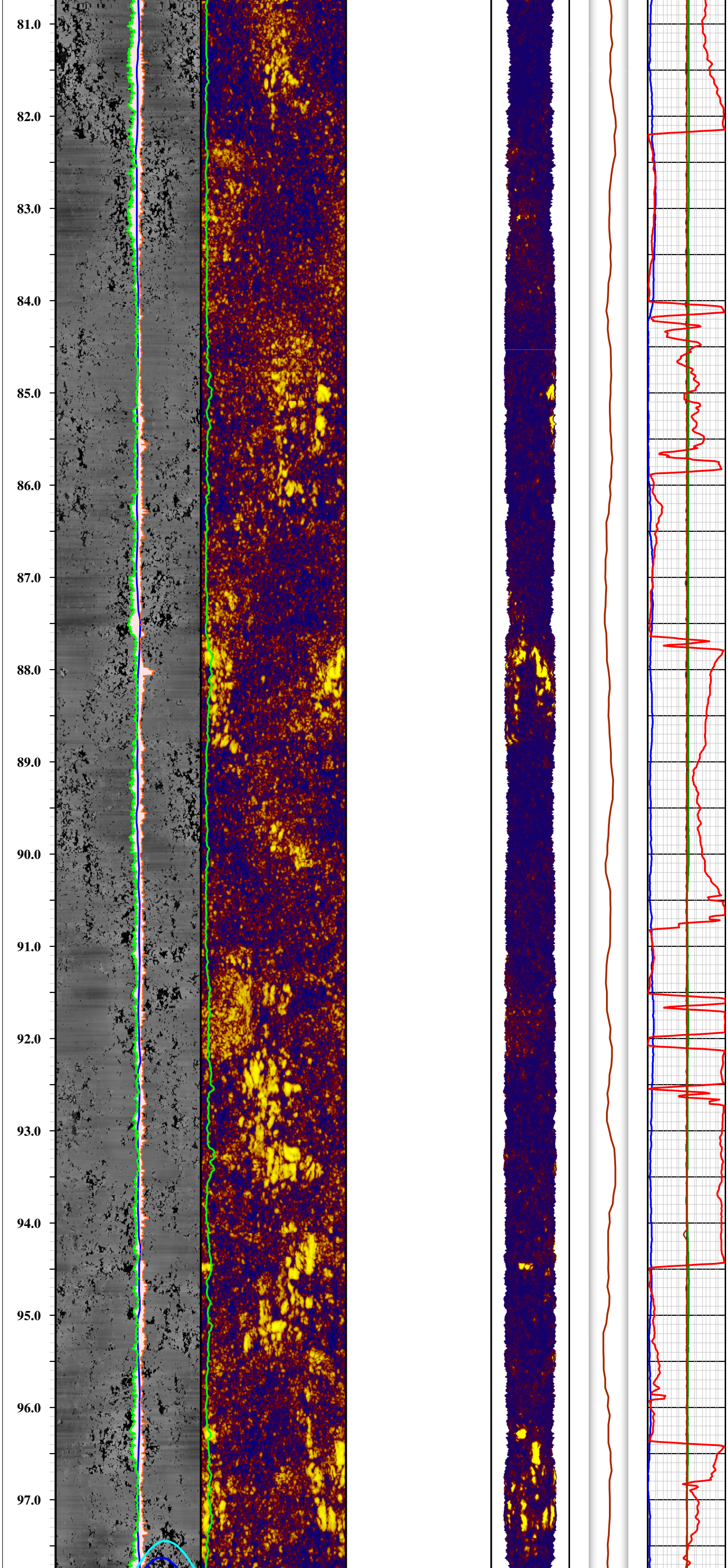
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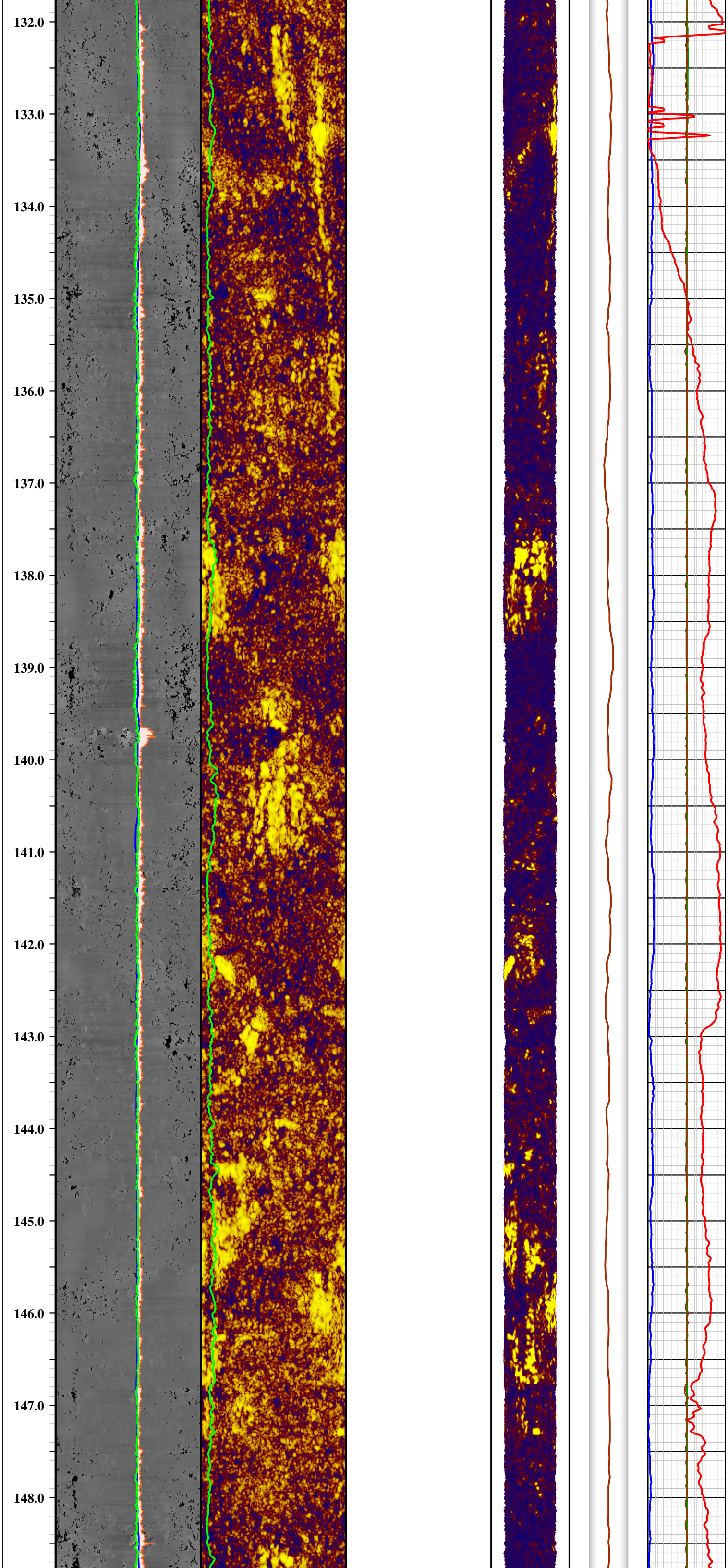
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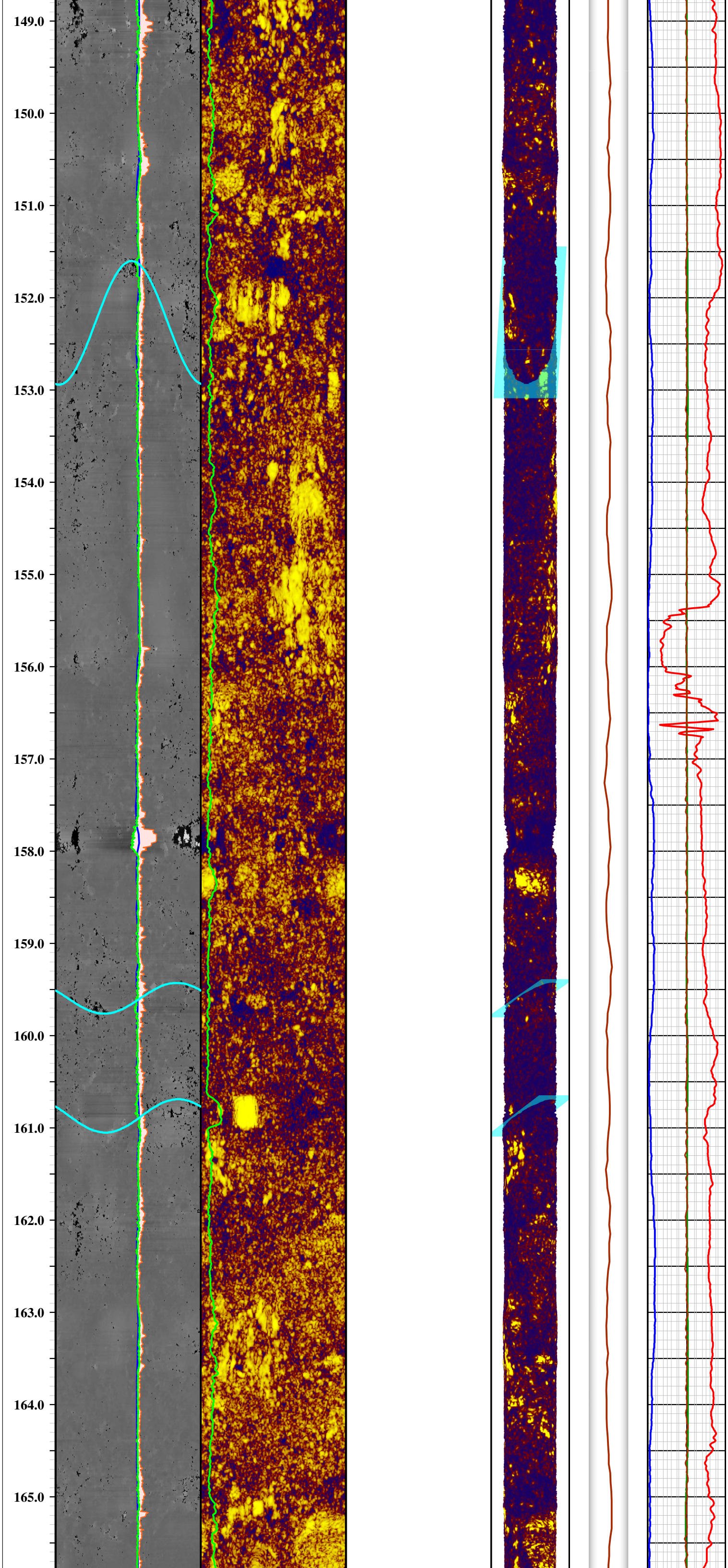
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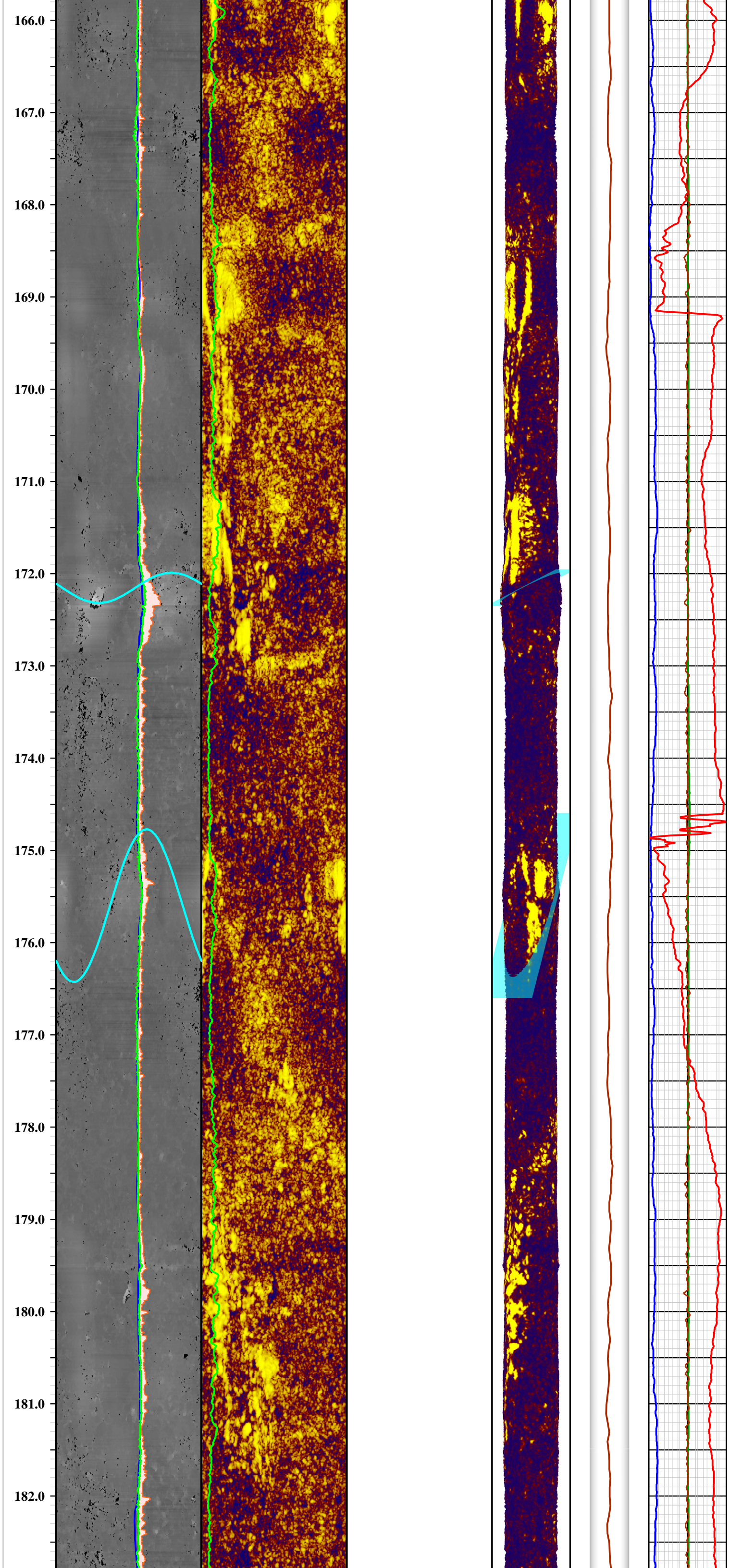

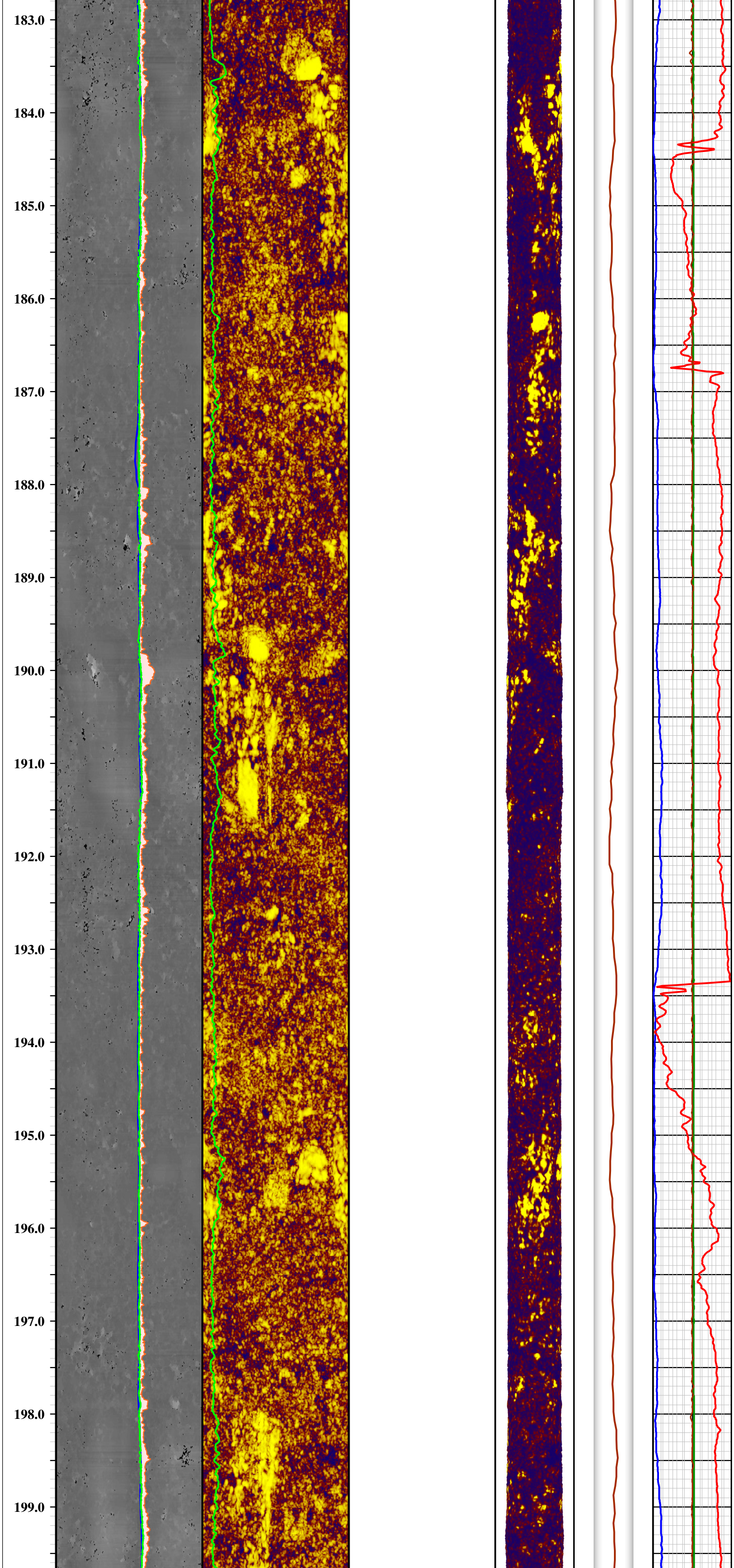
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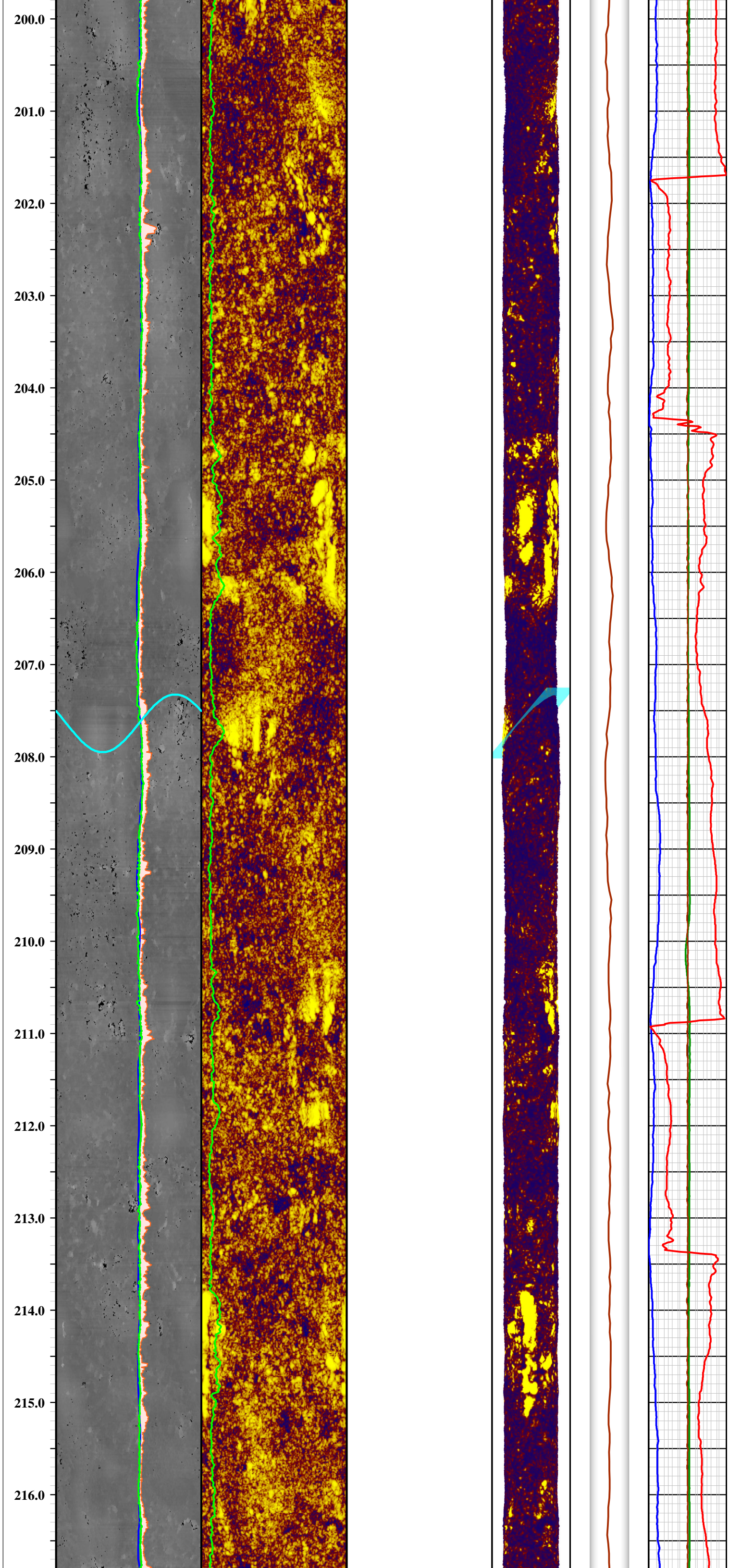
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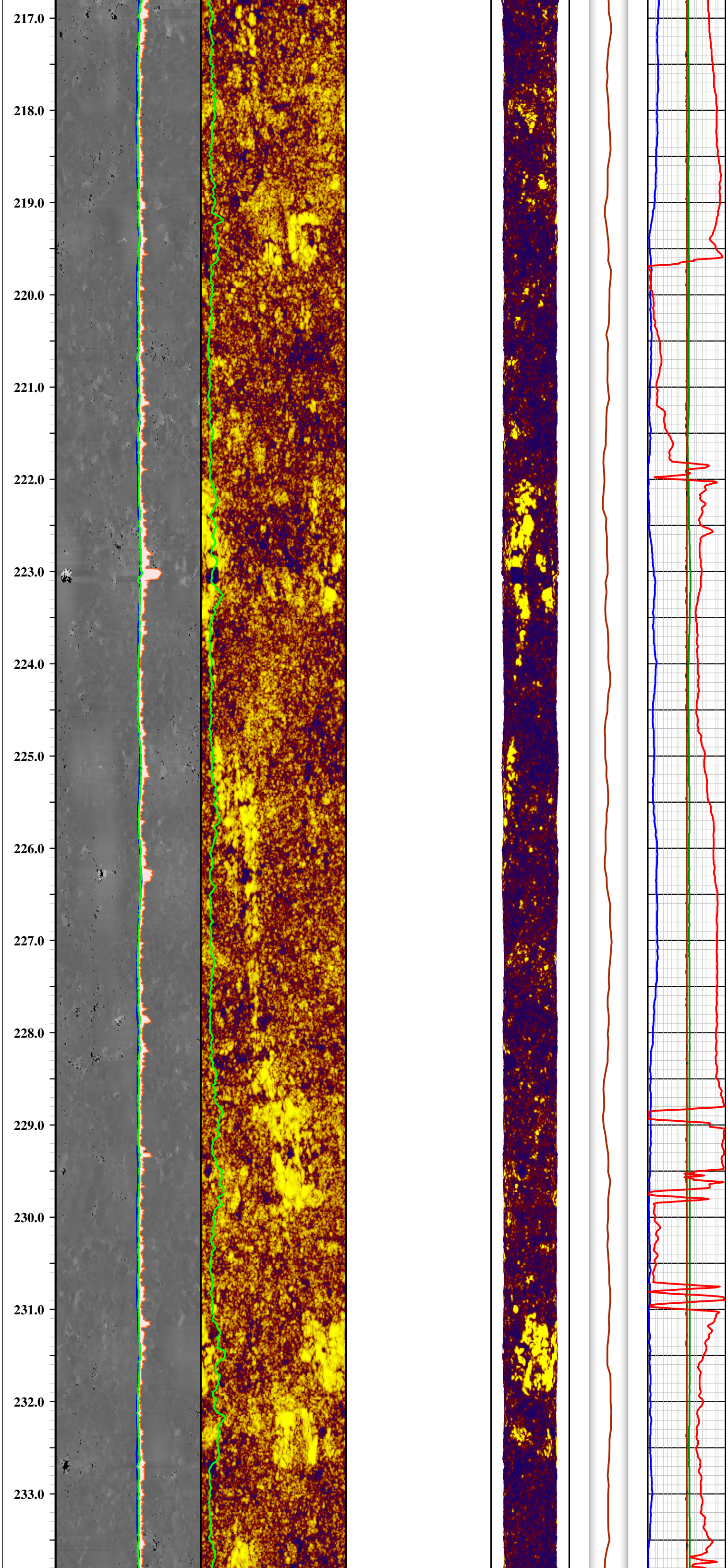
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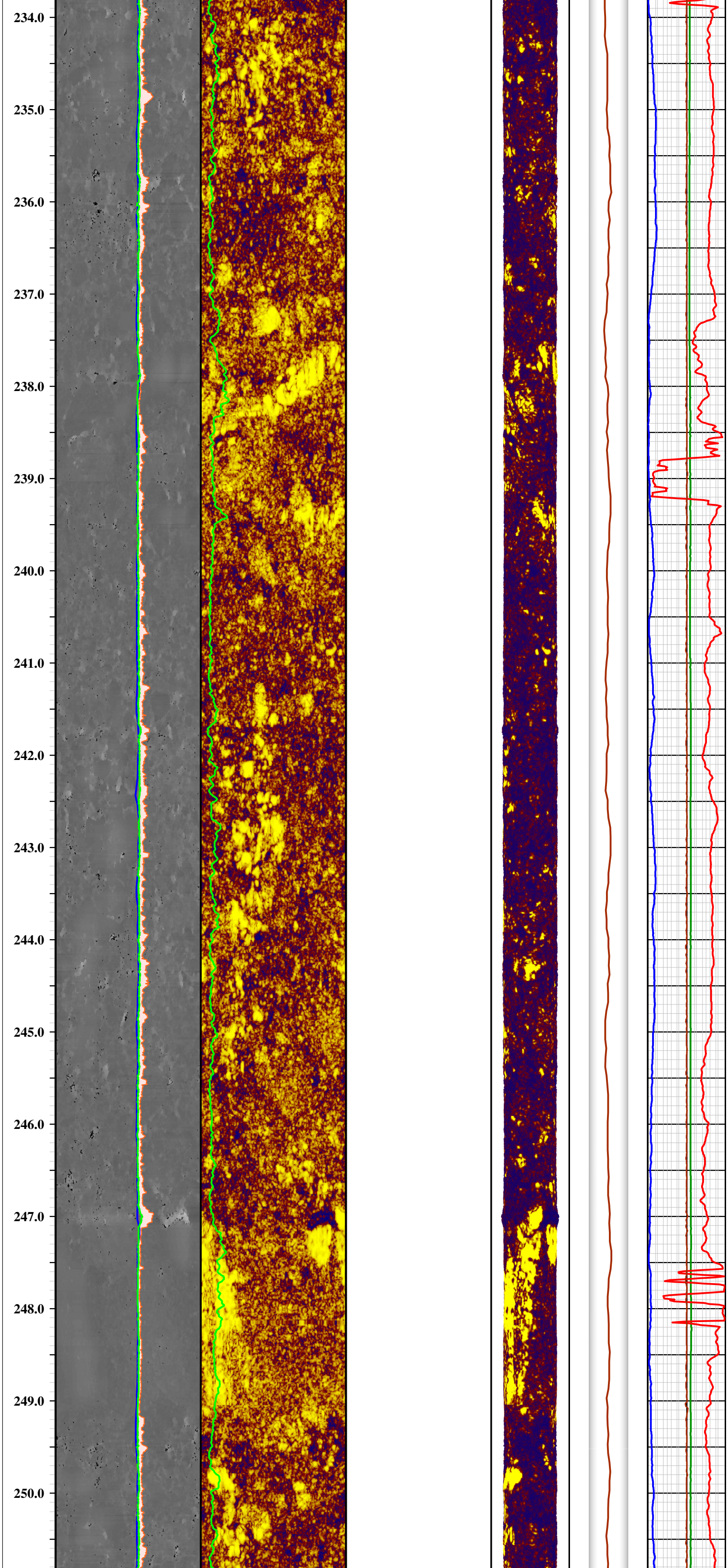
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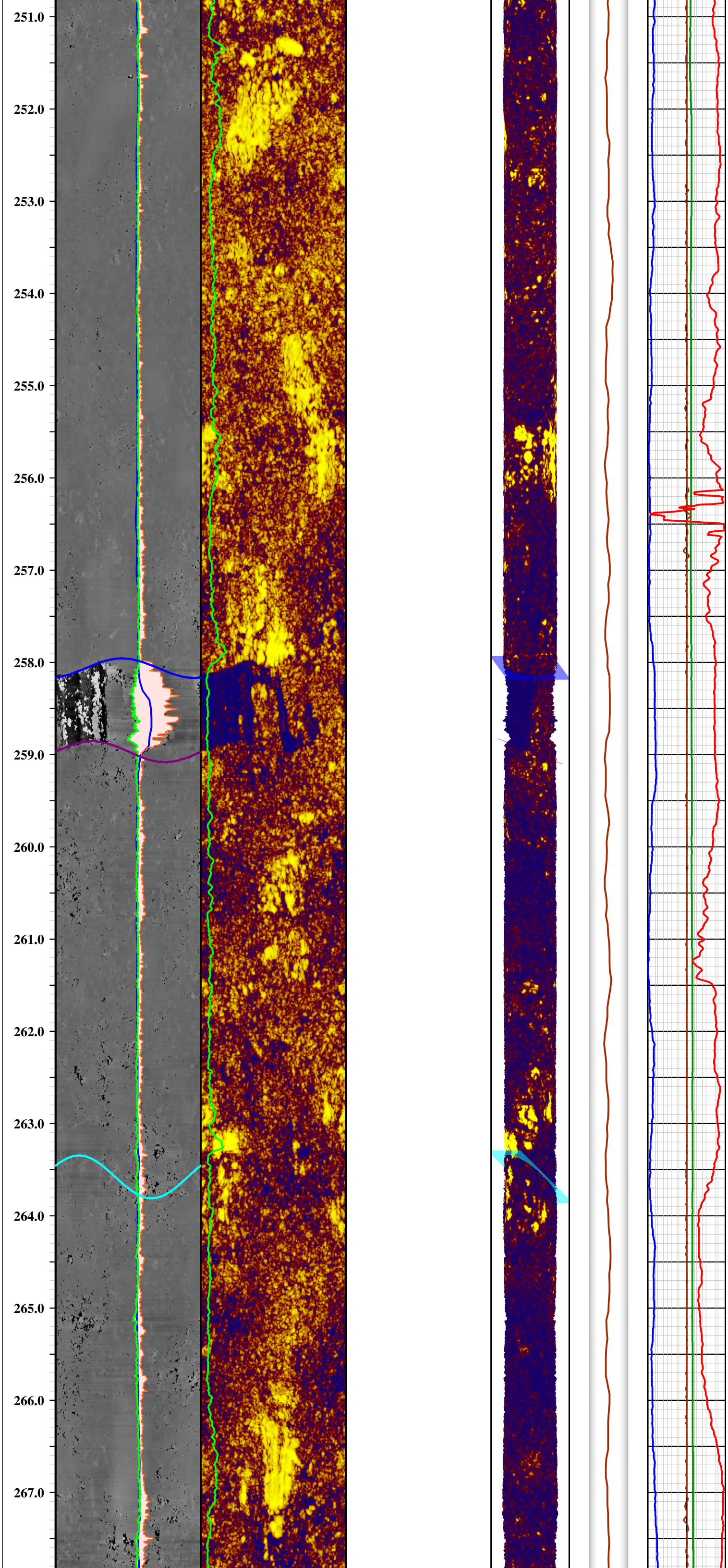
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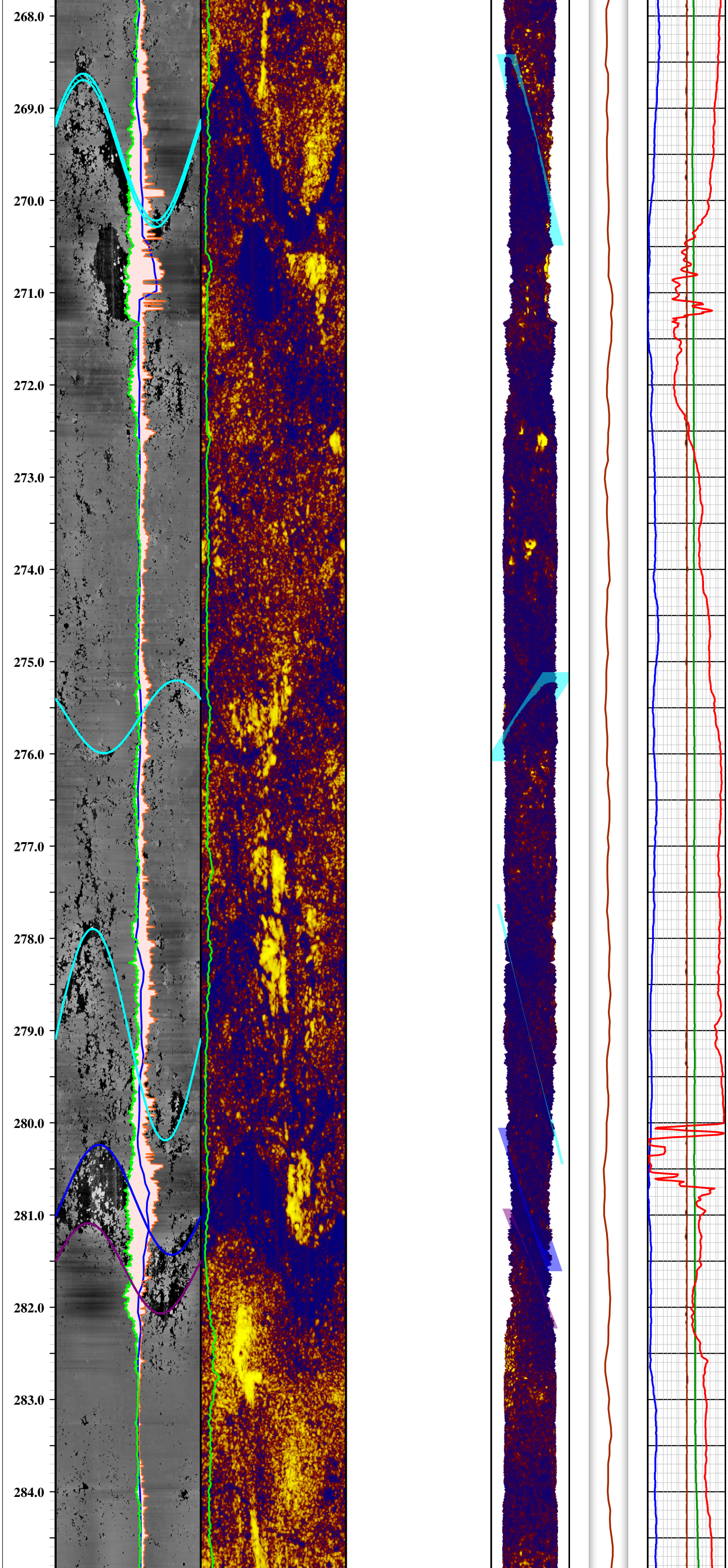
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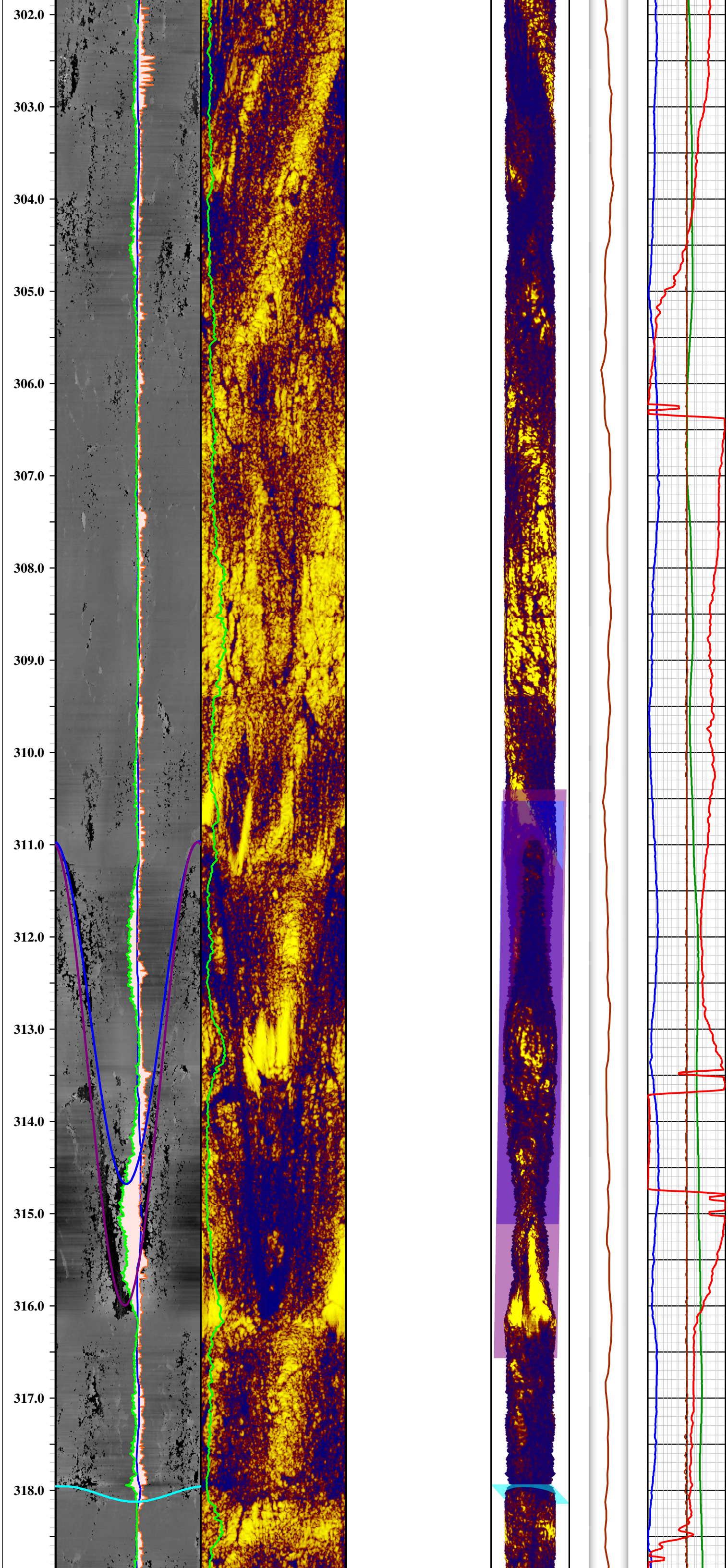
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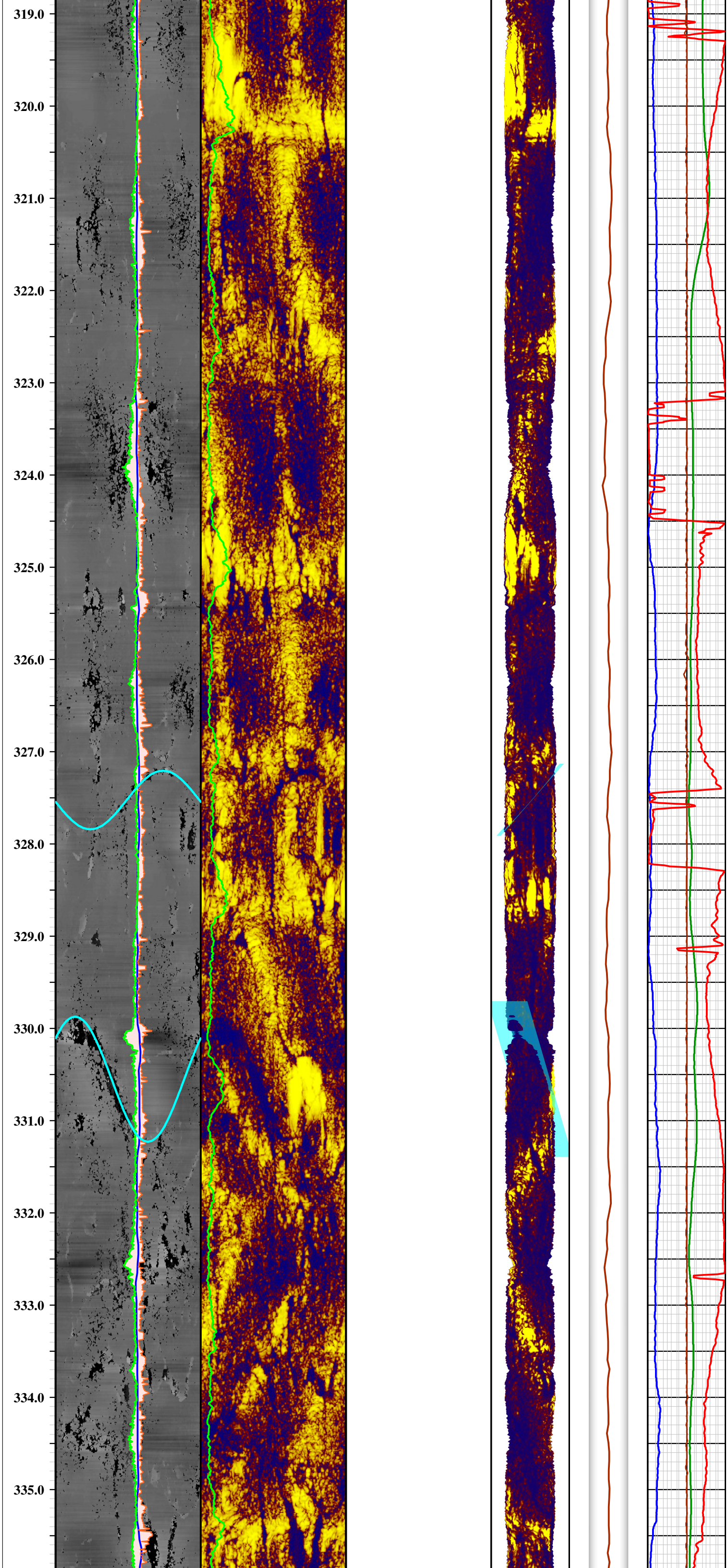
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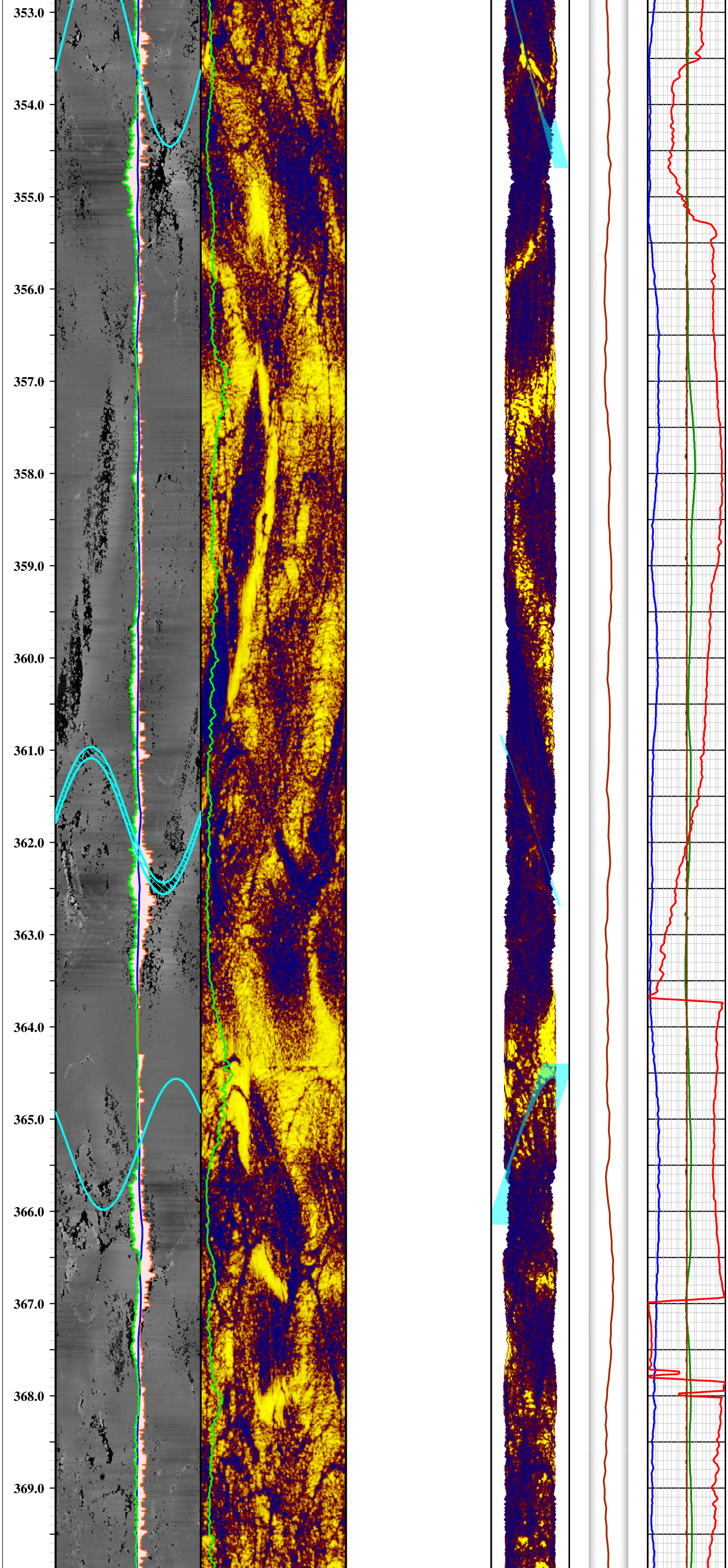
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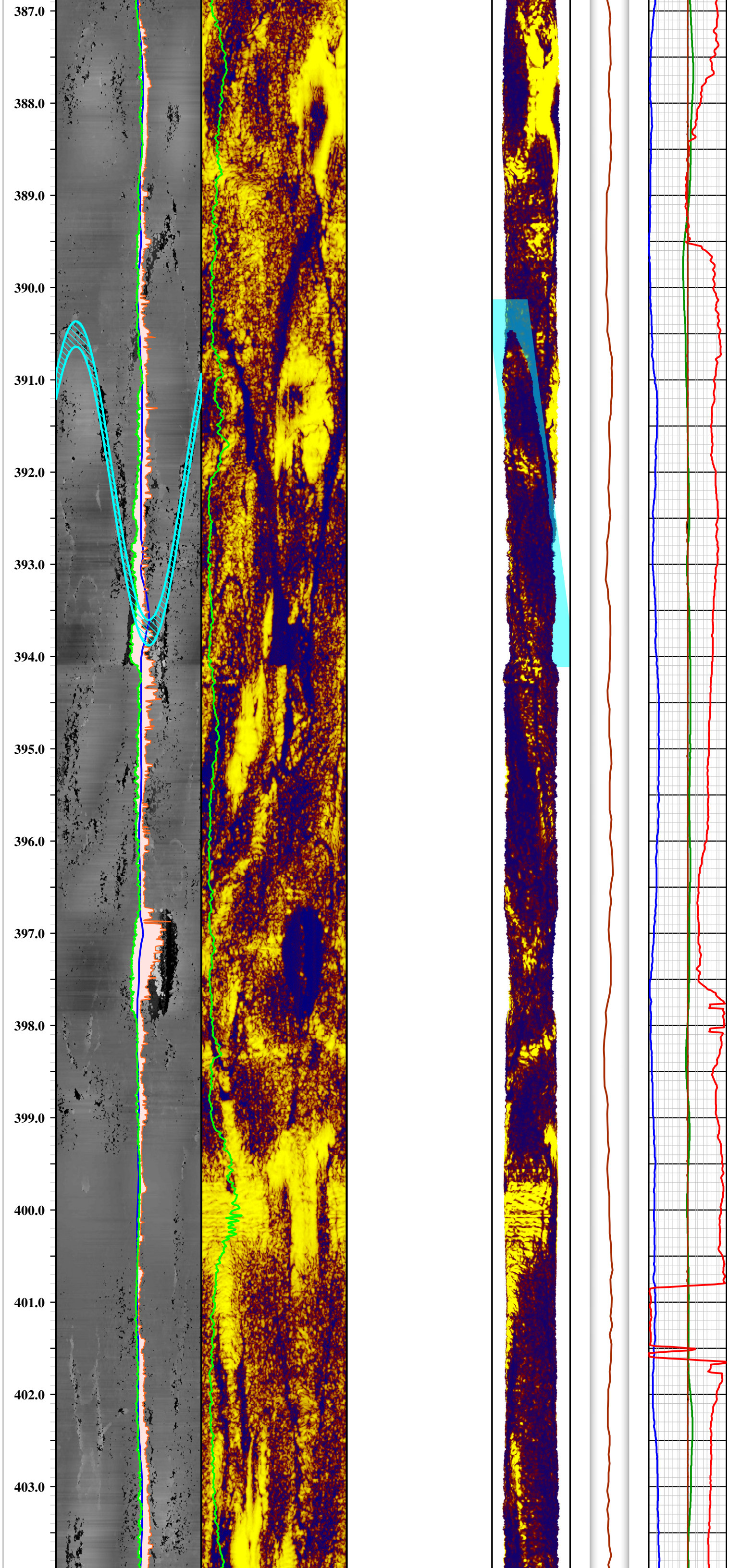
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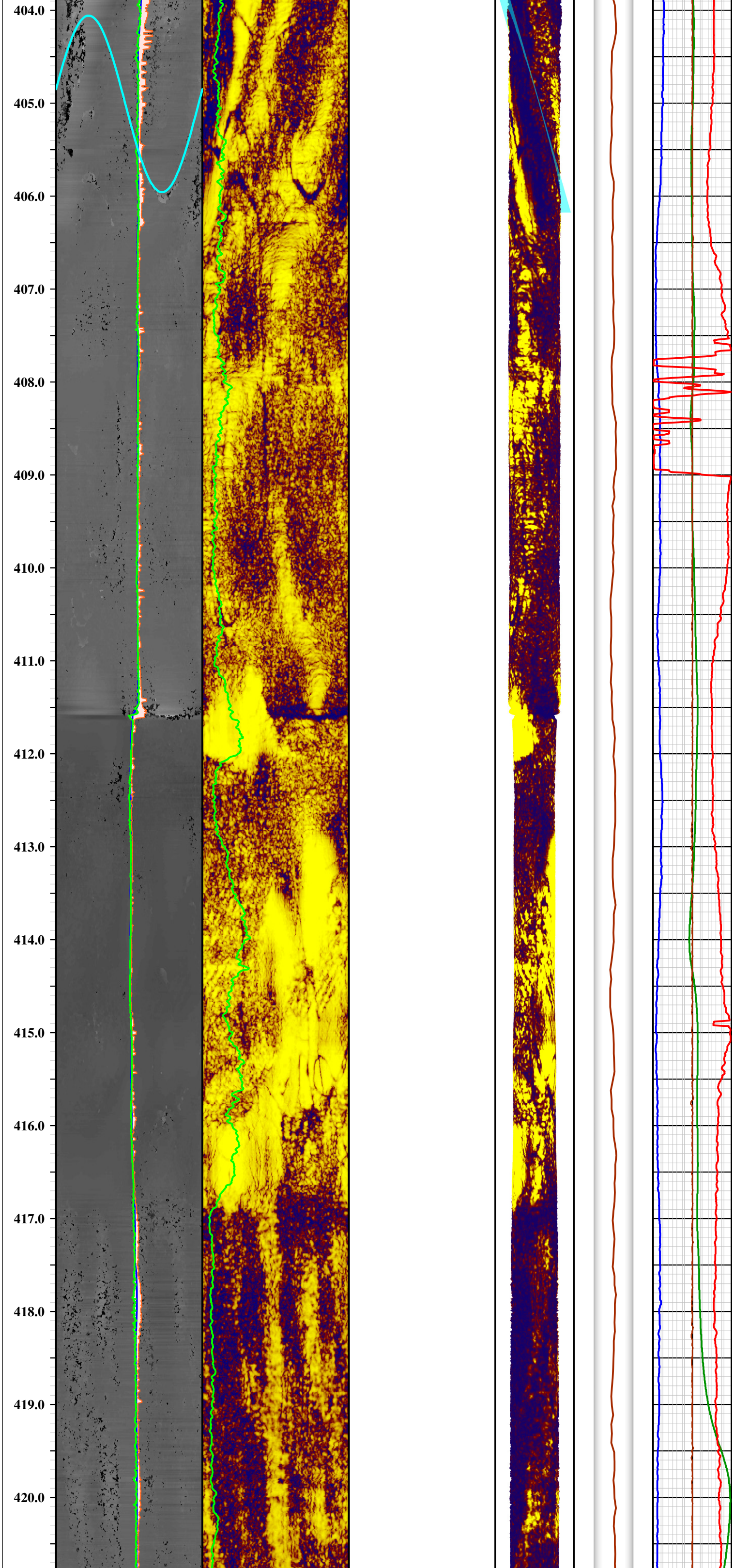
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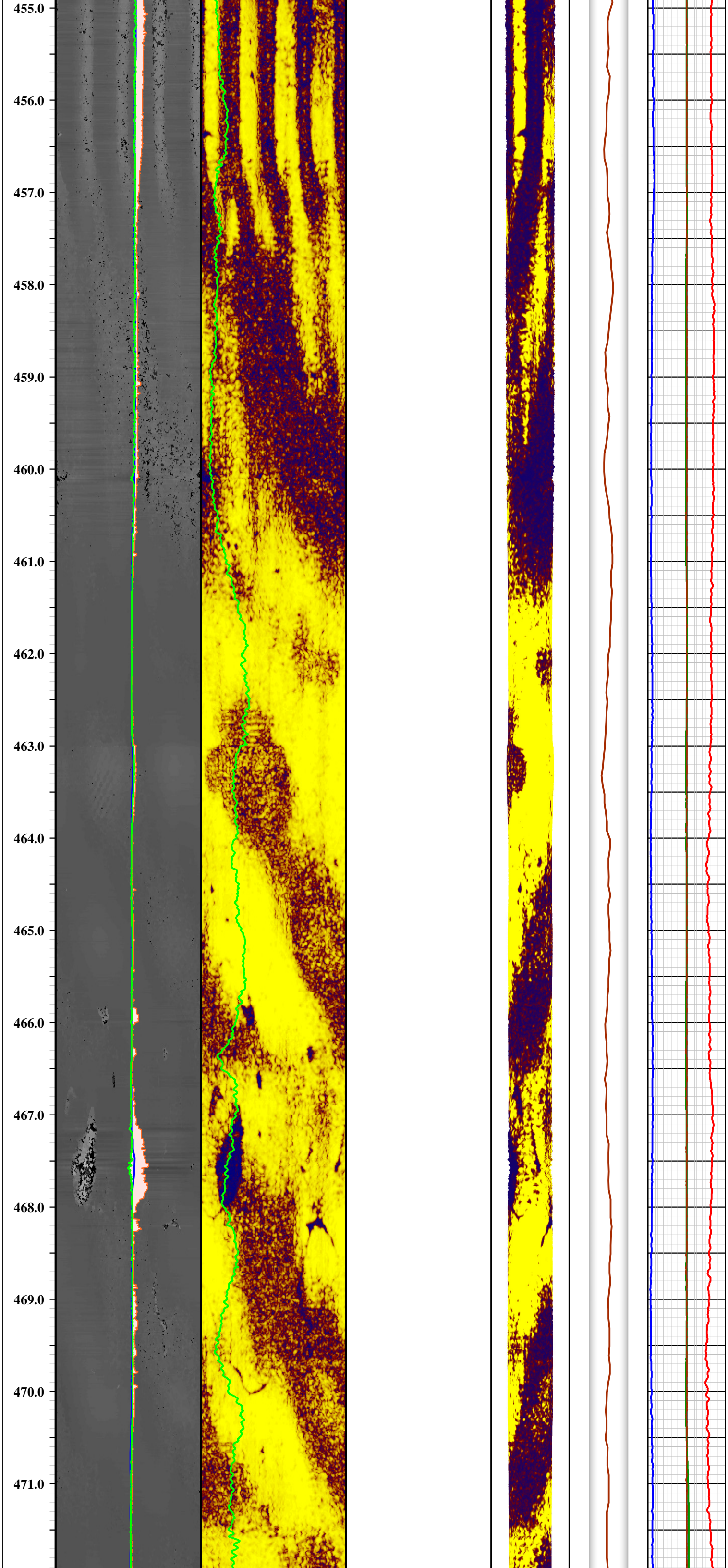
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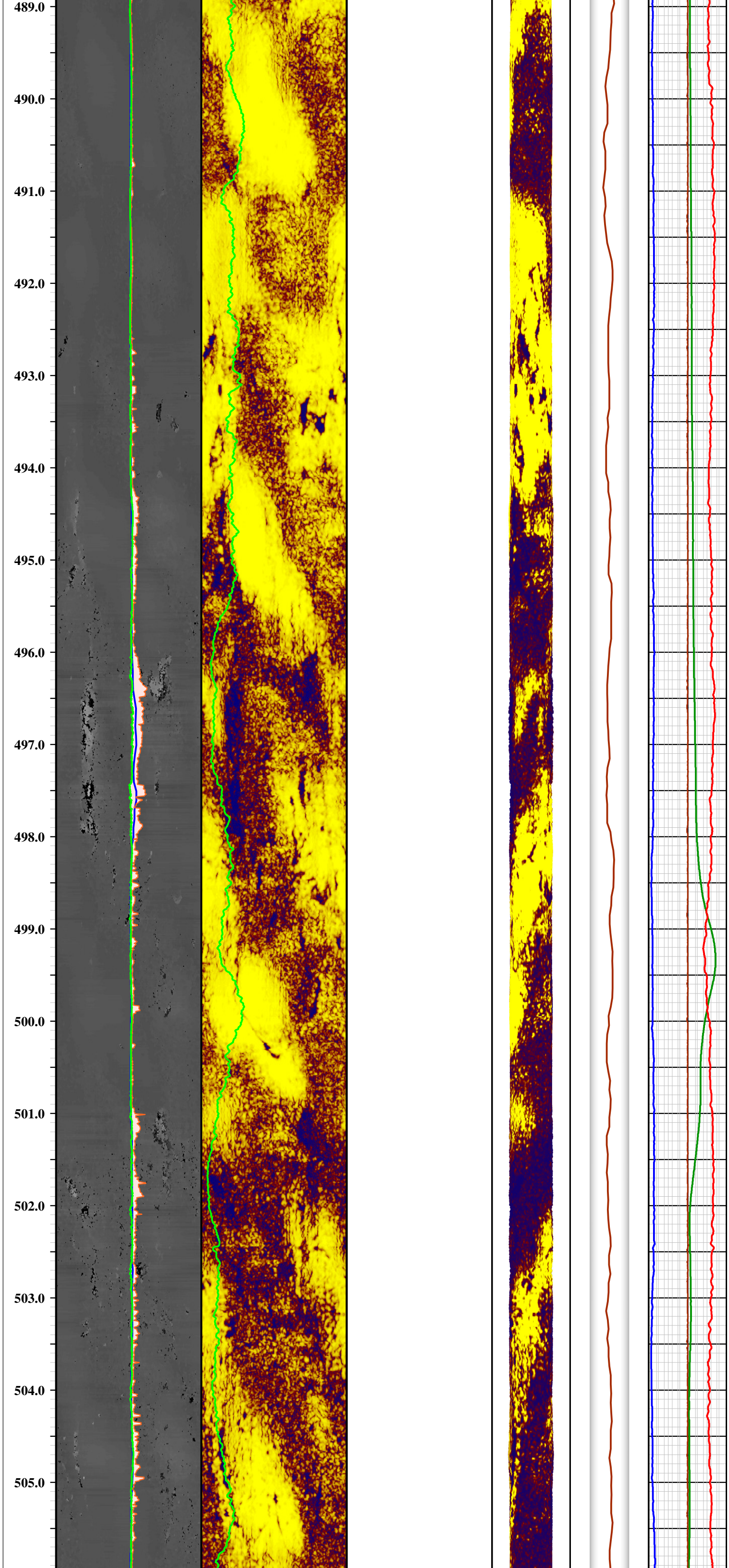
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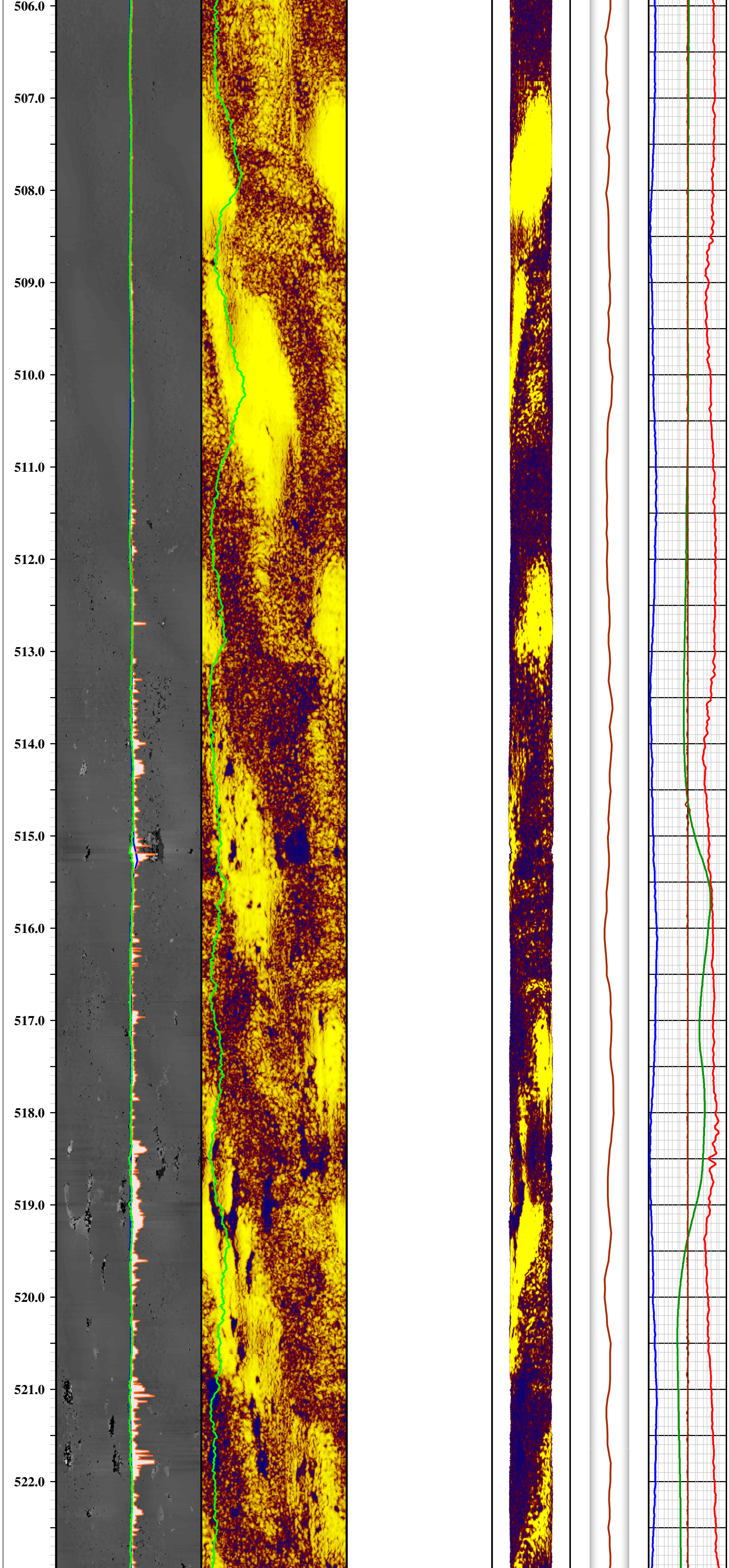
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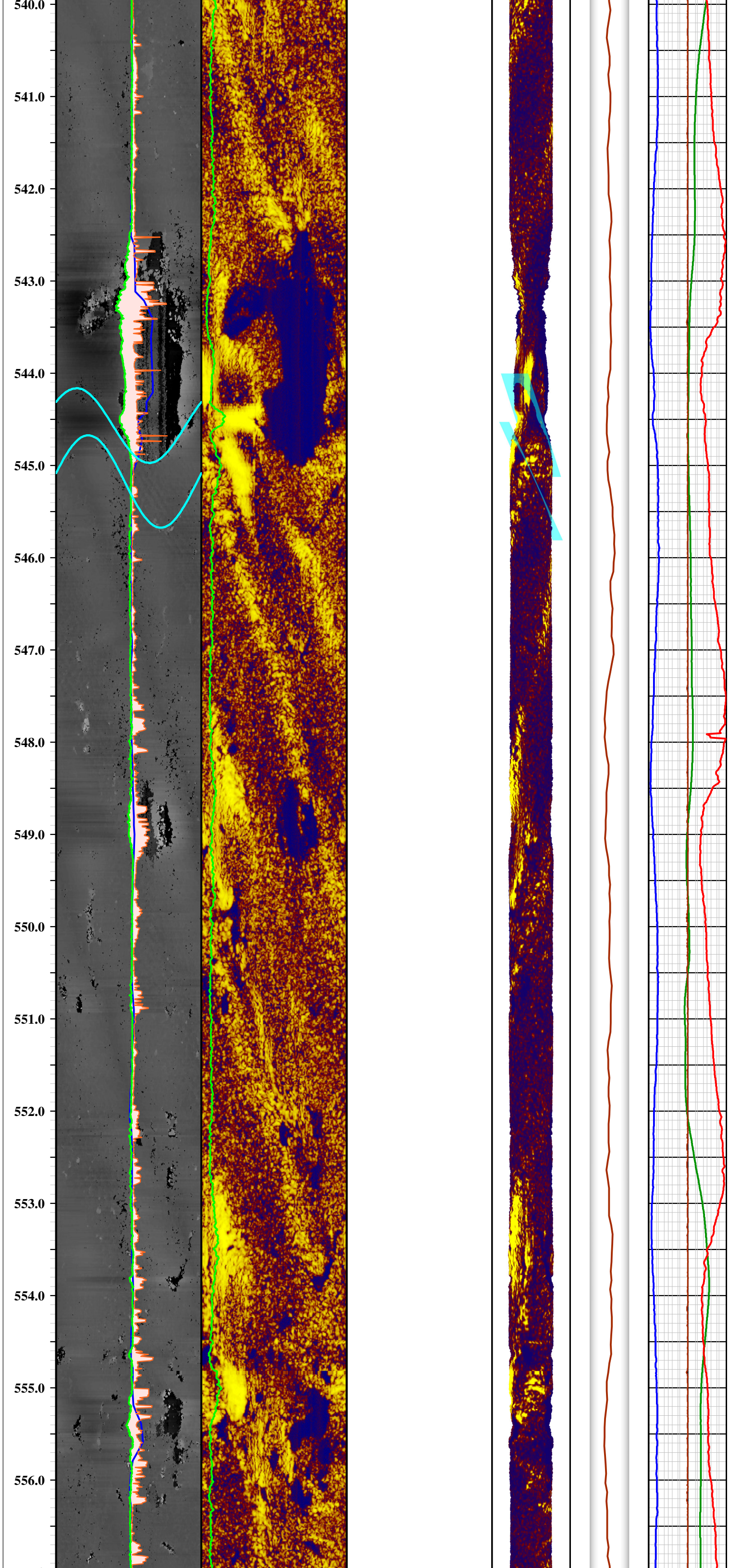
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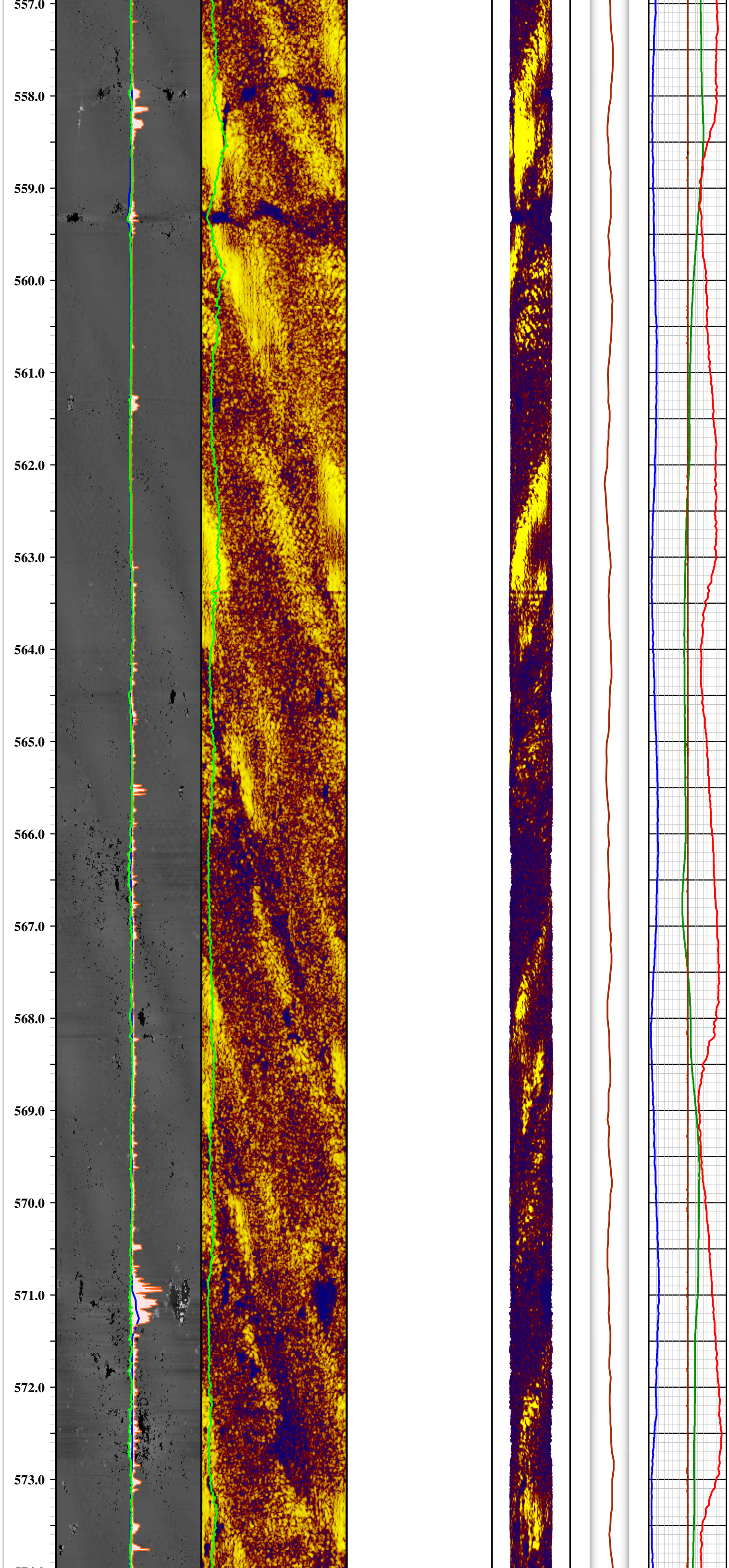
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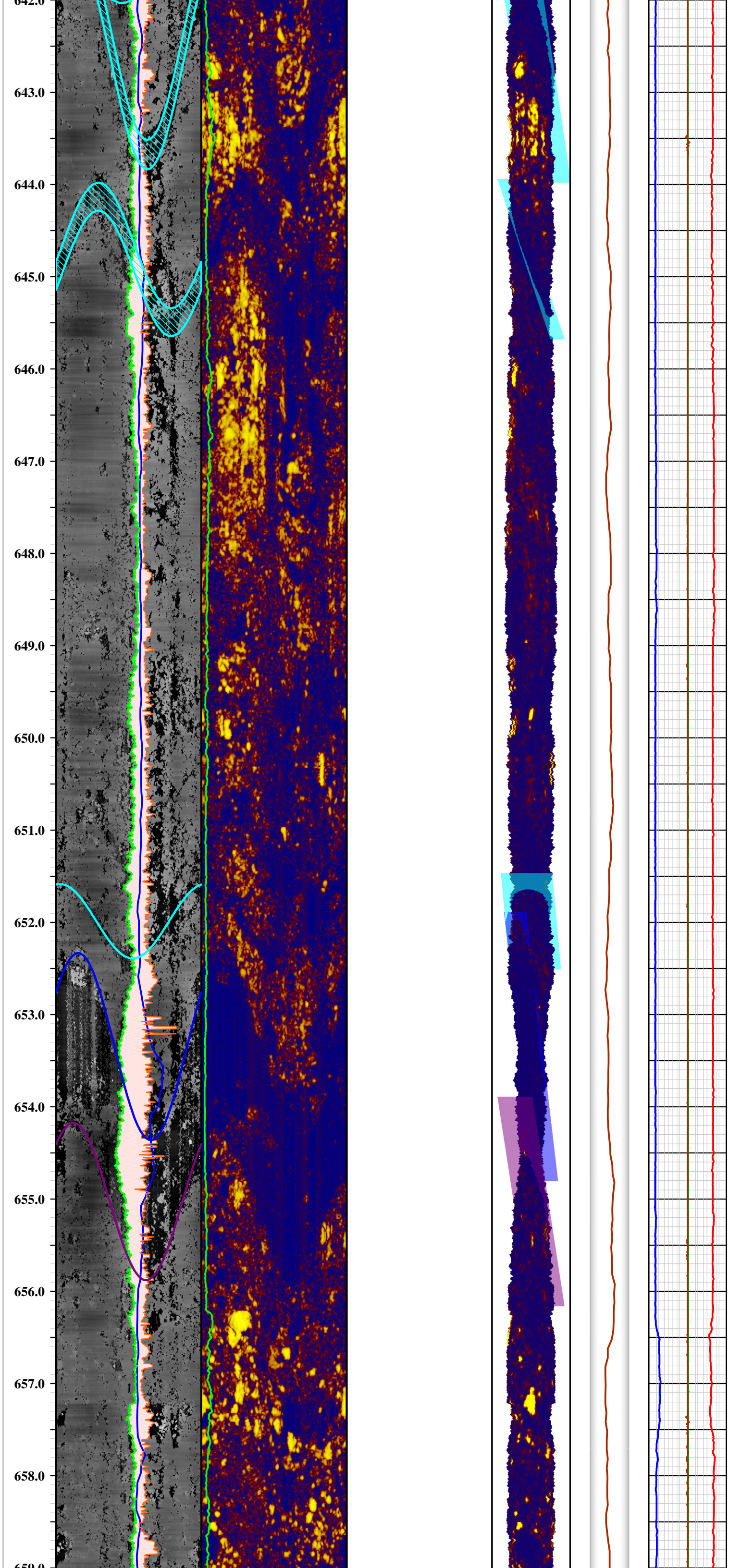
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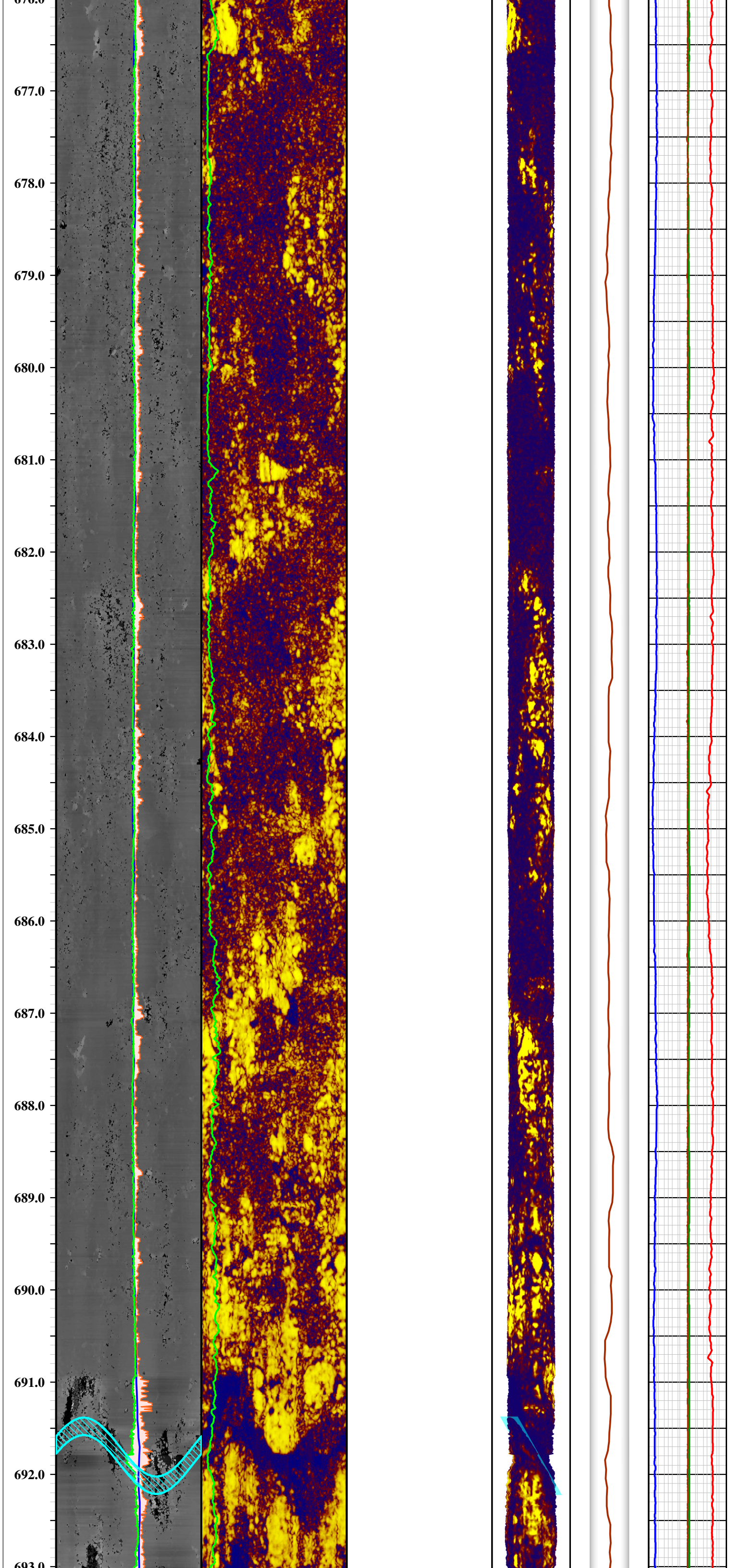
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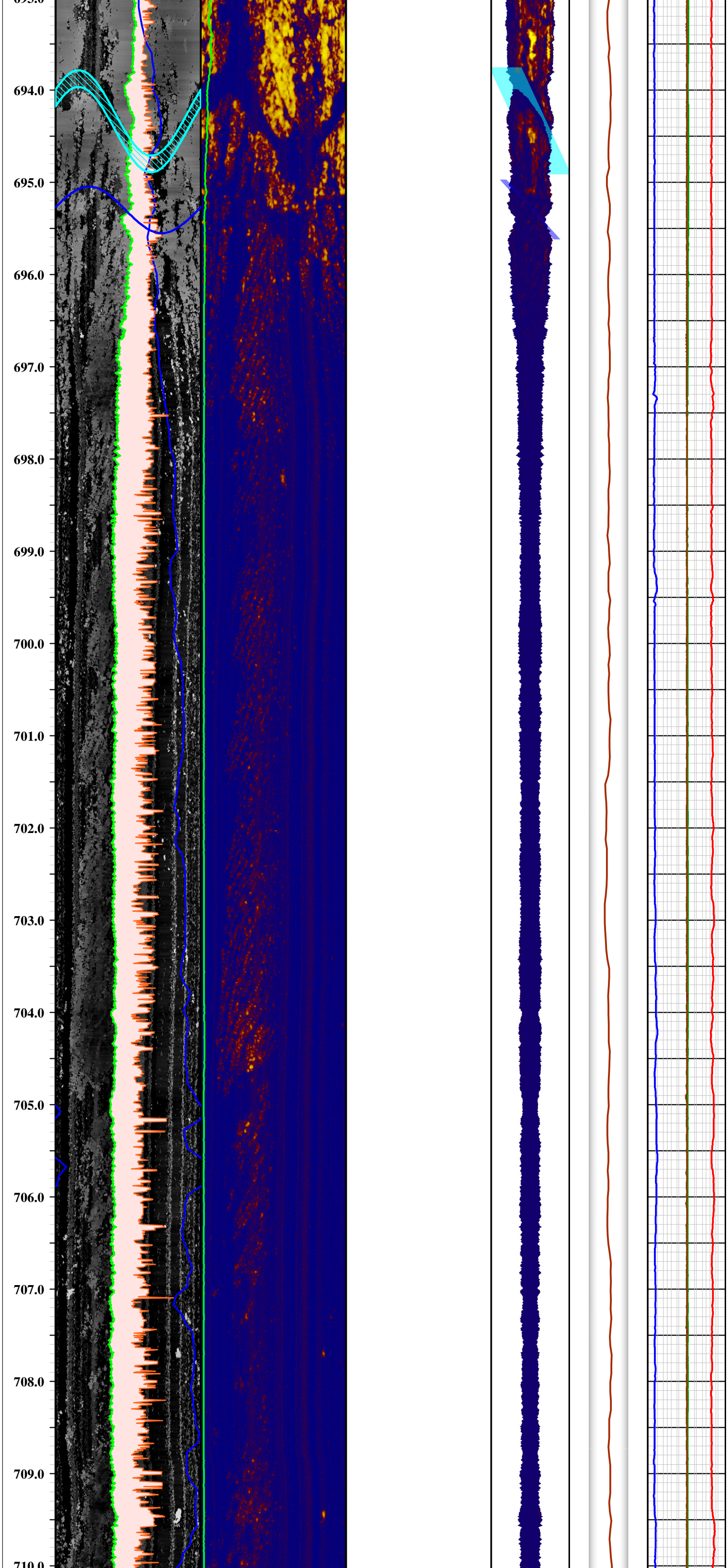
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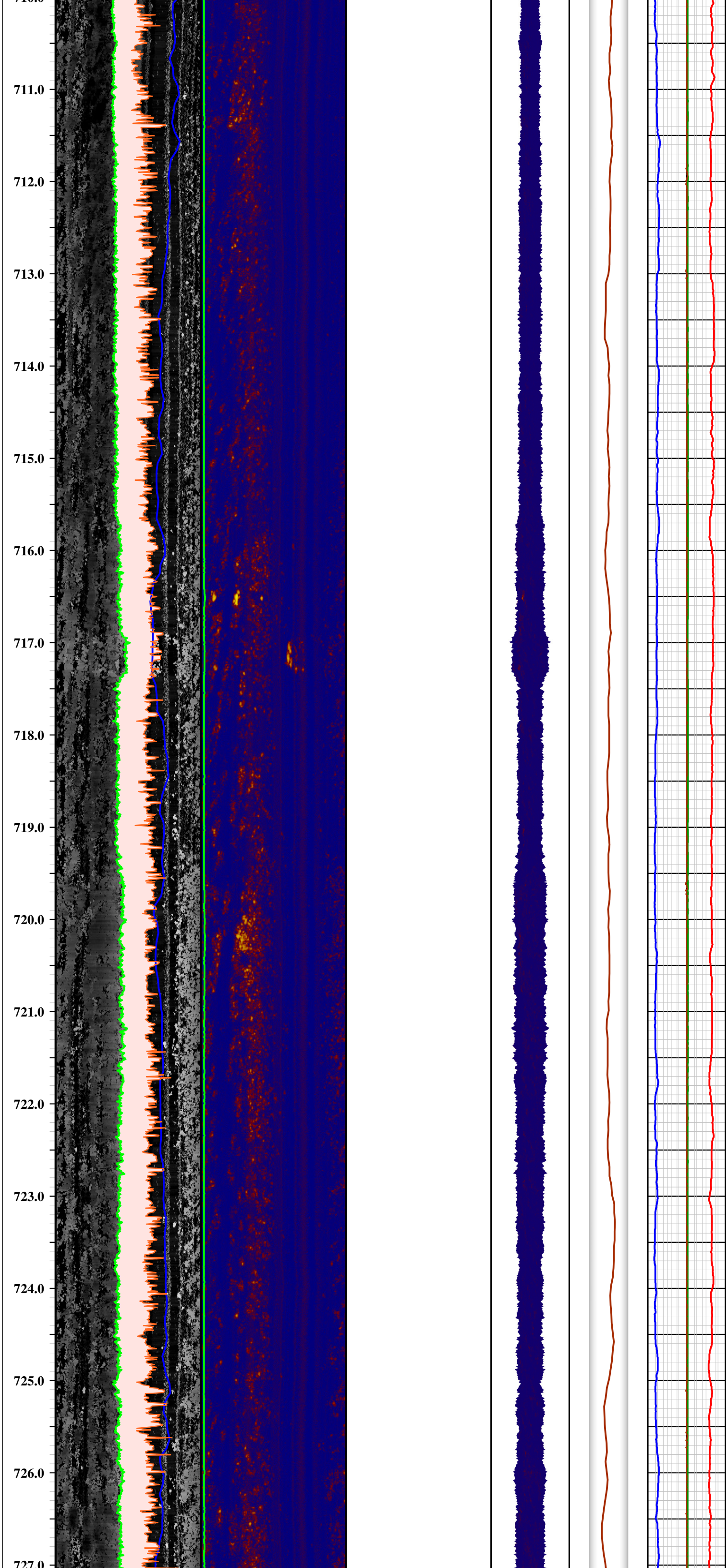
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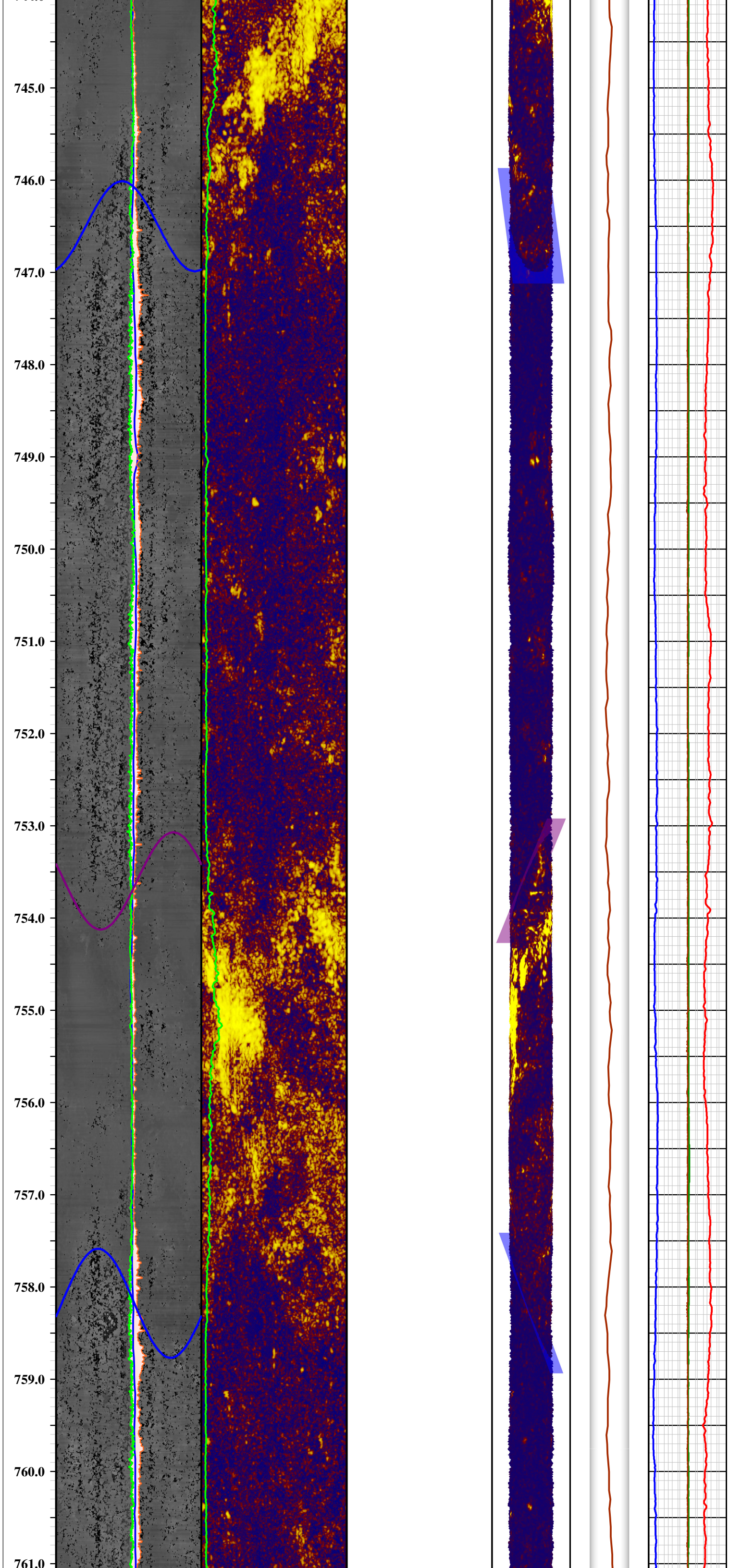
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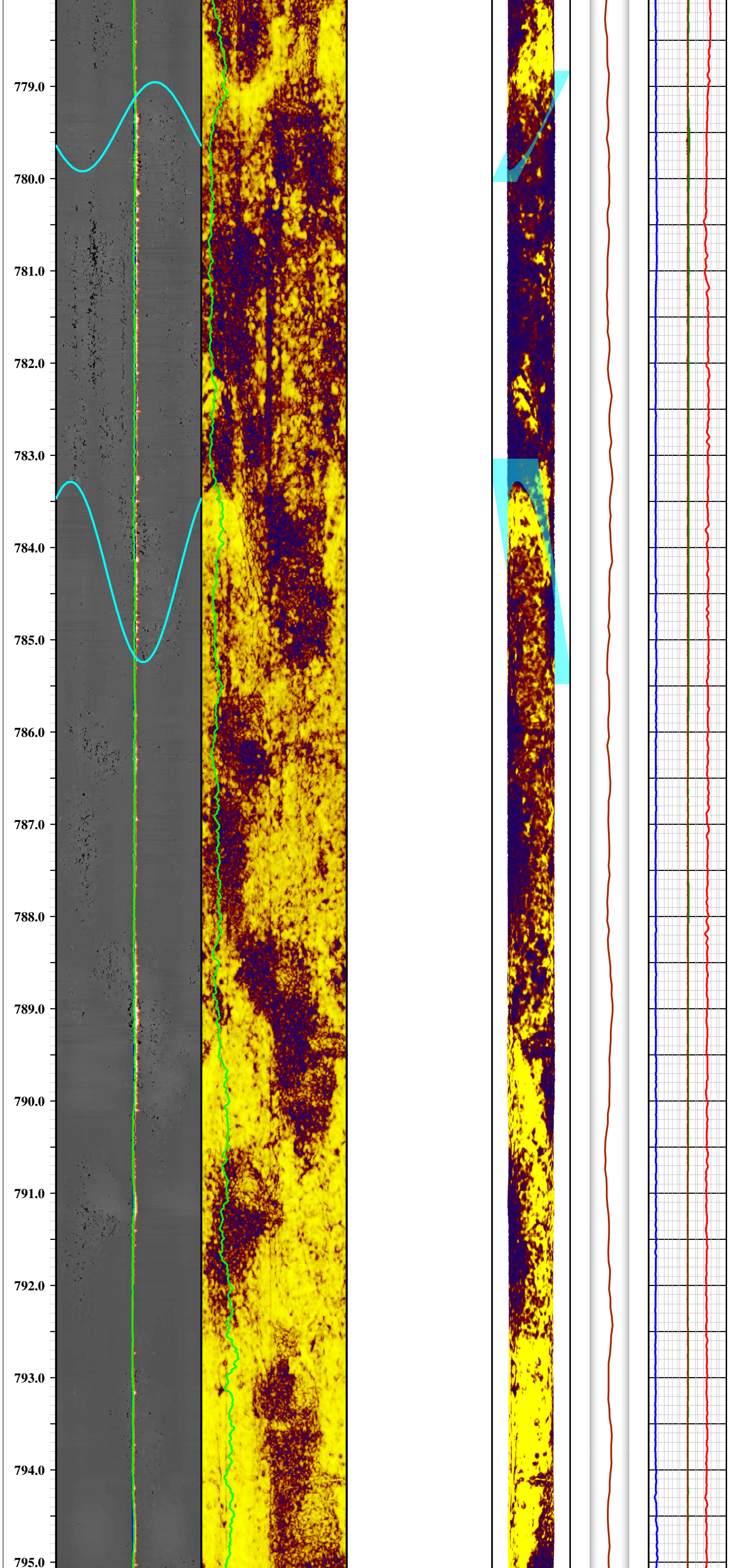
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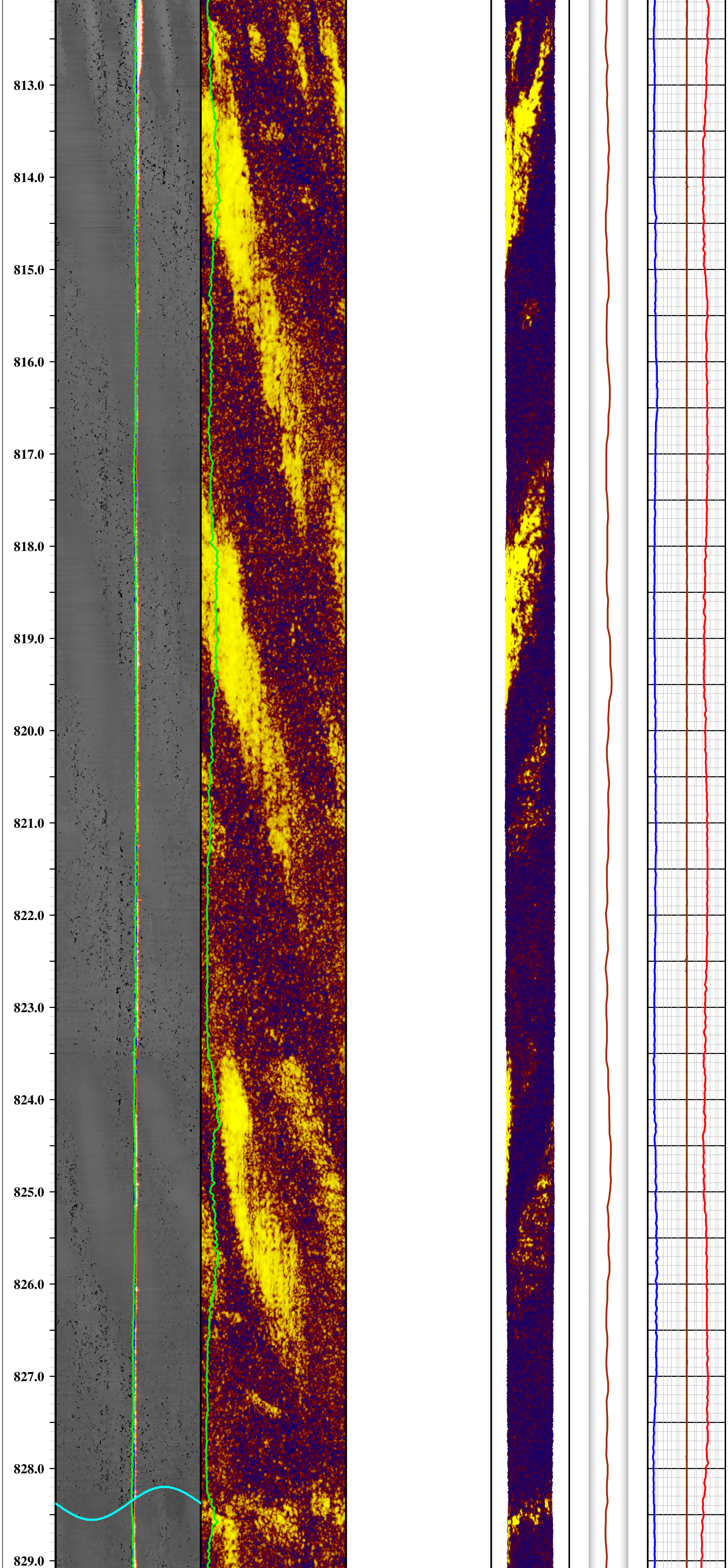
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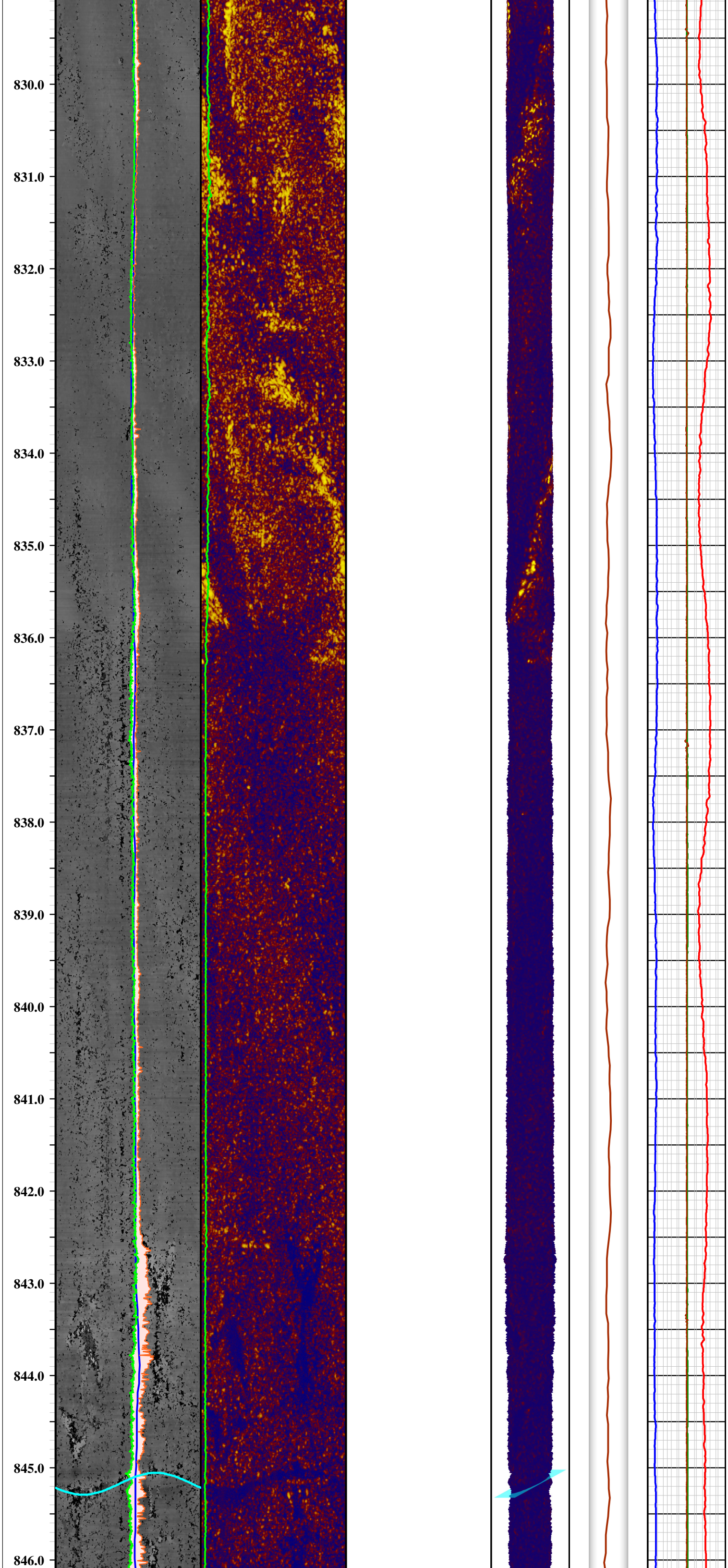
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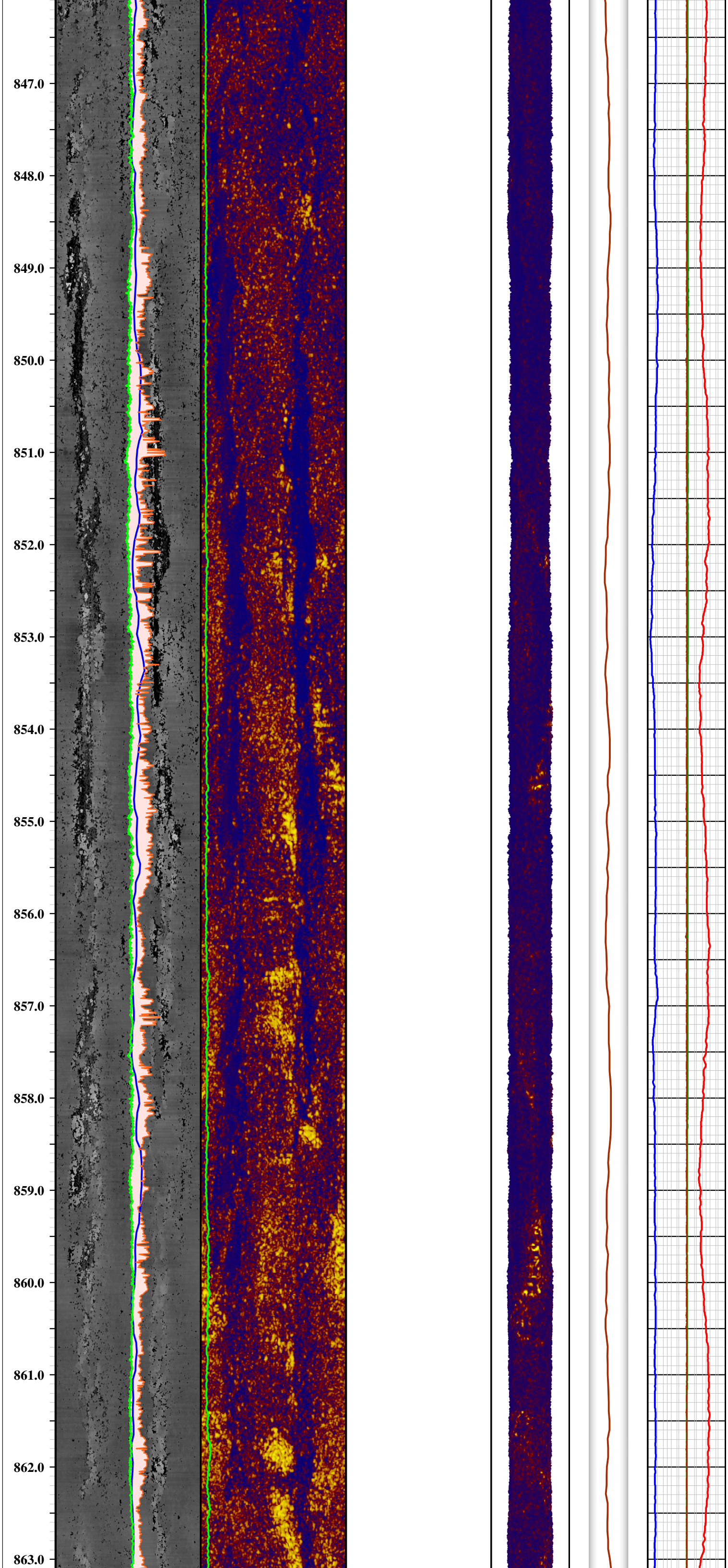
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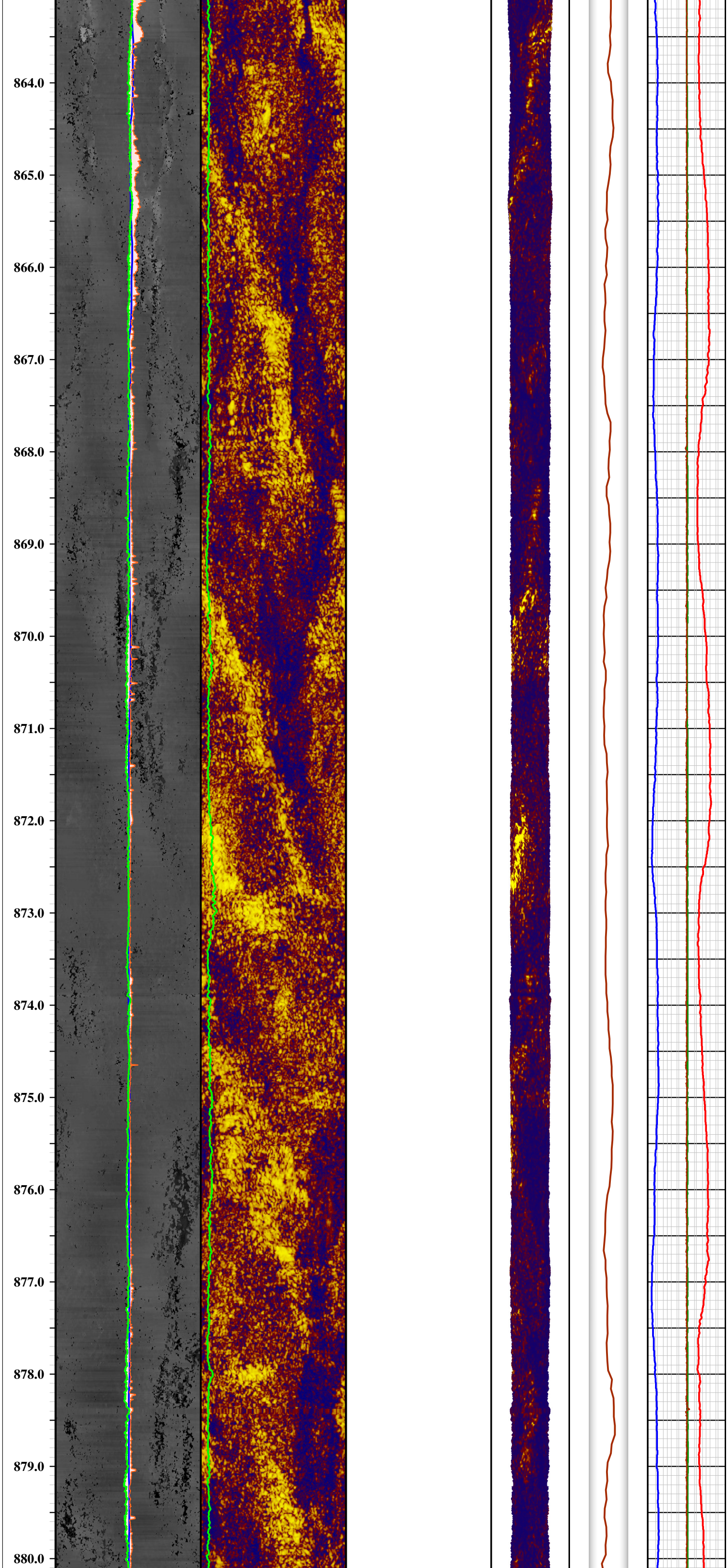
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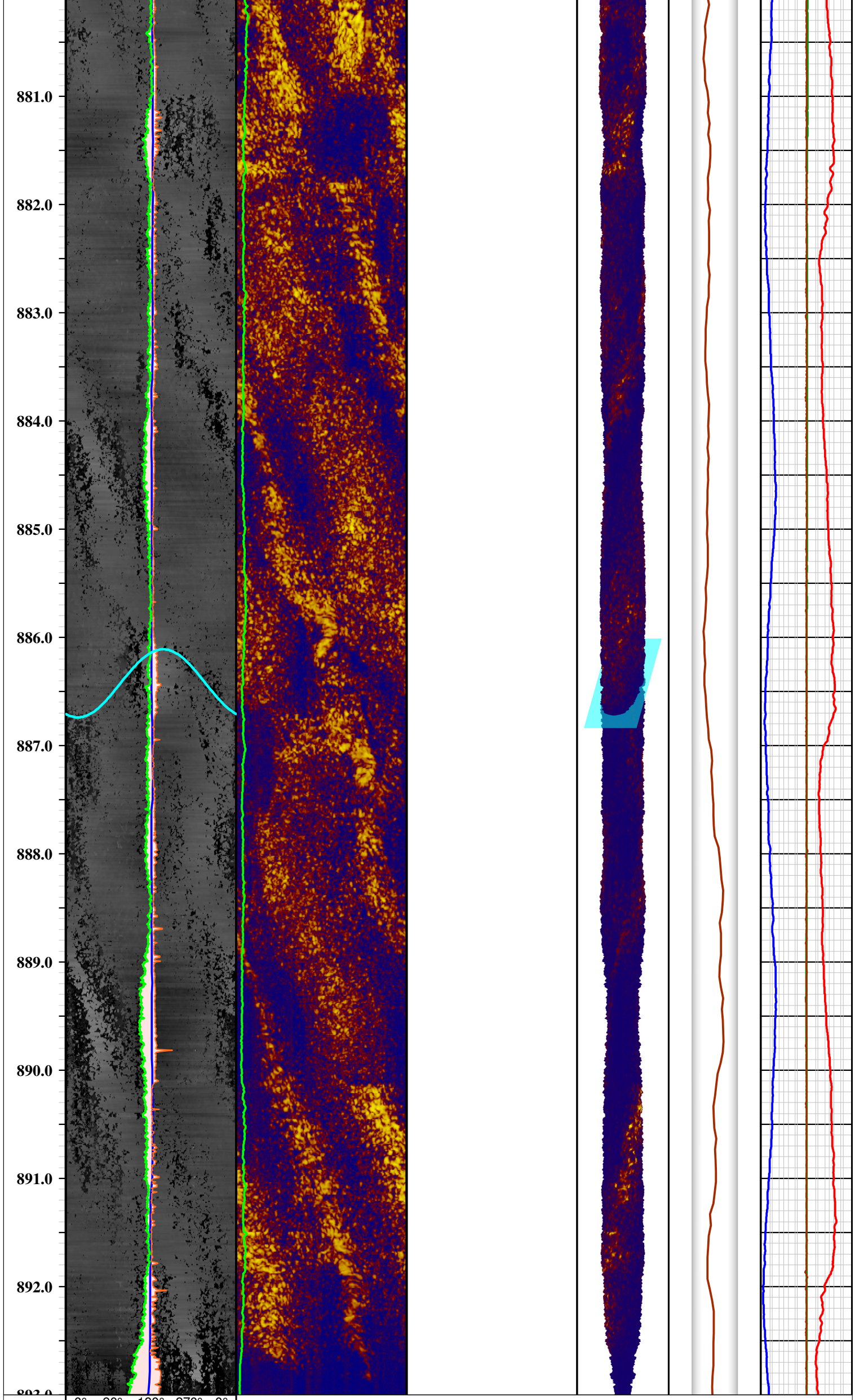


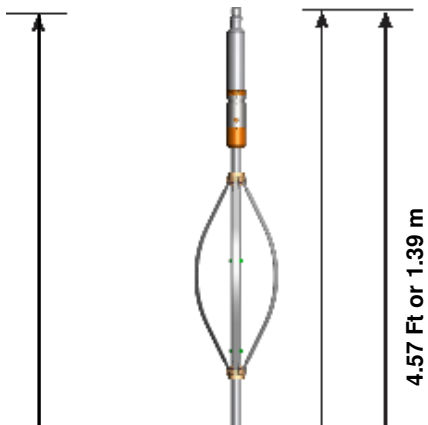
ABI Legend

Mnemonics	Description

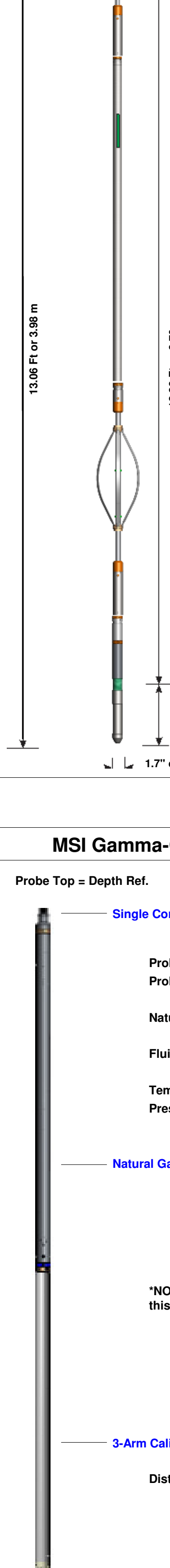
ABI-43 Acoustic Borehole Imager

Probe Top = Depth Ref.

Tool SN: 111801 & 091601



APS544 Probe Orientation Sensor
3-Axis Magnetometer
3 Accellerometers



Probe Length = 2.01 m or 6.59 ft

Probe Weight = 20.4 kg or 45.0 lbs

Distance from Acoustic Image Window to Orientation Sensor = 1.6 m or 5.1 ft

Inclination Accuracy = +/- 0.5 Deg

Azimuth Accuracy = +/- 1.2 Deg

Beam Width = 3.0 mm

Frequency: 1.2 mHz

Temperature Rating = 125.0 Deg C (257.0 Deg F)

Pressure Rating = 700 bar (10153 psi)

In-Line Centralizers - 3-6 band Titanium Bow Springs

MSI Gamma-Caliper-Temperature-Fluid Resistivity

Probe Top = Depth Ref.

Probe Length = 2.59 m or 8.5 ft

Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

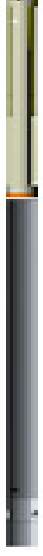
Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)

Presure Rating: 200 bar (2900 psi)

NOTE: Lengths on a particular tool may vary from those listed on this document due to probe sizes and styles utilized

Distance from tool top: 2.20 m (86.5 in)



Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS16-14
Field	NEAR WEST
County	PINAL
State	ARIZONA

Final

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY	RESOLUTION COPPER MINING
WELL ID	DS17-15 (DS-D) 55-920156
FIELD	NEAR WEST
COUNTY	PINAL STATE ARIZONA

TYPE OF LOGS: OPTICAL TELEVIEWER
MORE: GAMMA - CALIPER

LOCATION
D (1-12)06abd

SEC 6 TWP 1S RGE 12E

OTHER SERVICES
TEMP / FLUID RES
DUAL INDUCTION
GYRO

PERMANENT DATUM		ELEVATION 2379 FT.	K.B.
LOG MEAS. FROM	GROUND LEVEL	ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL		G.L.

DATE	1-22-17	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	2/4	MUD WEIGHT	N/A
TYPE LOG	OPTICAL TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	680 FT	LEVEL	~ 636 FT
DEPTH-LOGGER	680 FT	MAX. REC. TEMP.	27.99 Deg C
BTM LOGGED INTERVAL	625 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	20 FT	SAMPLE INTERVAL	0.035 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	E. TURNER / K. MITCHELL	TOOL STRING/SN	ALT QL OBI40 2G SN 152511
WITNESSED BY	MATT - M & A	LOG TIME: ON SITE/OFF SITE	7:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	21 FT	12 IN	STEEL	SURFACE	21 FT
2	10 1/2 IN	21 FT	TOTAL DEPTH				
3							

COMMENTS:

.

Tool Summary:

Date	1-22-17		**Date**	1-22-17		**Date**	1-22-17		**Date**	1-22-17		**Date**	1-22-17		**Date**	1-22-17		**Date**	1-22-17		**Date**	1-22-17	
Run No.	3		**Run No.**	2		**Run No.**	1		**Run No.**	6		**Run No.**	5		**Run No.**	4		**Run No.**	3		**Run No.**	2	
Tool Model	MSI DUAL IND.		**Tool Model**	ALT QL OBI40 2G		**Tool Model**	WELNAV GYRO		**Tool Model**			**Tool Model**			**Tool Model**	MSI COMBO TOOL		**Tool Model**			**Tool Model**		
Tool SN	6261		**Tool SN**	152511		**Tool SN**	201		**Tool SN**			**Tool SN**			**Tool SN**	4953		**Tool SN**			**Tool SN**		
From	SURFACE		**From**	20 FT		**From**	SURFACE		**From**			**From**			**From**	SURFACE		**From**			**From**		
To	680 FT		**To**	625 FT		**To**	650 FT		**To**			**To**			**To**	680 FT		**To**			**To**		
Recorded By	E. TURNER		**Recorded By**	E. TURNER		**Recorded By**	E.TURNER		**Recorded By**			**Recorded By**			**Recorded By**	E. TURNER		**Recorded By**			**Recorded By**		
Truck No	310		**Truck No**	310		**Truck No**	310		**Truck No**			**Truck No**			**Truck No**	310		**Truck No**			**Truck No**		
Operation Check	1-16-17		**Operation Check**	1-16-17		**Operation Check**	1-16-17		**Operation Check**			**Operation Check**			**Operation Check**	1-16-17		**Operation Check**			**Operation Check**		
Calibration Check	1-16-17		**Calibration Check**	N/A		**Calibration Check**	N/A		**Calibration Check**			**Calibration Check**			**Calibration Check**	1-16-17		**Calibration Check**			**Calibration Check**		
Time Logged	1:30 PM		**Time Logged**	11:30		**Time Logged**	7:30 AM		**Time Logged**			**Time Logged**			**Time Logged**	2:00 PM		**Time Logged**			**Time Logged**		

Additional Comments:

Caliper Arms Used: 9" **Calibration Points:** 6" & 12"

E-Log Calibration Range: 1 - 1000 OHM-M **Calibration Points:** 1 & 1000 OHM-M

Disclaimer:

All interpretations of log data are opinions based on inferences from electrical or other measurements. We do not guarantee the accuracy or correctness of any interpretations or recommendations and shall not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our employees or agents. These interpretations are also subject to our general terms and conditions set out in our current Service Invoice.

DS17-15 (DS-D) OBI40 2G Summary 17.6 to 624.34ft

Depth	Nat. Gamma		3-D View	Mag Field	Tilt	Image-NM	Gravity	Azim-Edited
1ft:6ft	0 API 200	3-Arm Caliper	0°	40 uT 60	0 Deg 5	Oriented Mag North	0.9 G 1.2	0 360
		10 Inches 15				0° 90° 180° 270° 0° Structures	0° 90° 180° 270° 0°	

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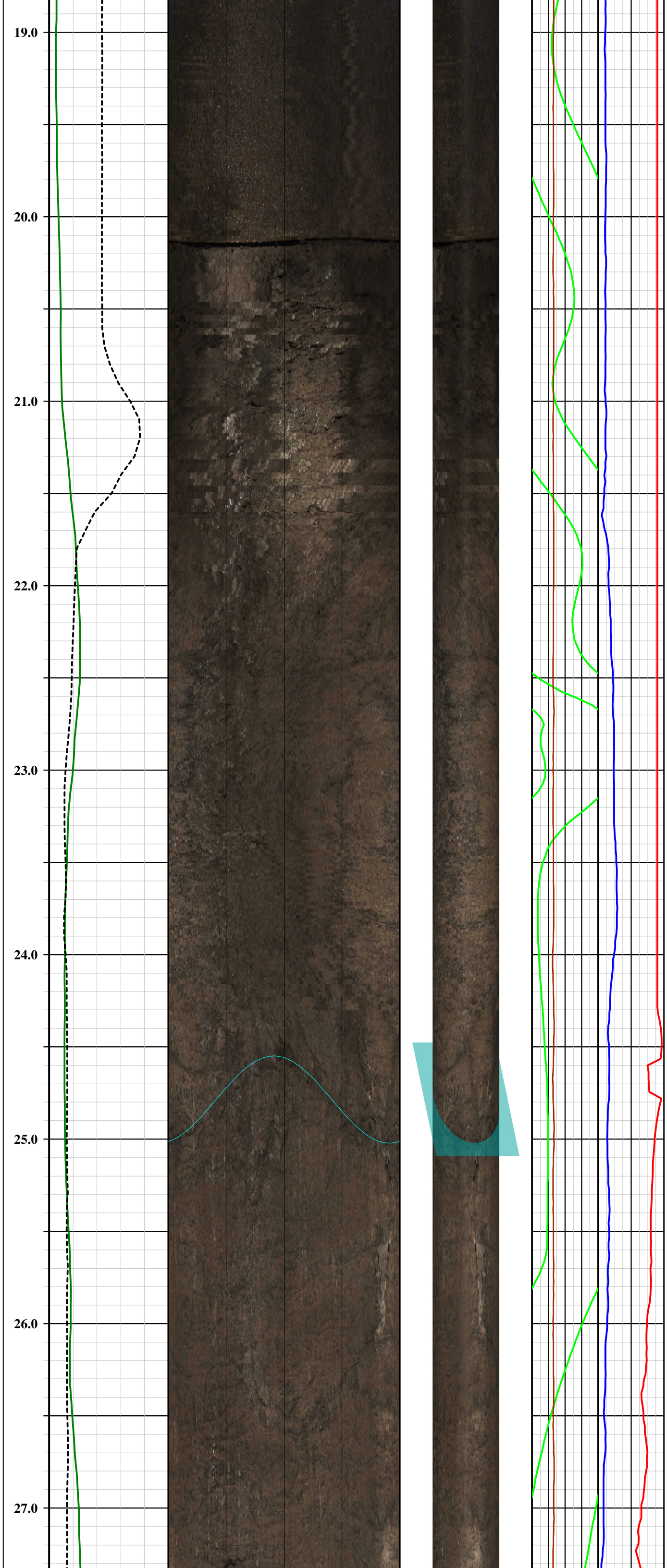

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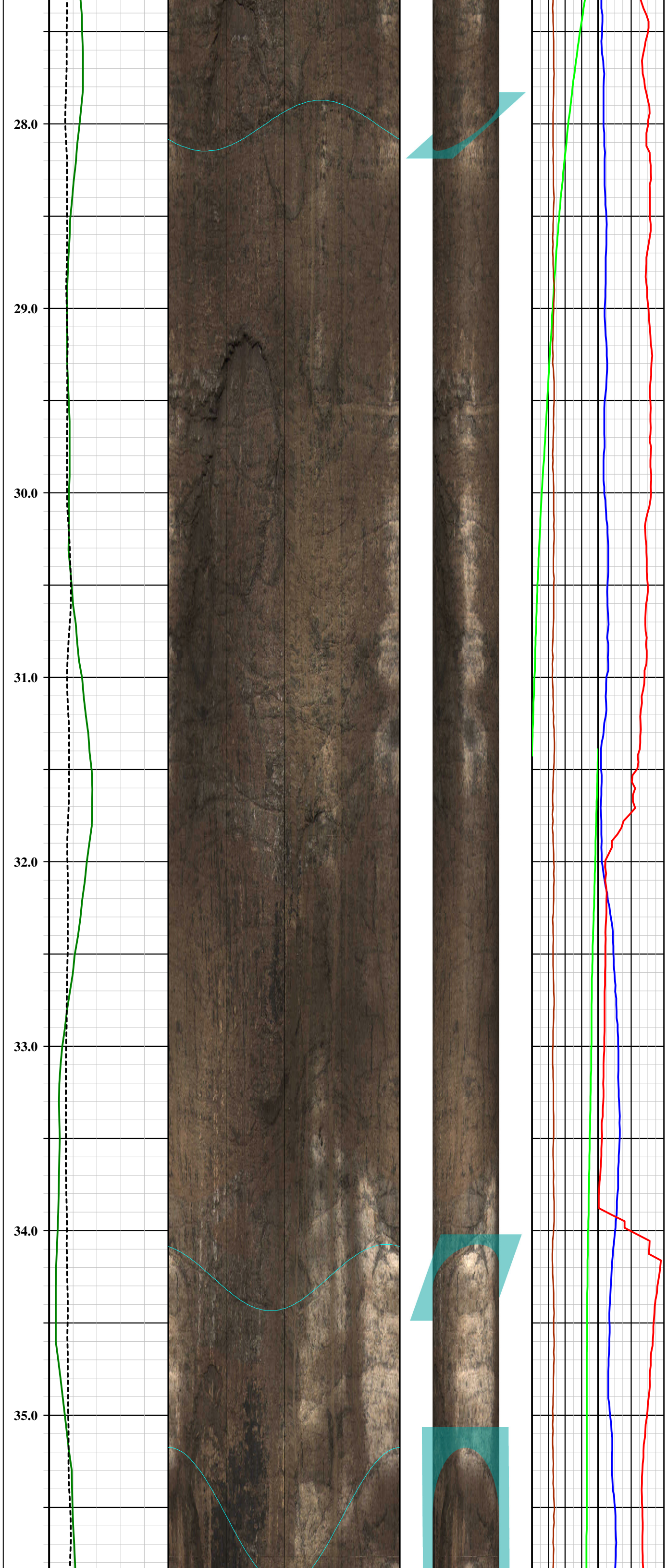

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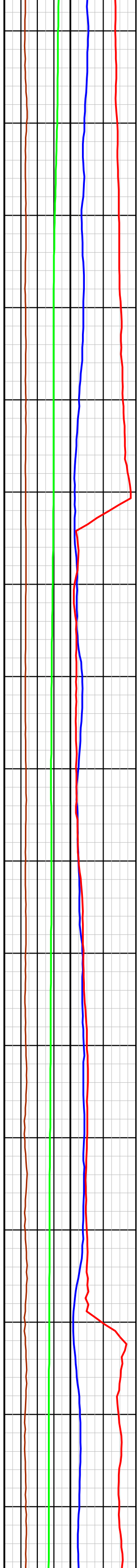

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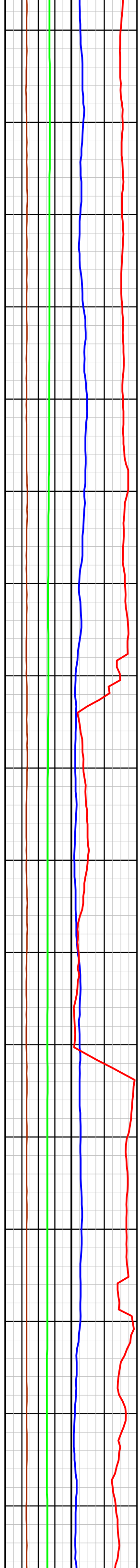

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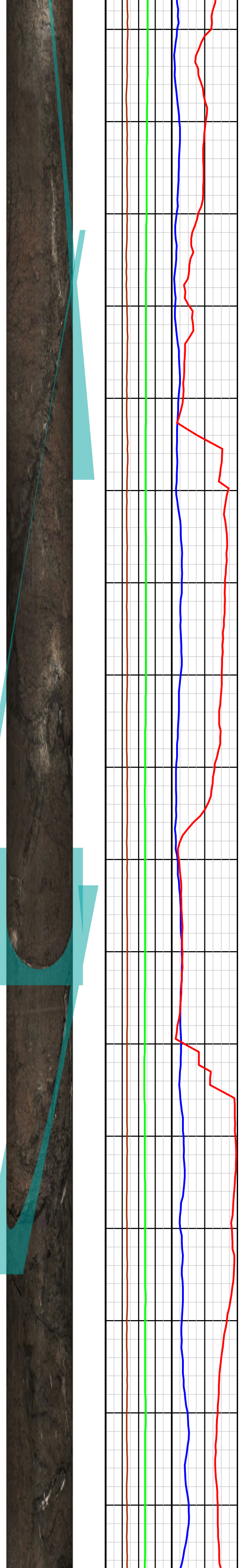

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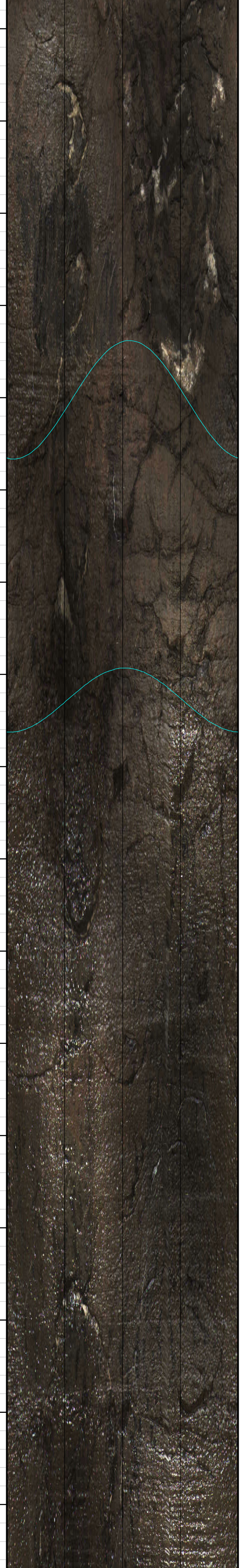



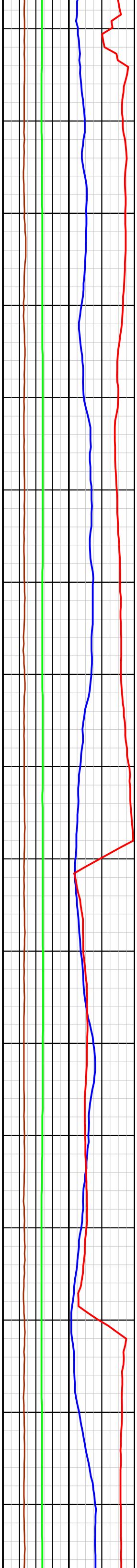

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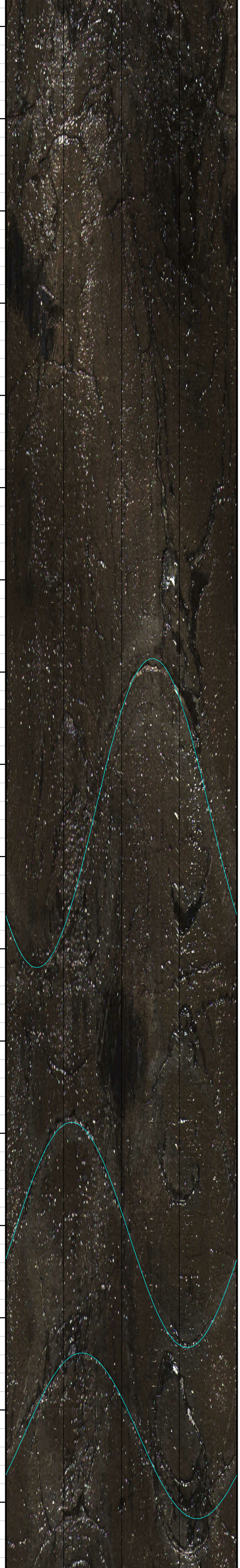



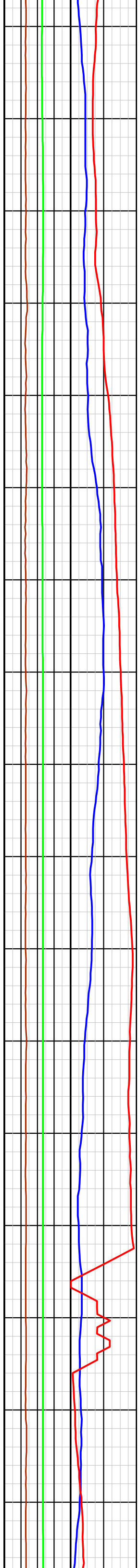

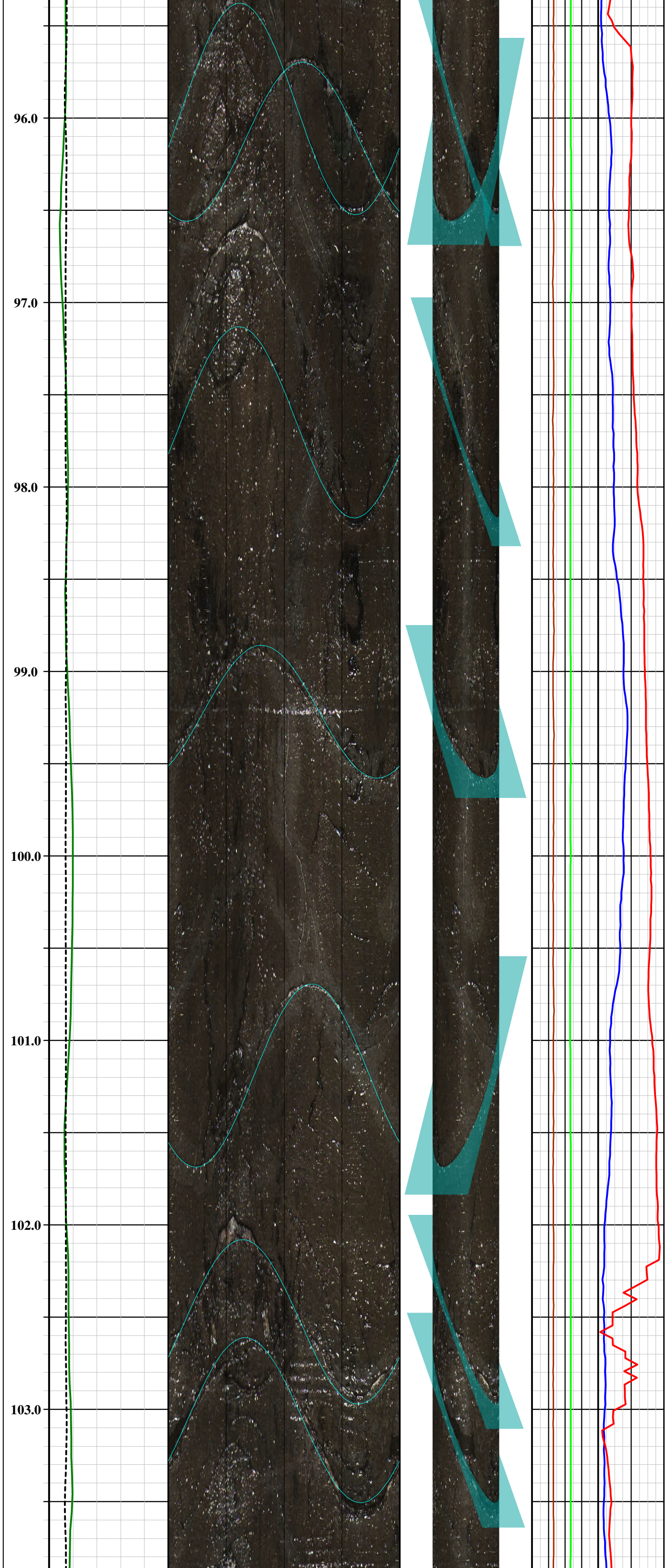
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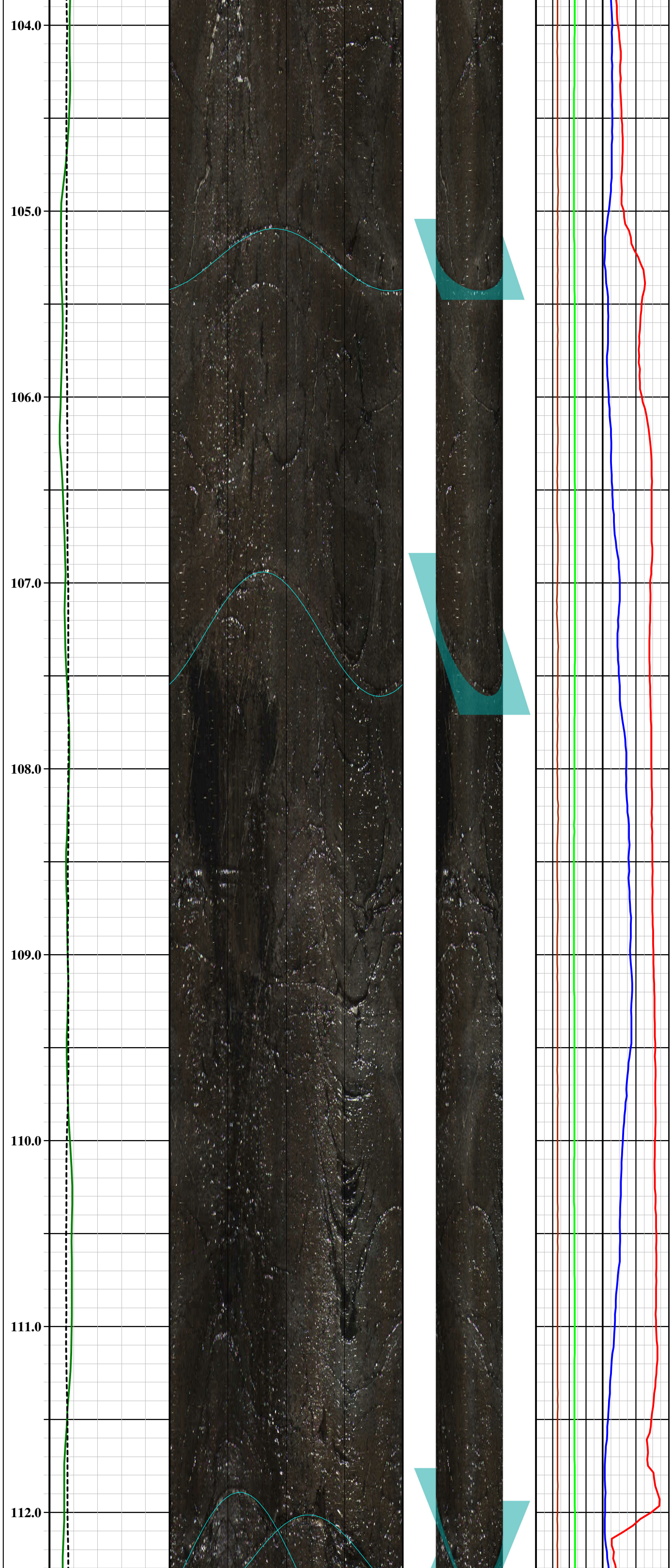
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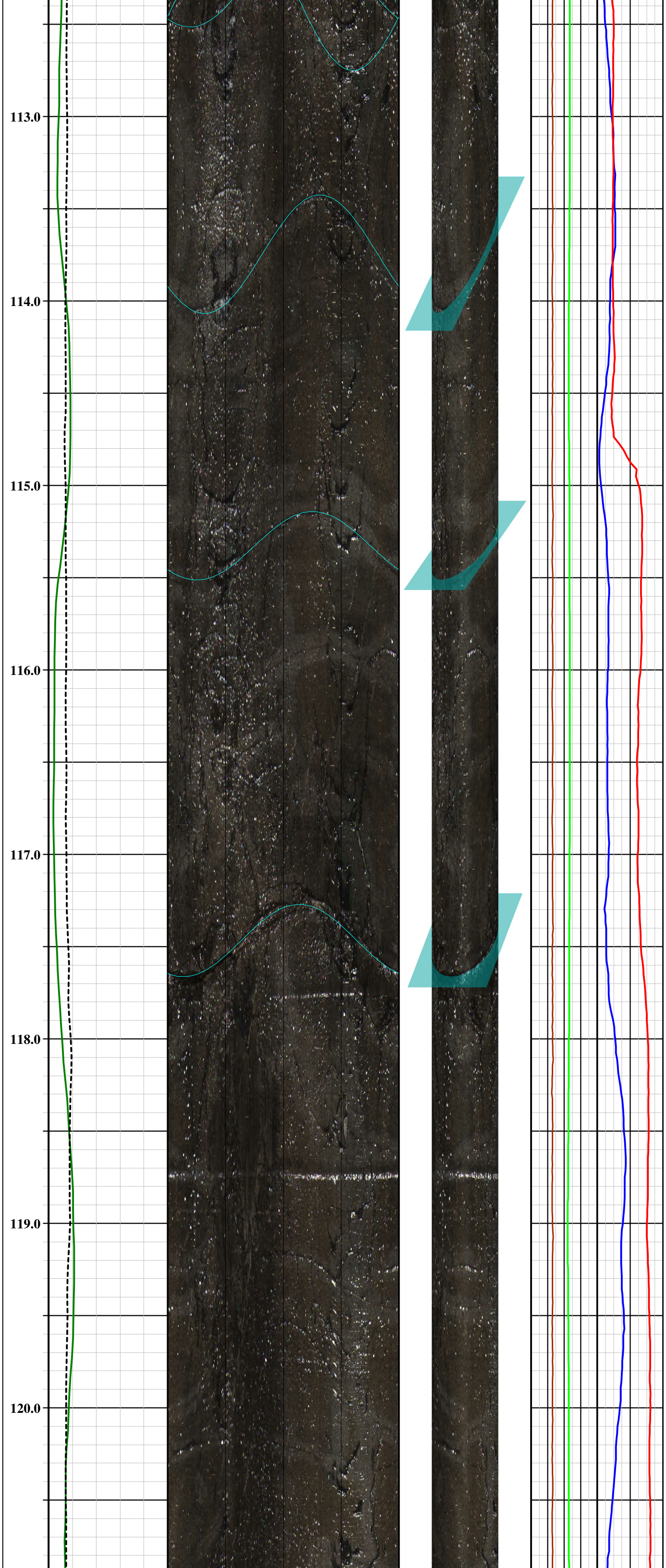
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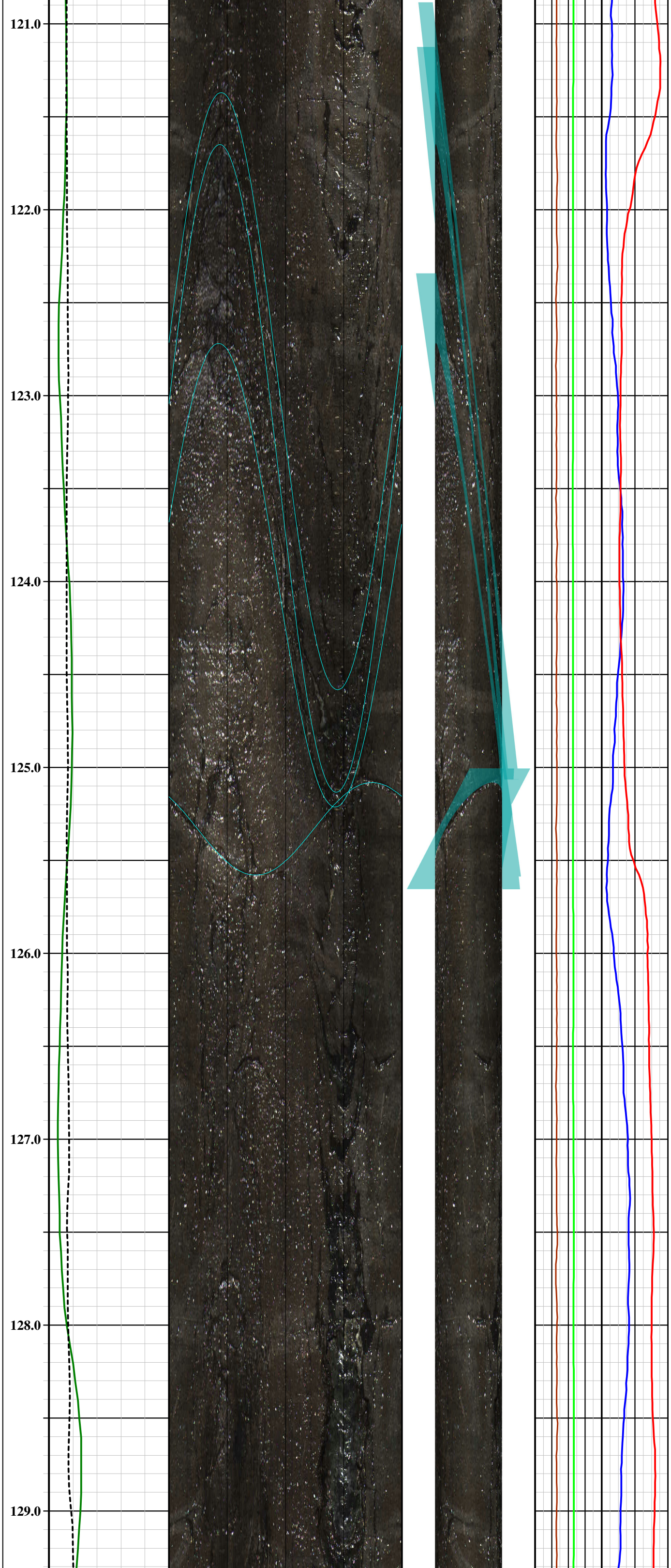

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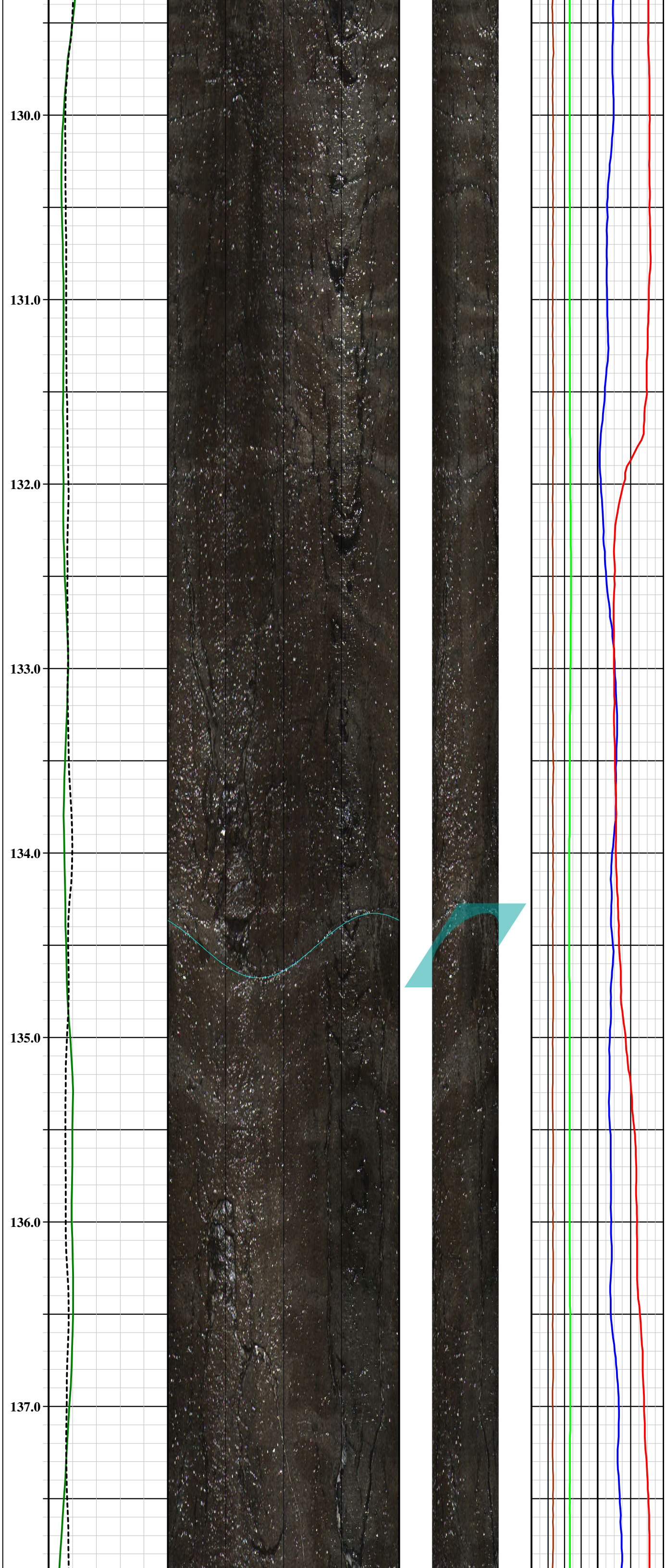
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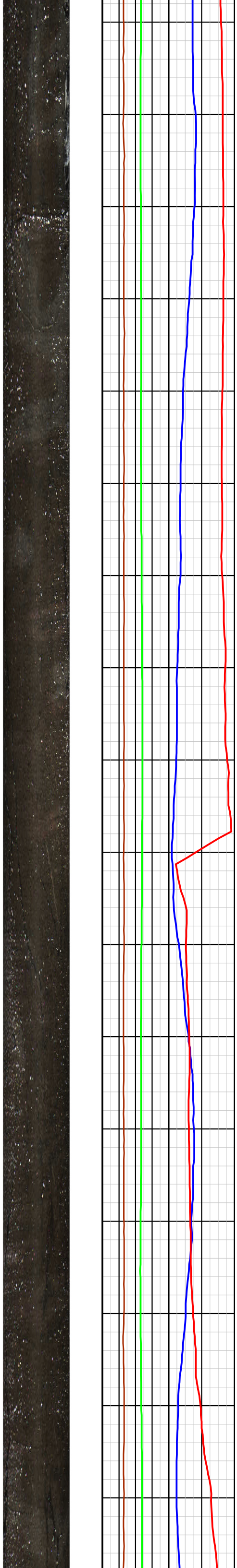

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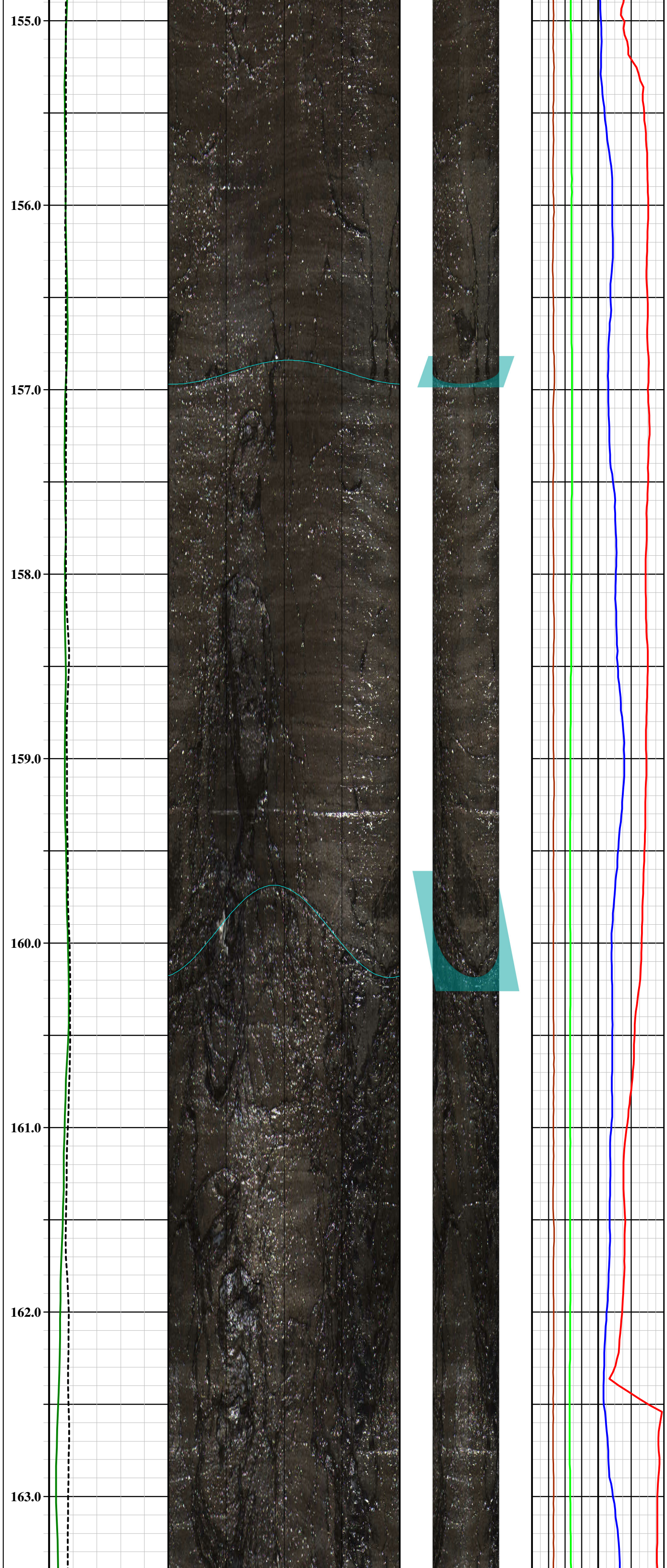
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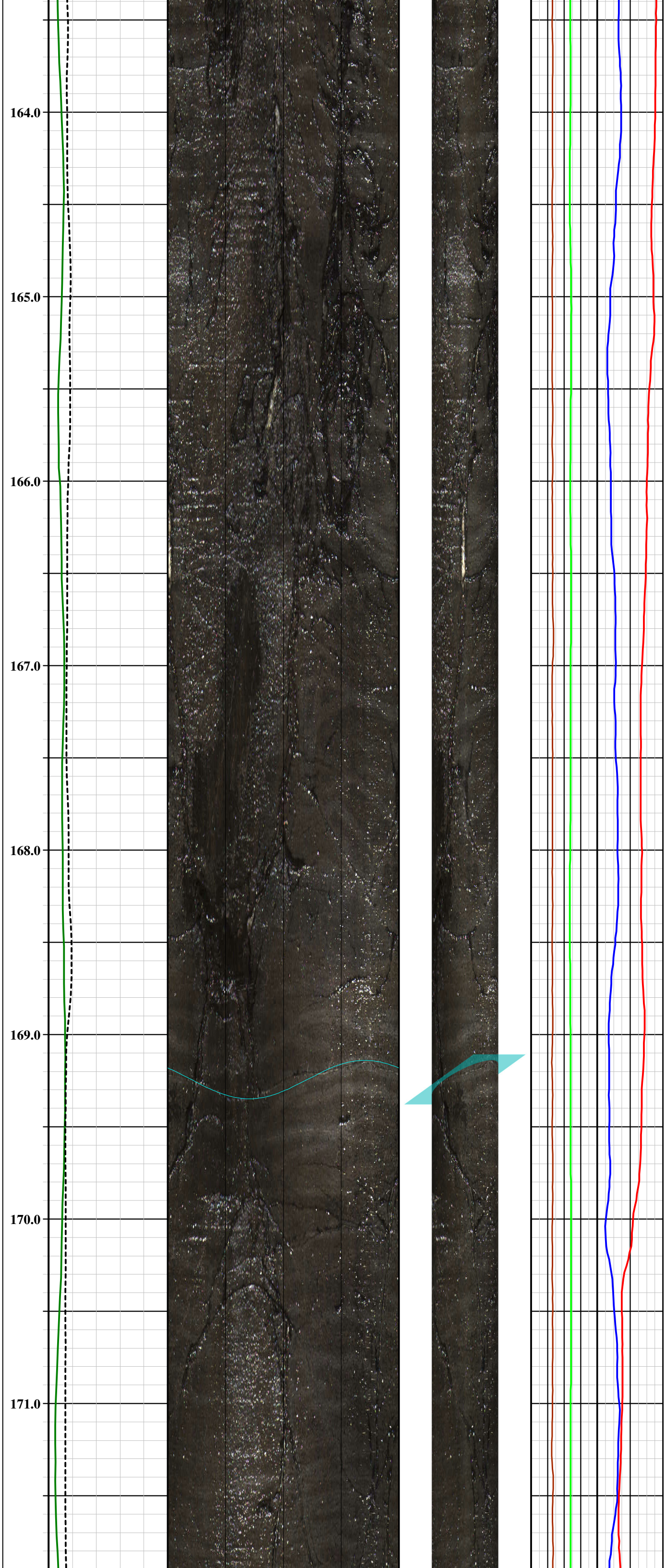

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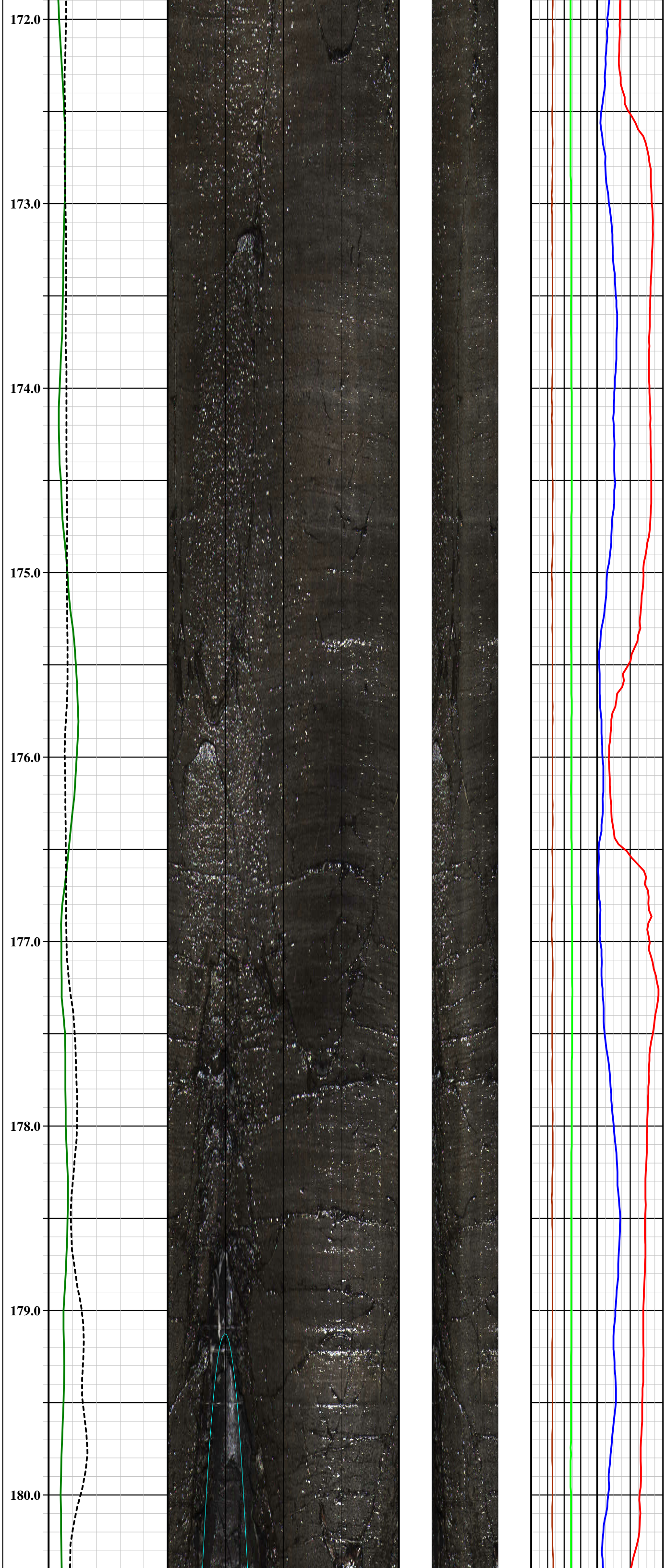

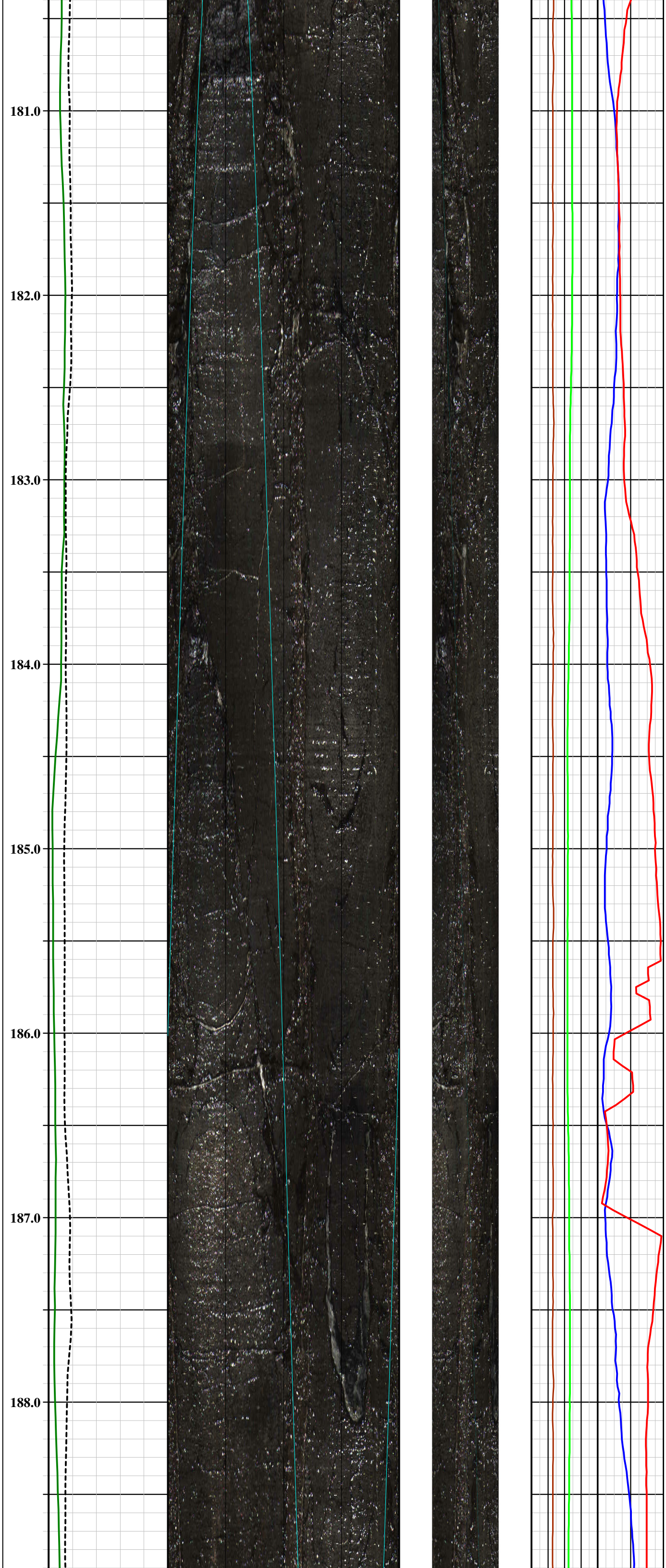
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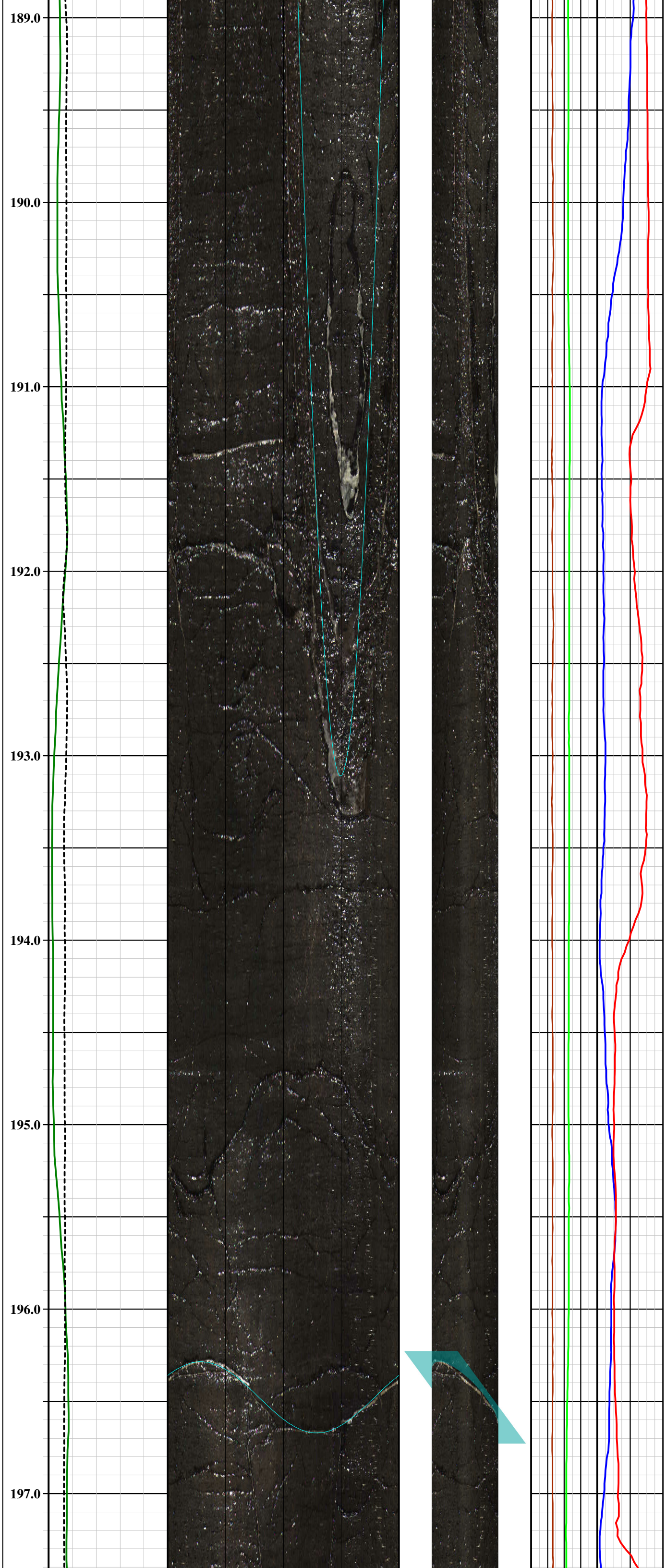

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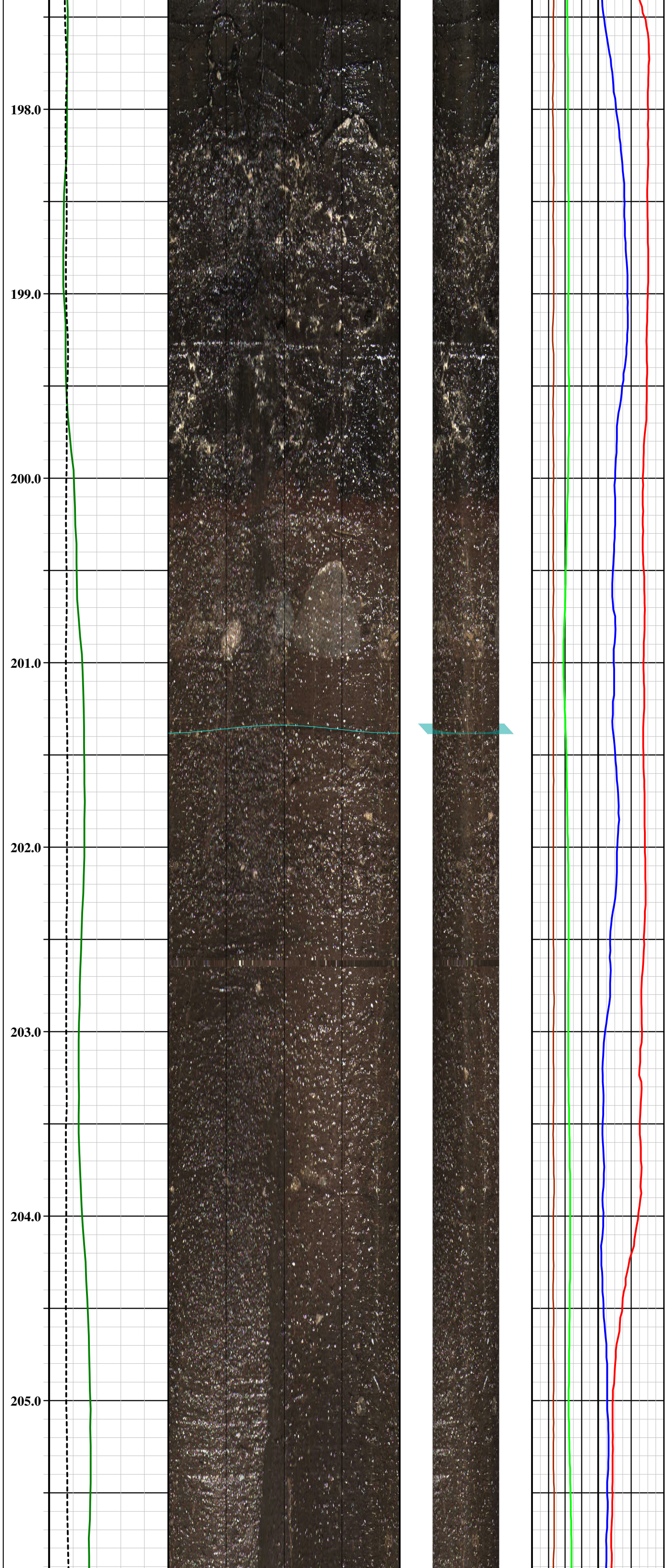

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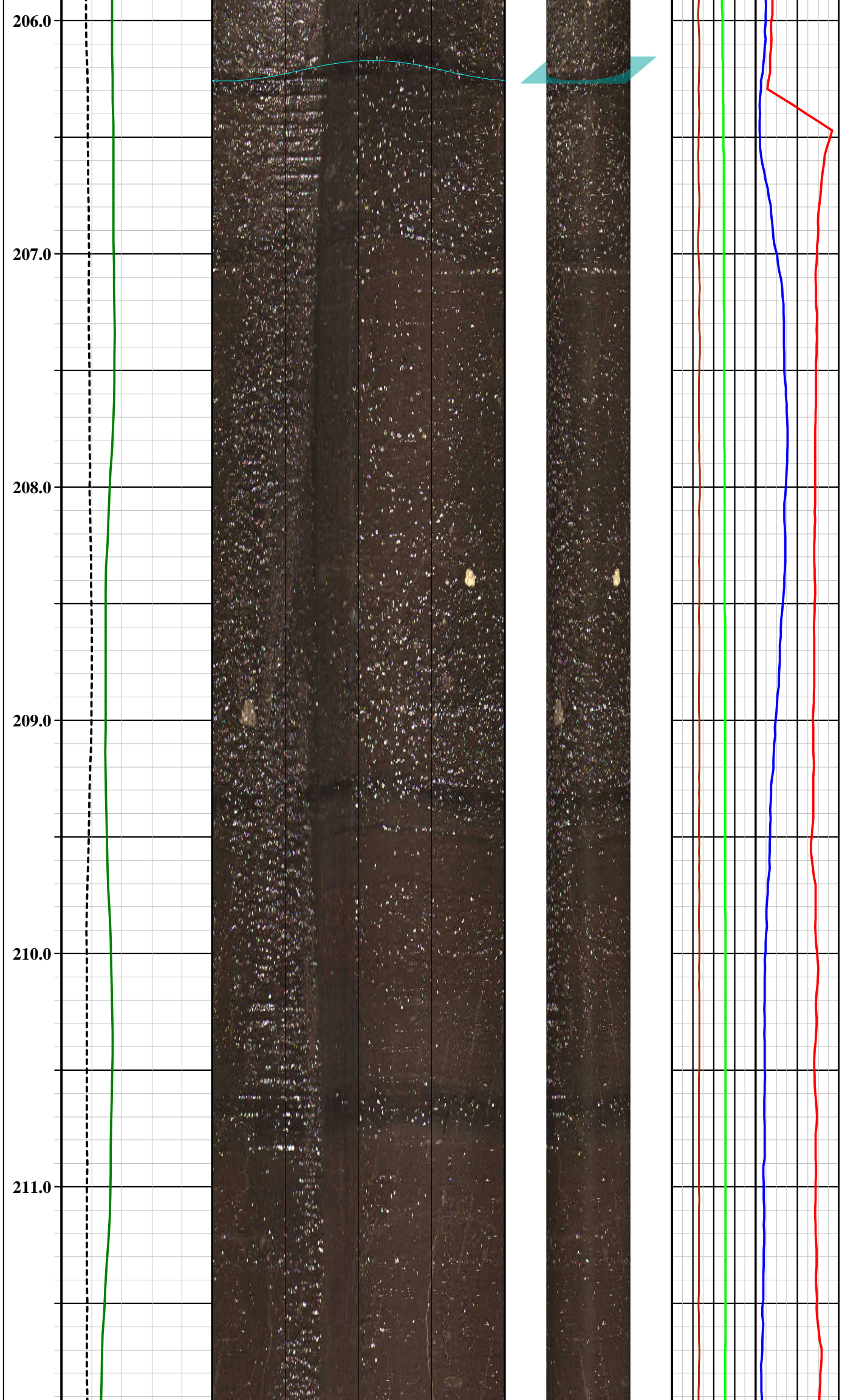

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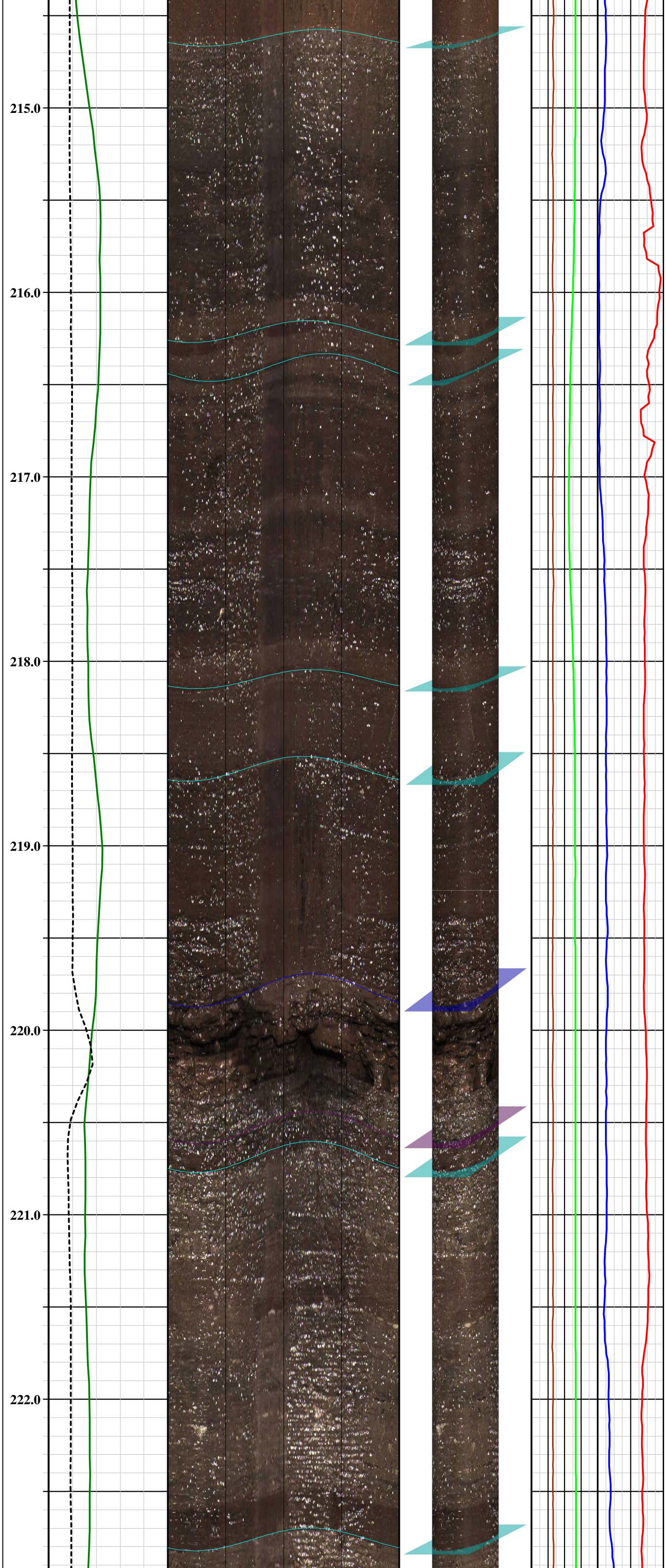

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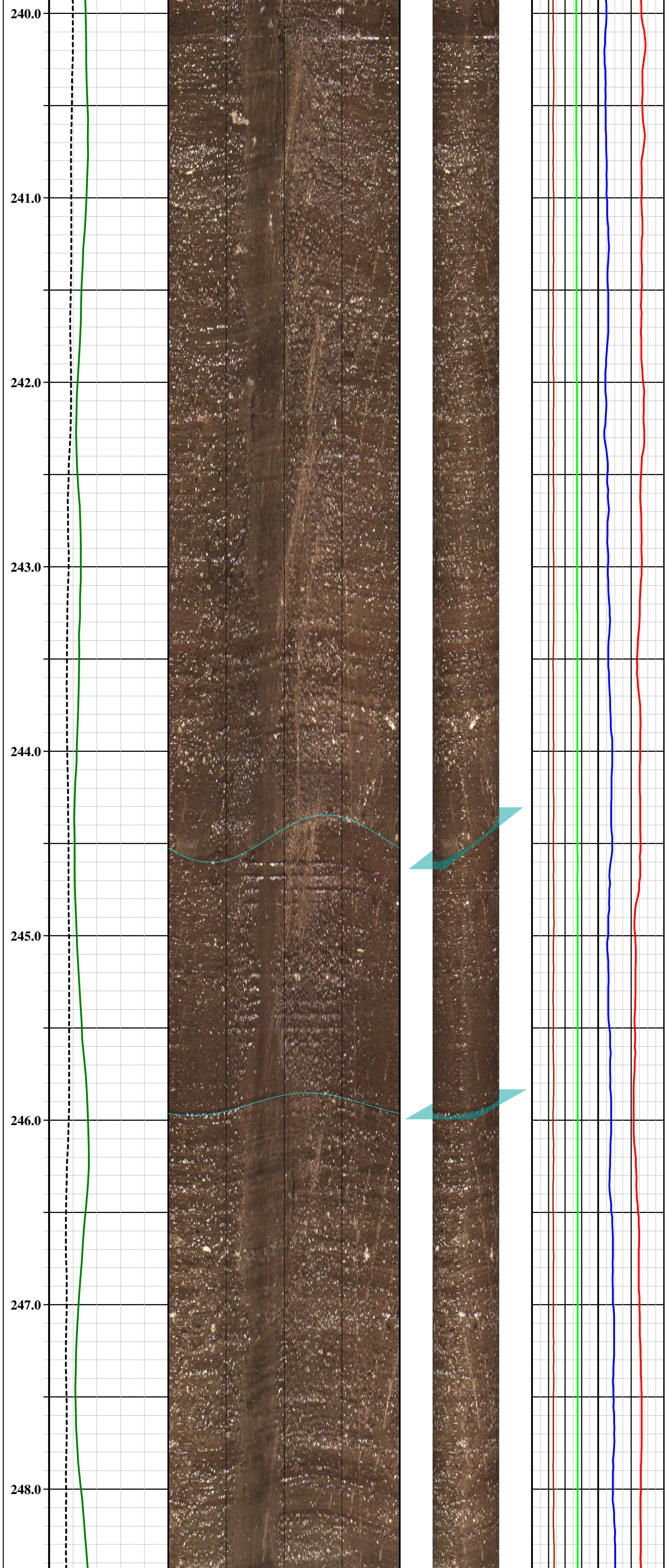

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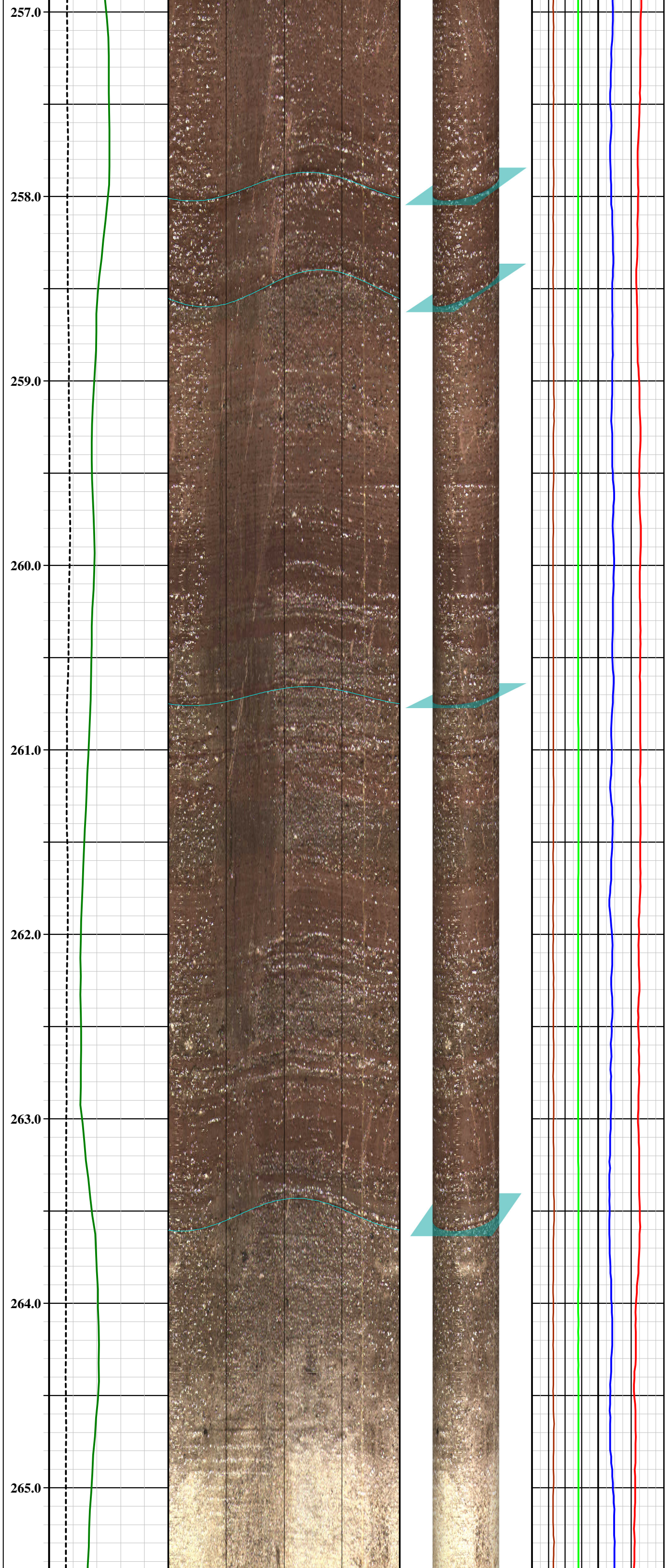
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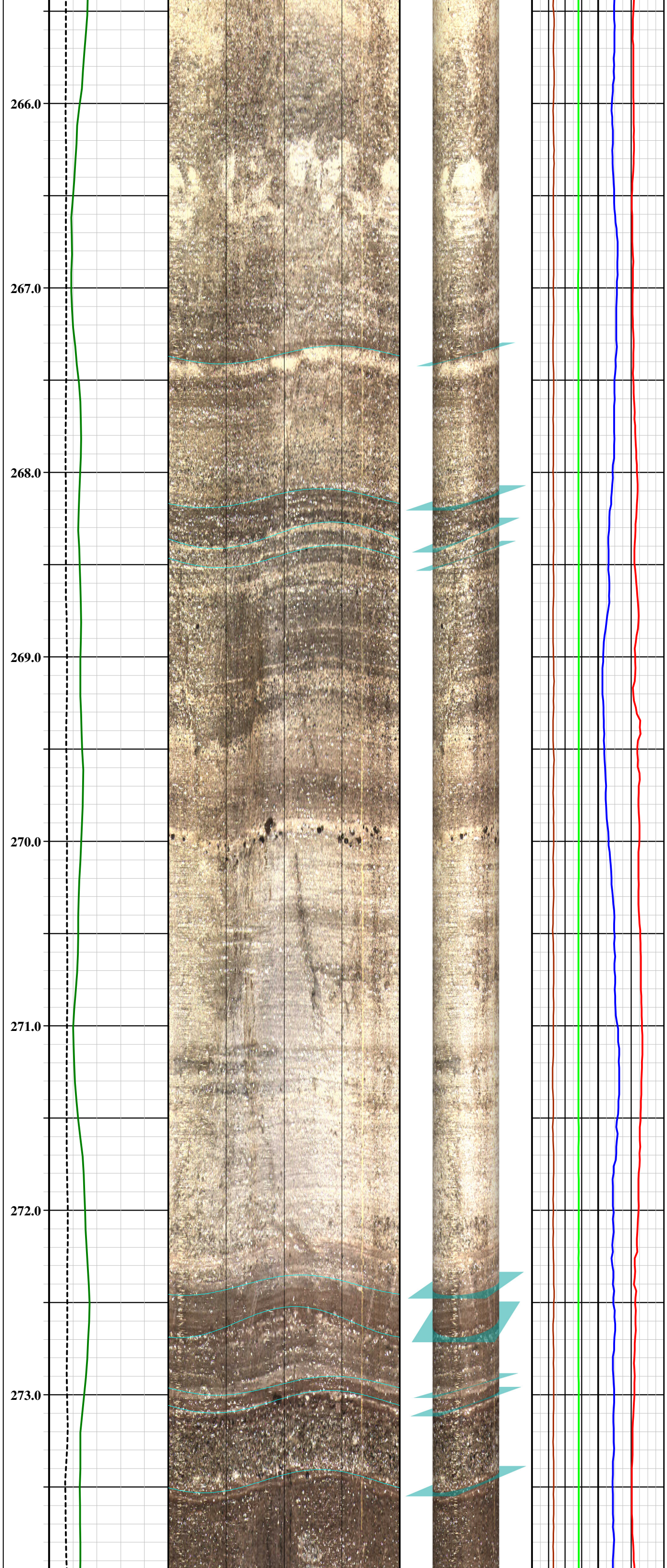

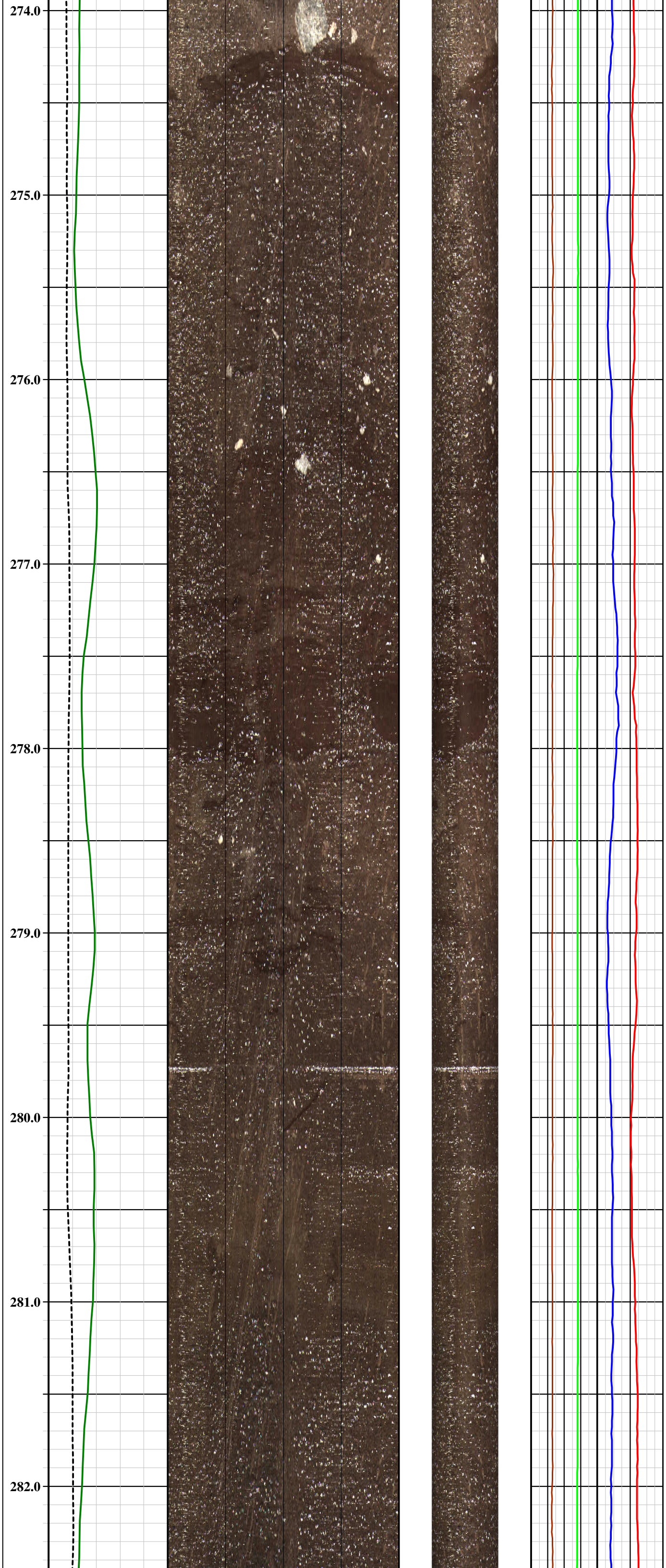
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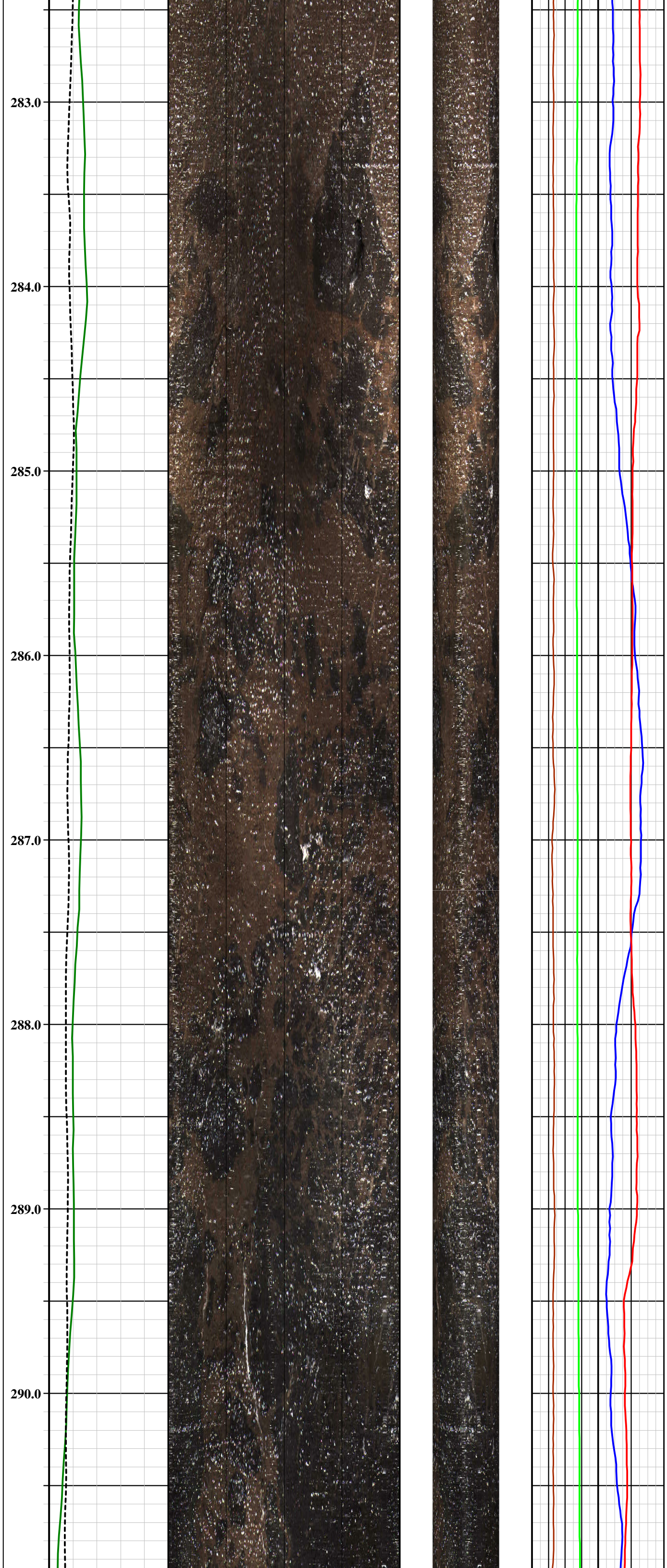

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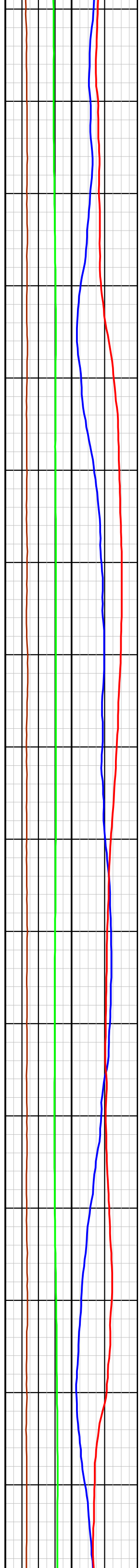

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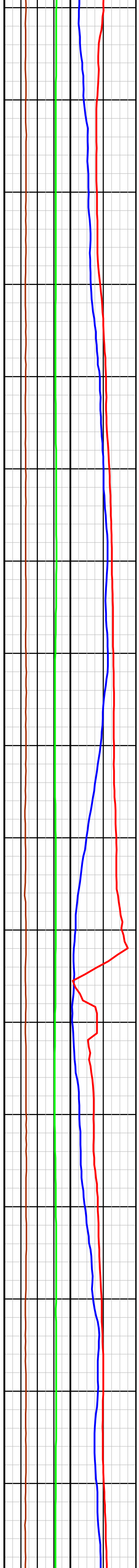

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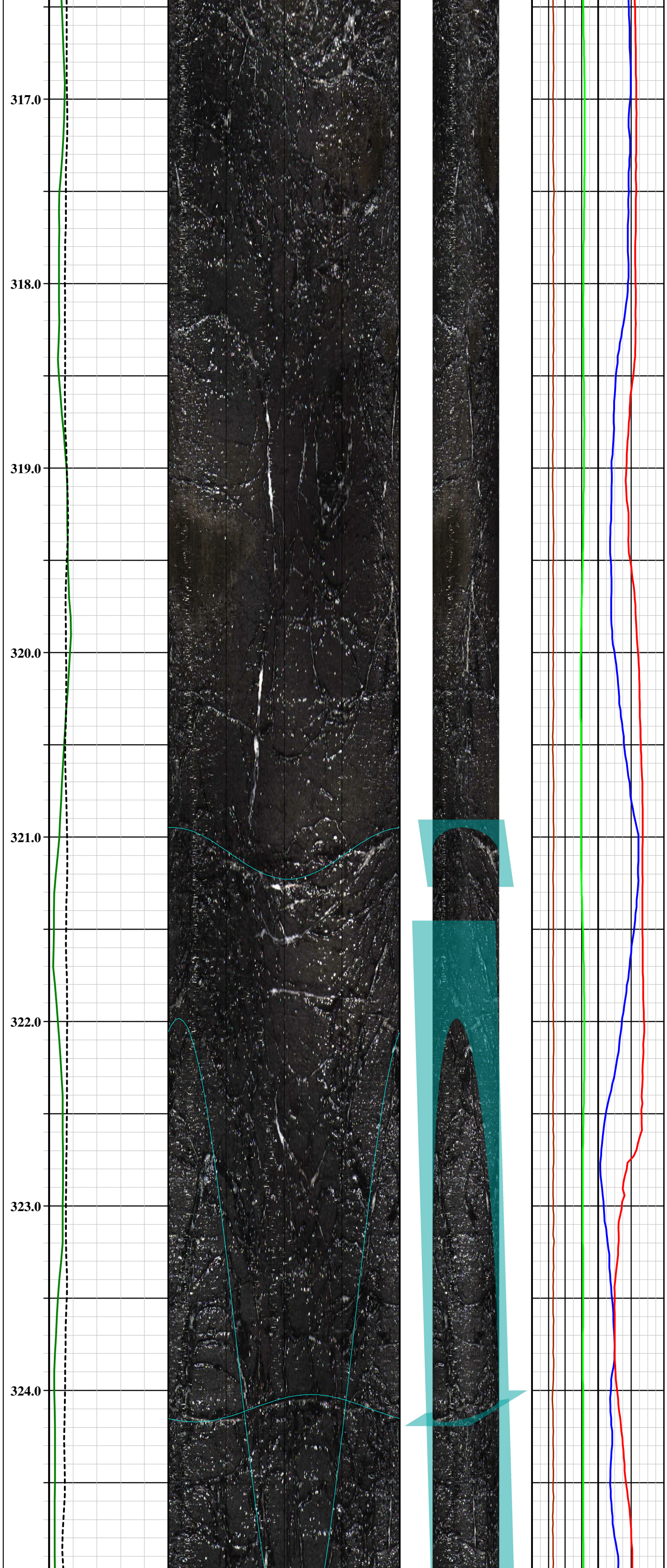

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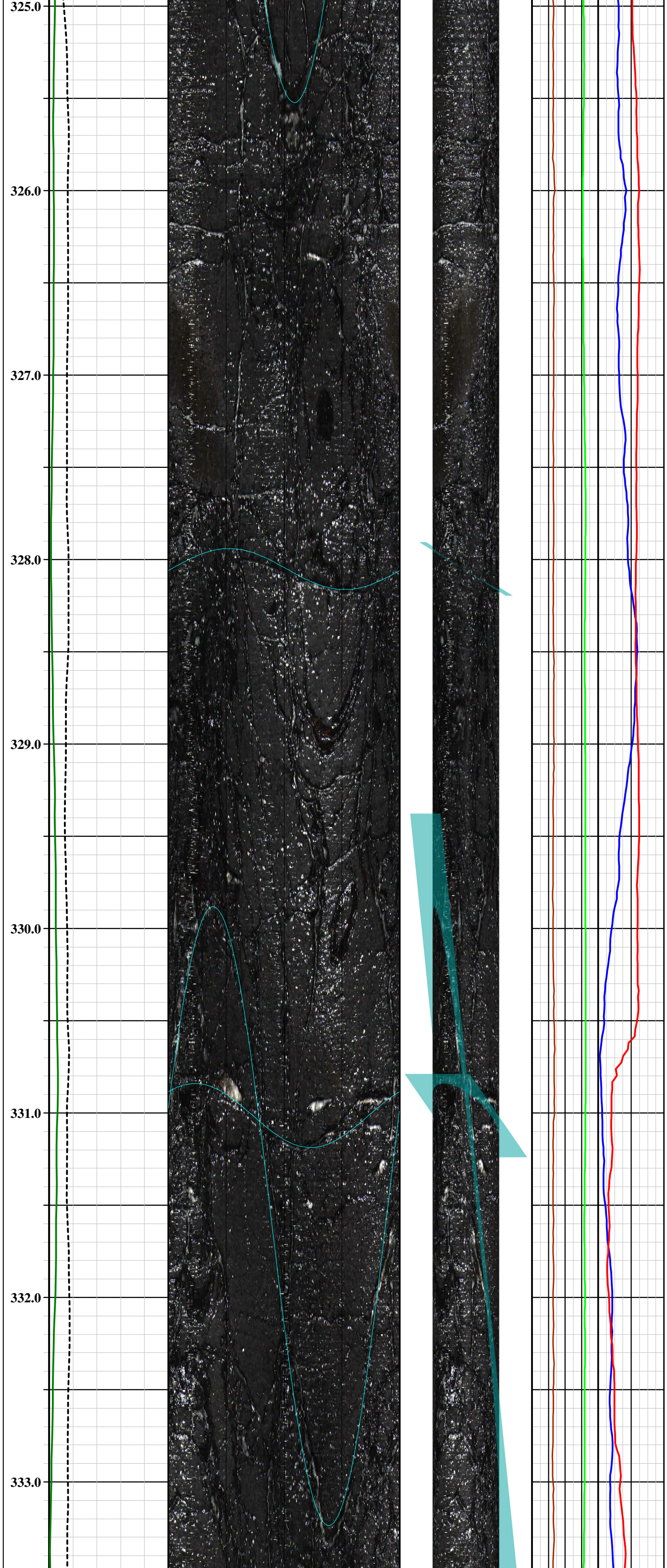

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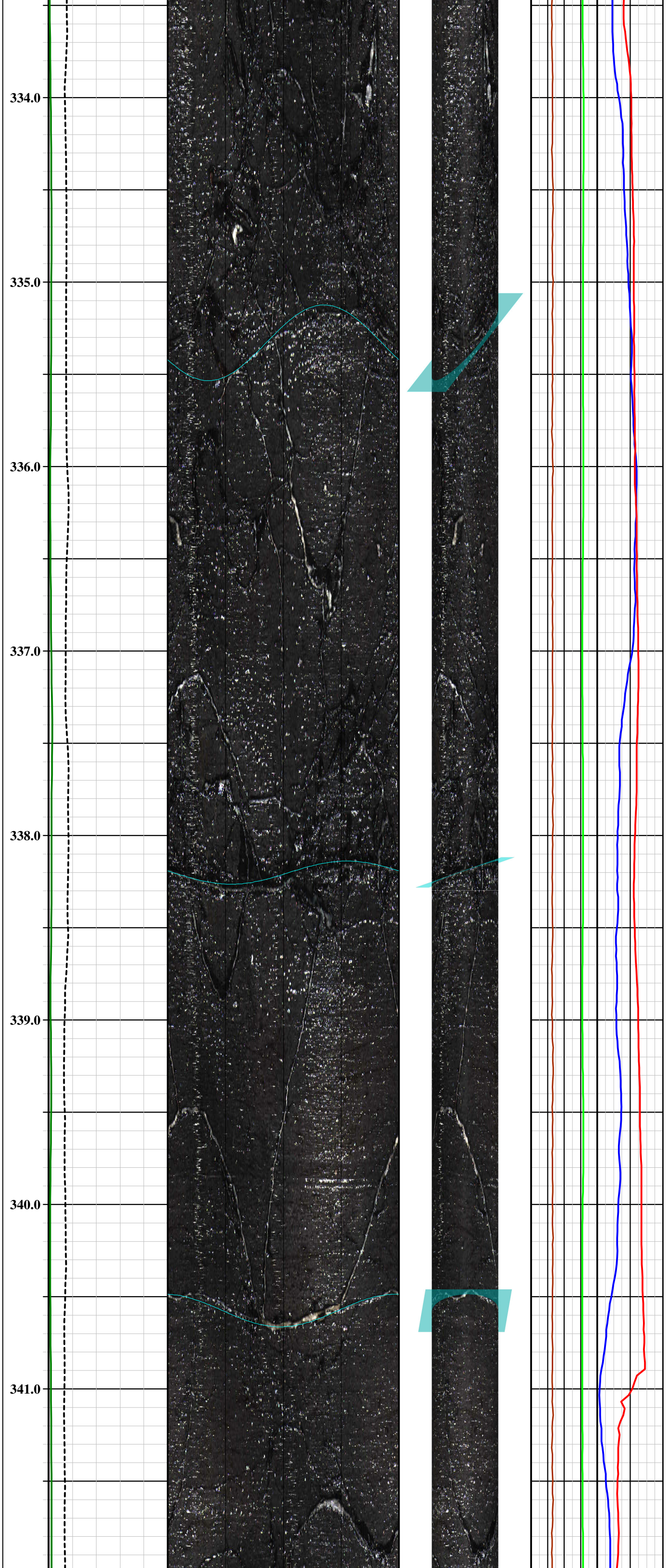

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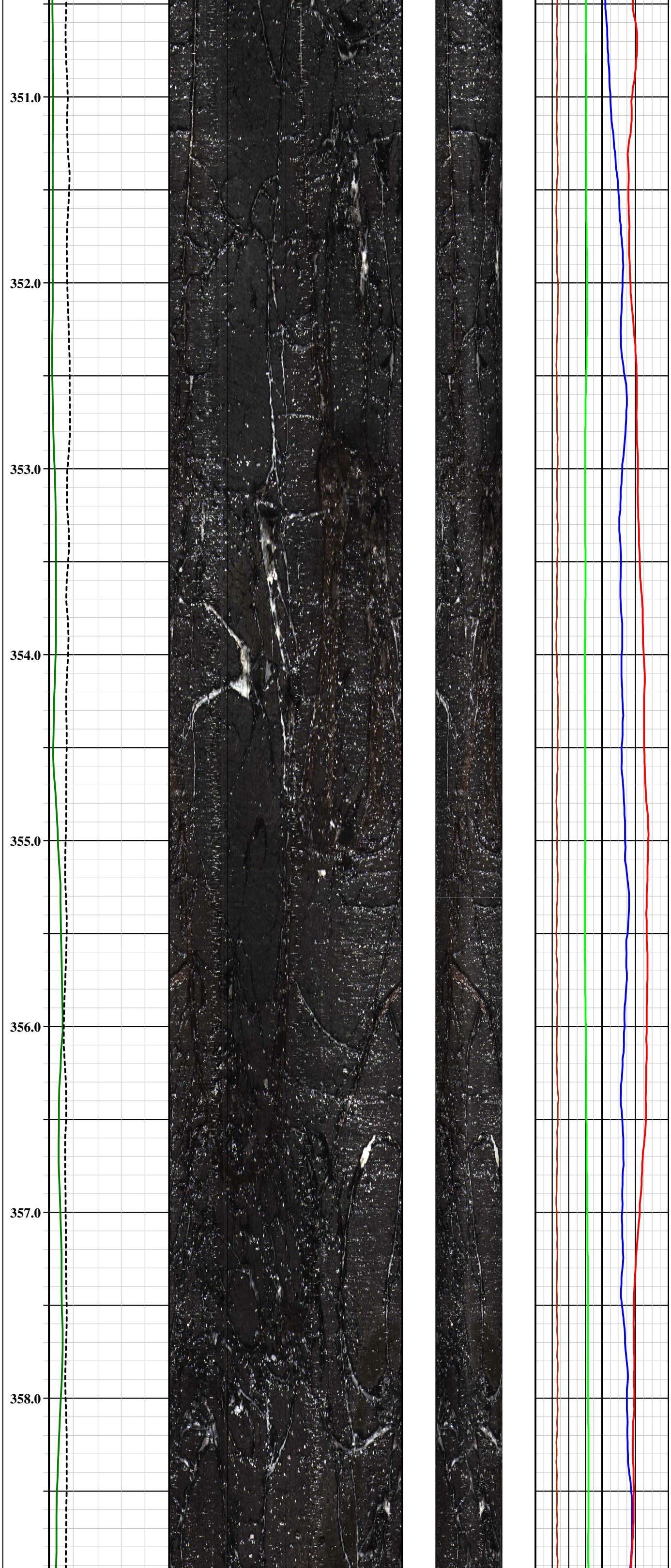
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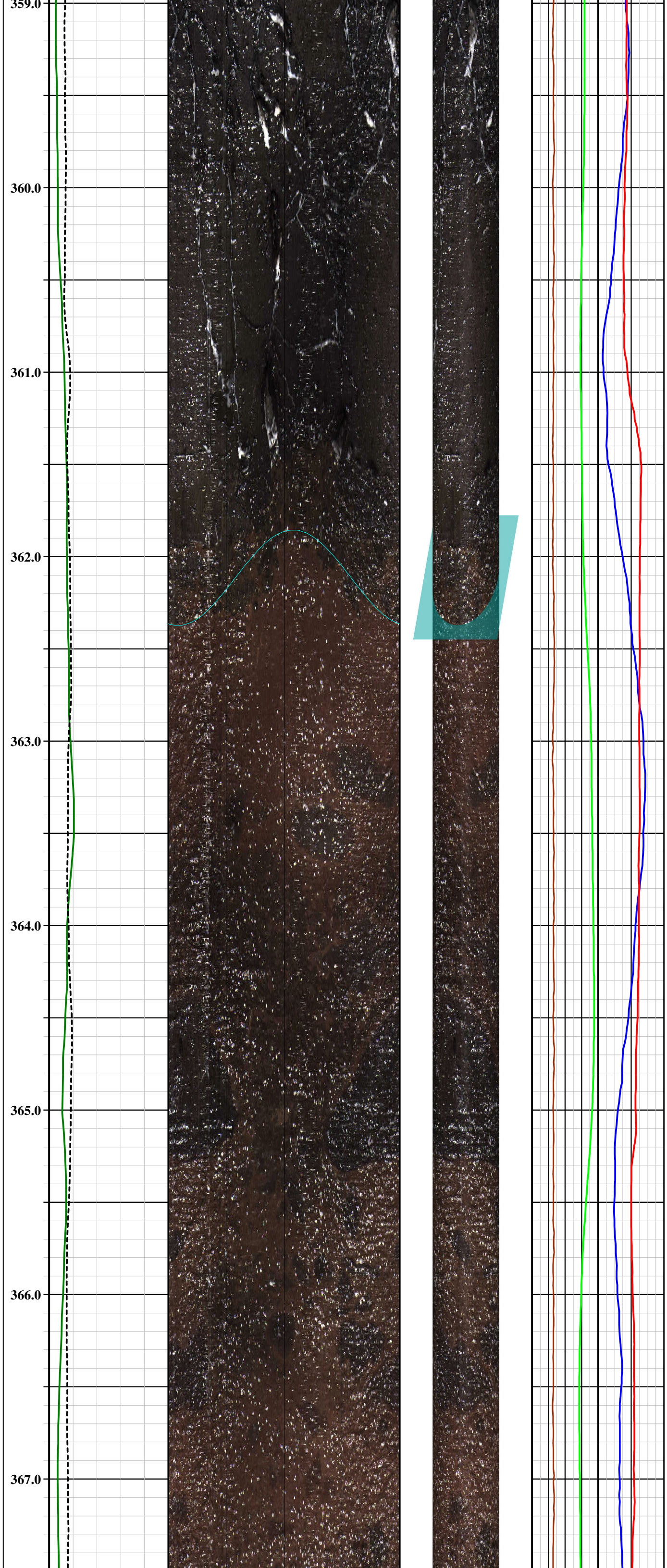

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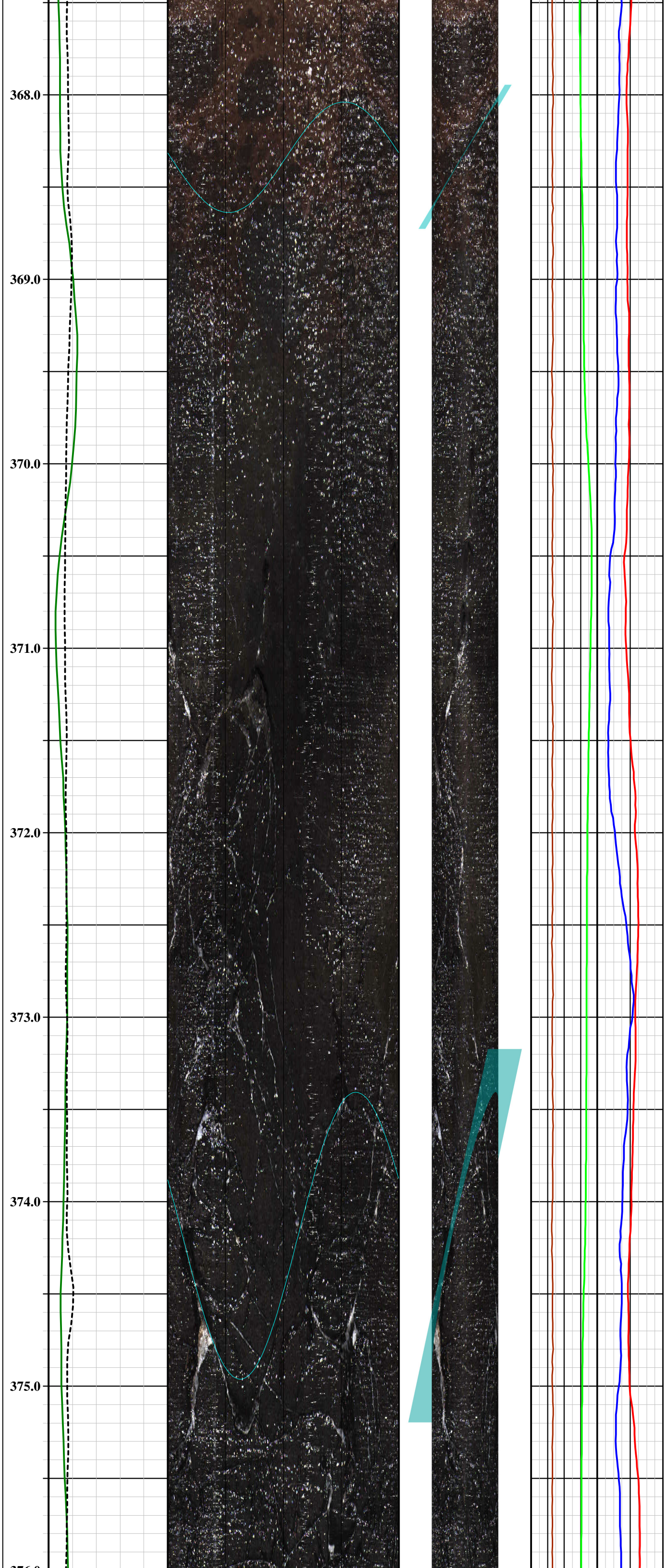

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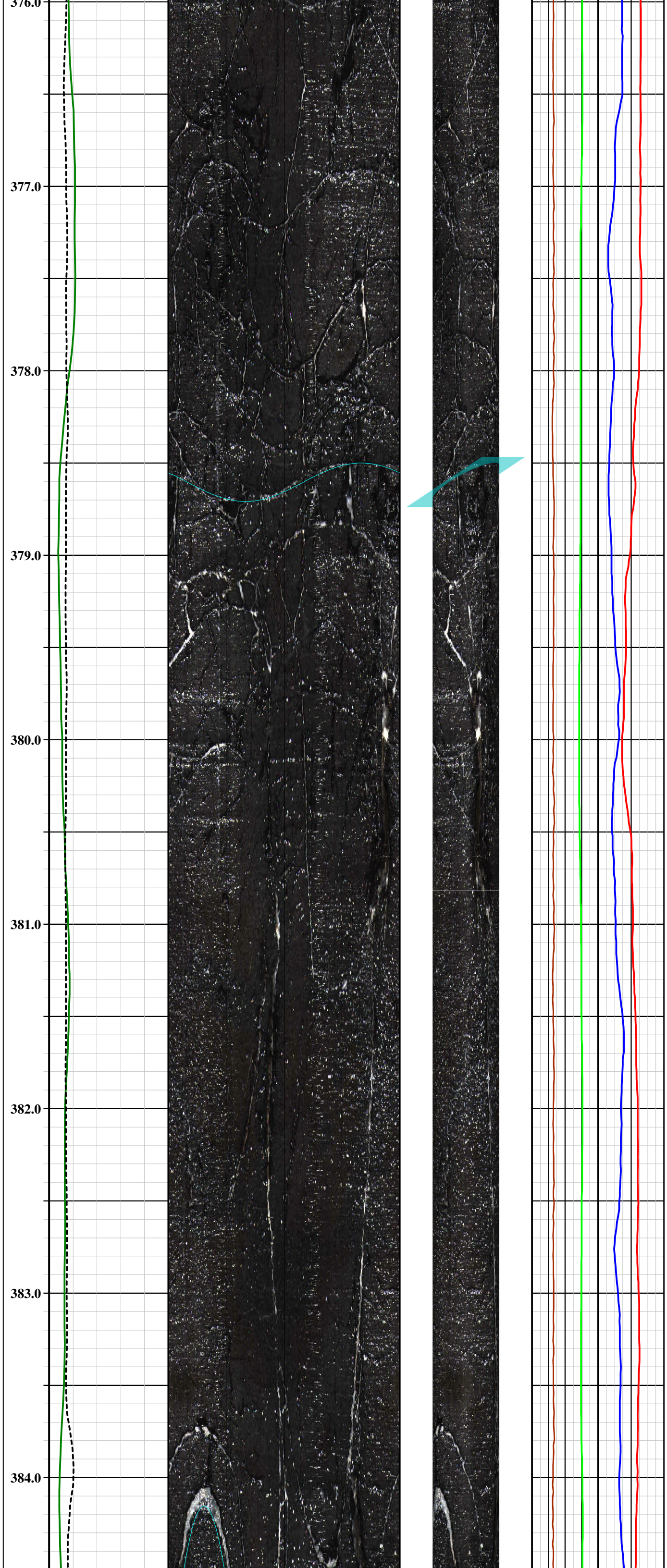

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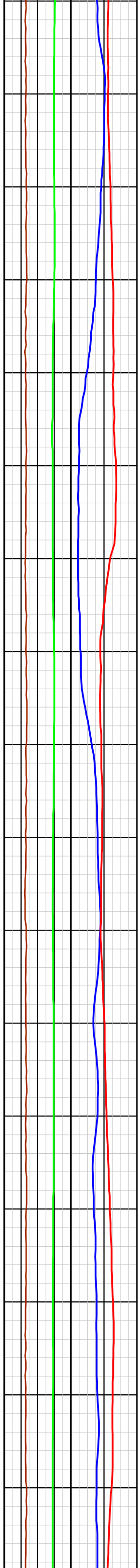


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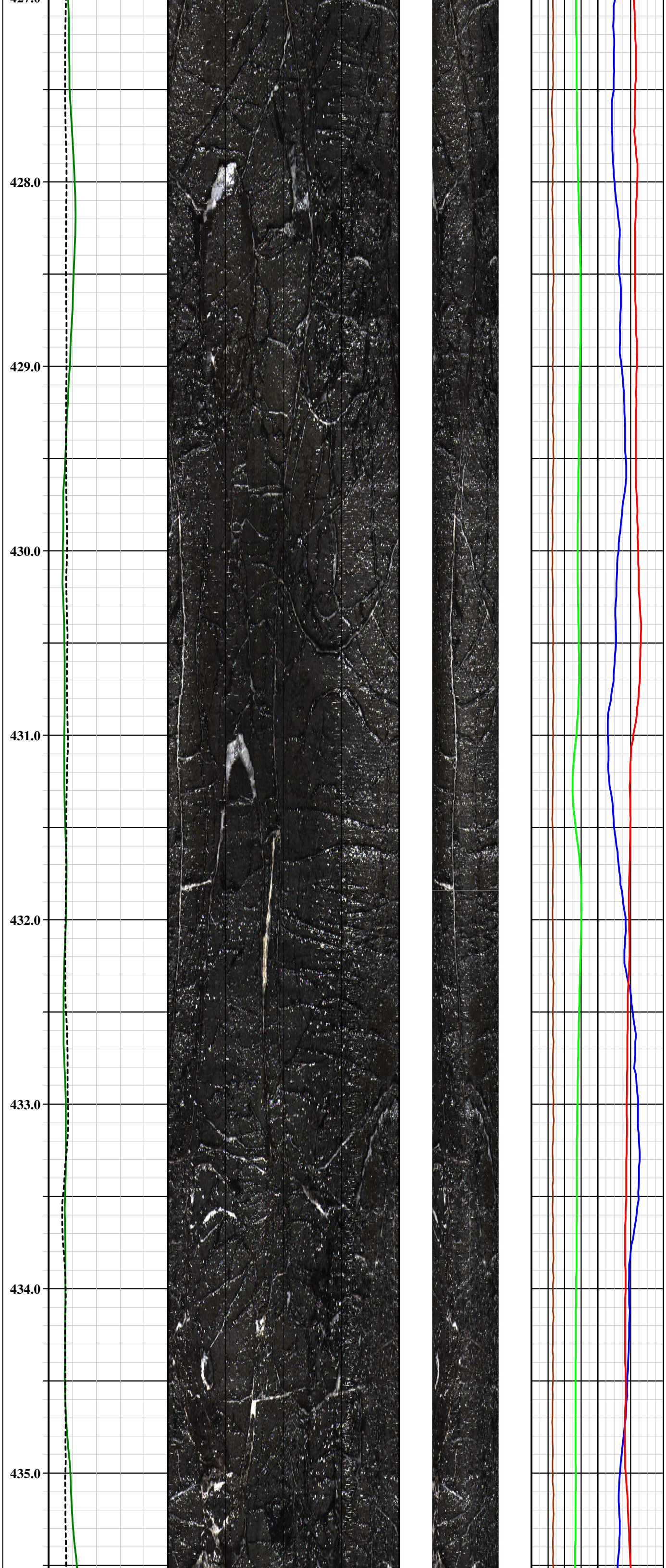

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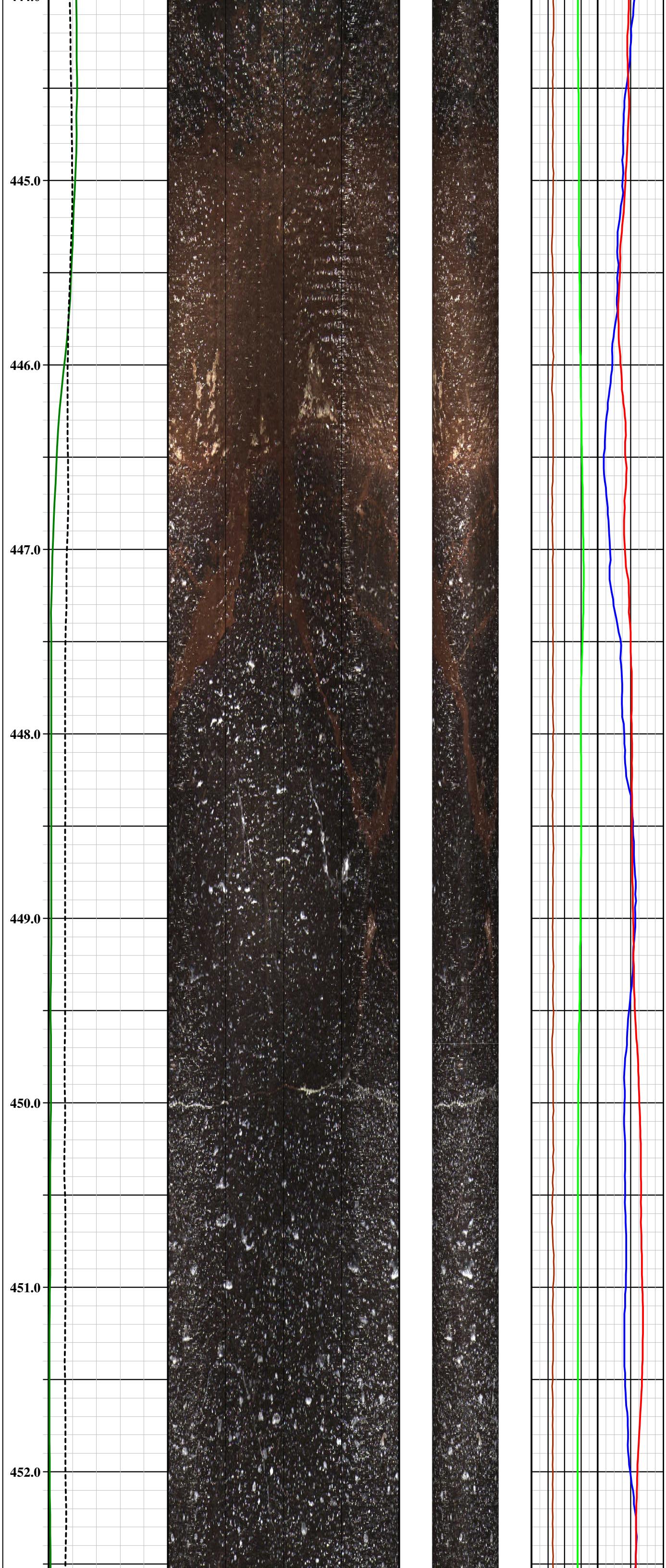

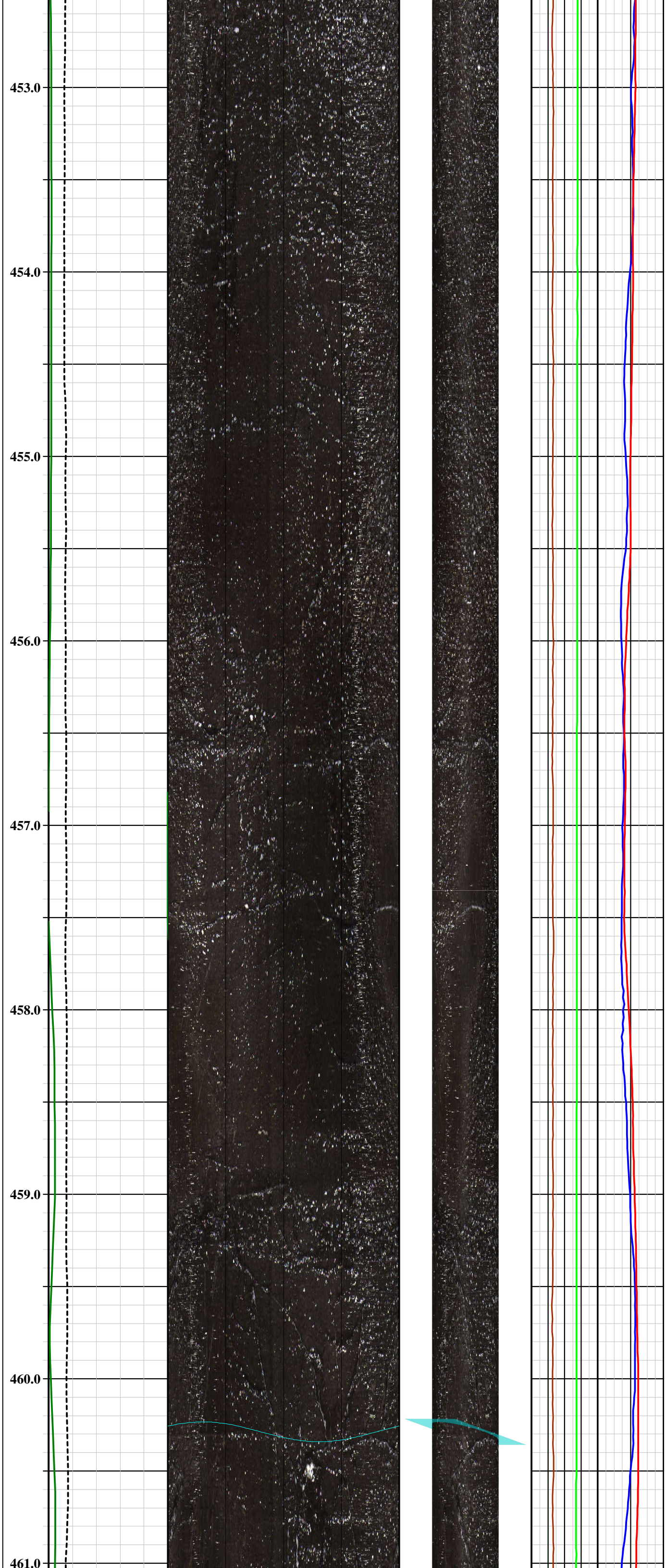
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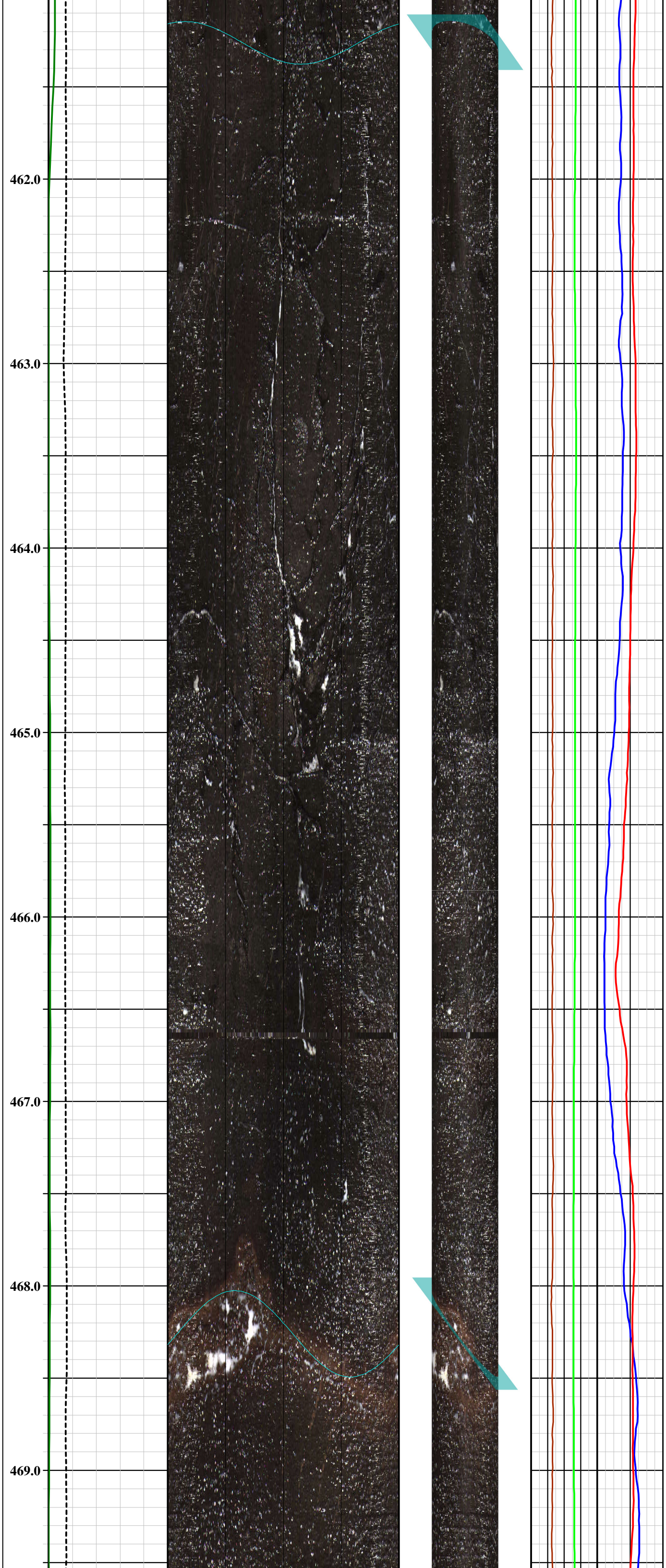

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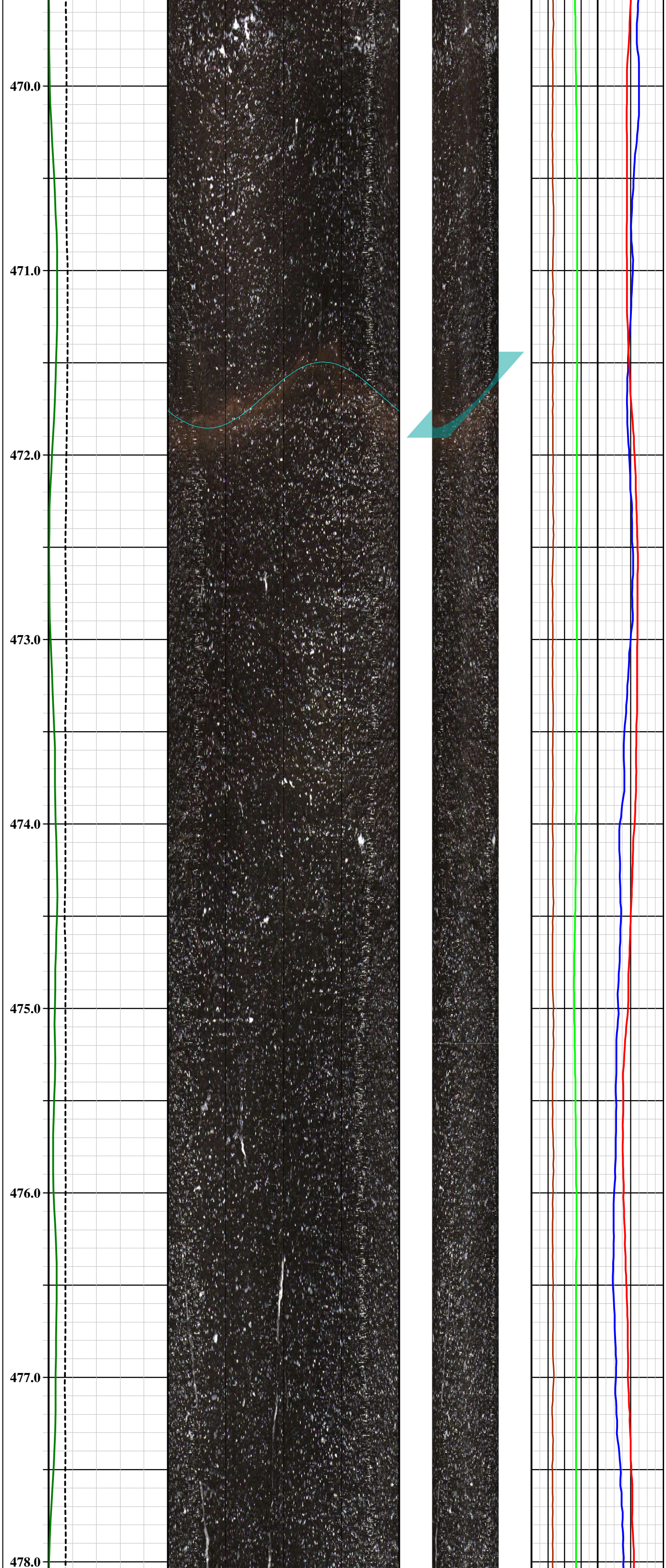

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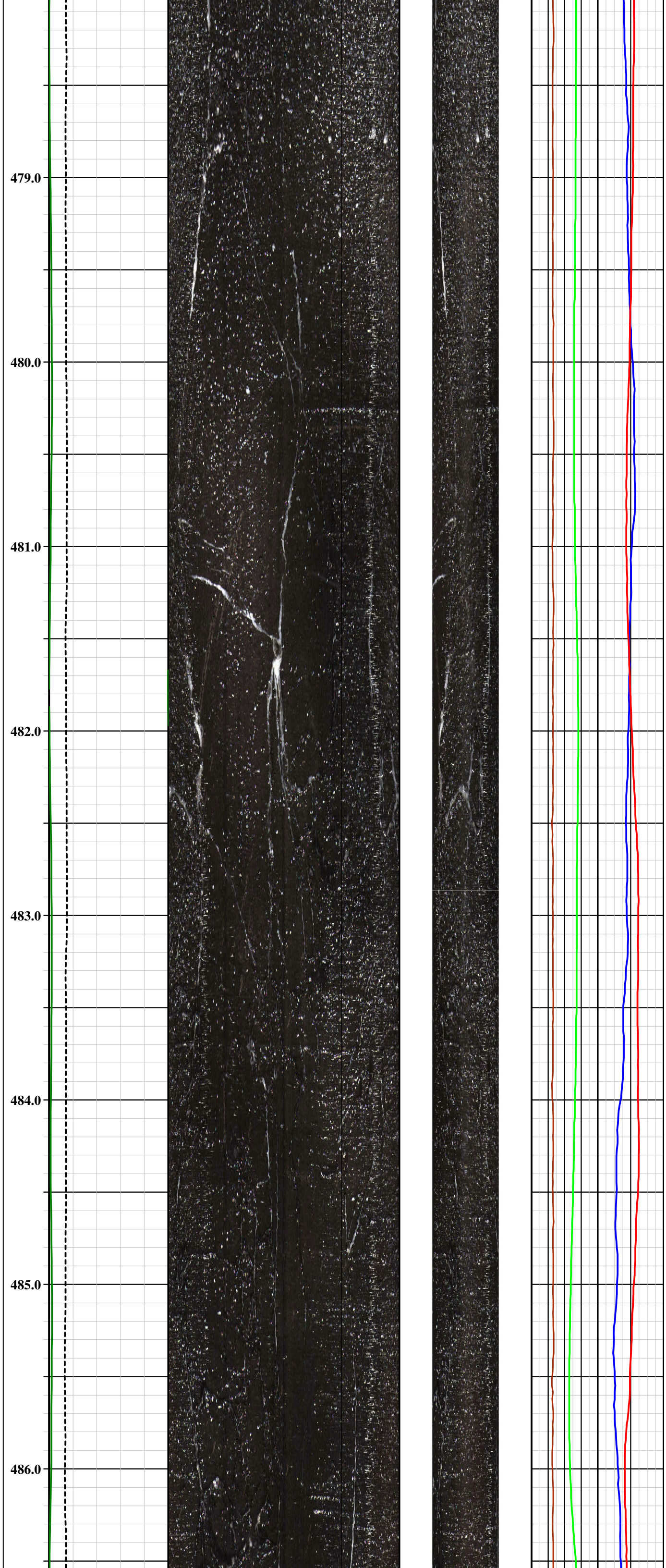

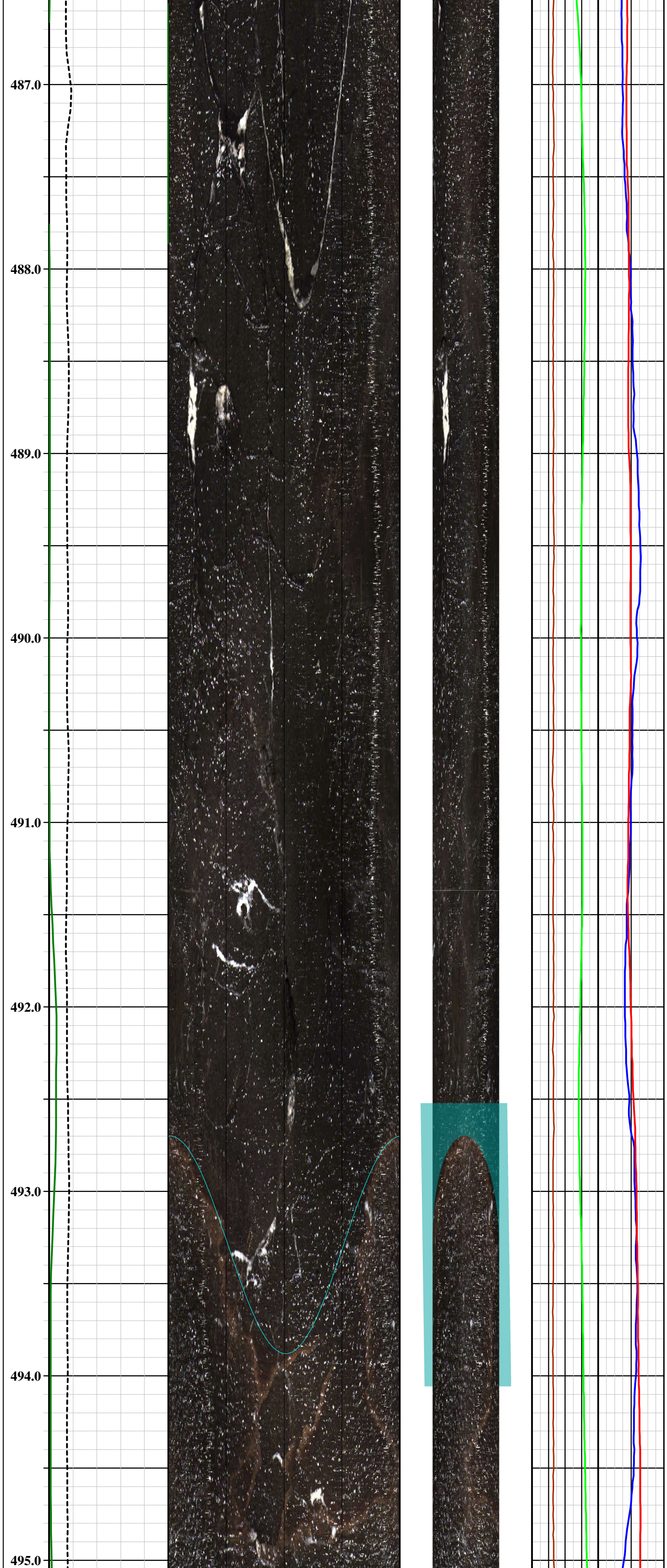
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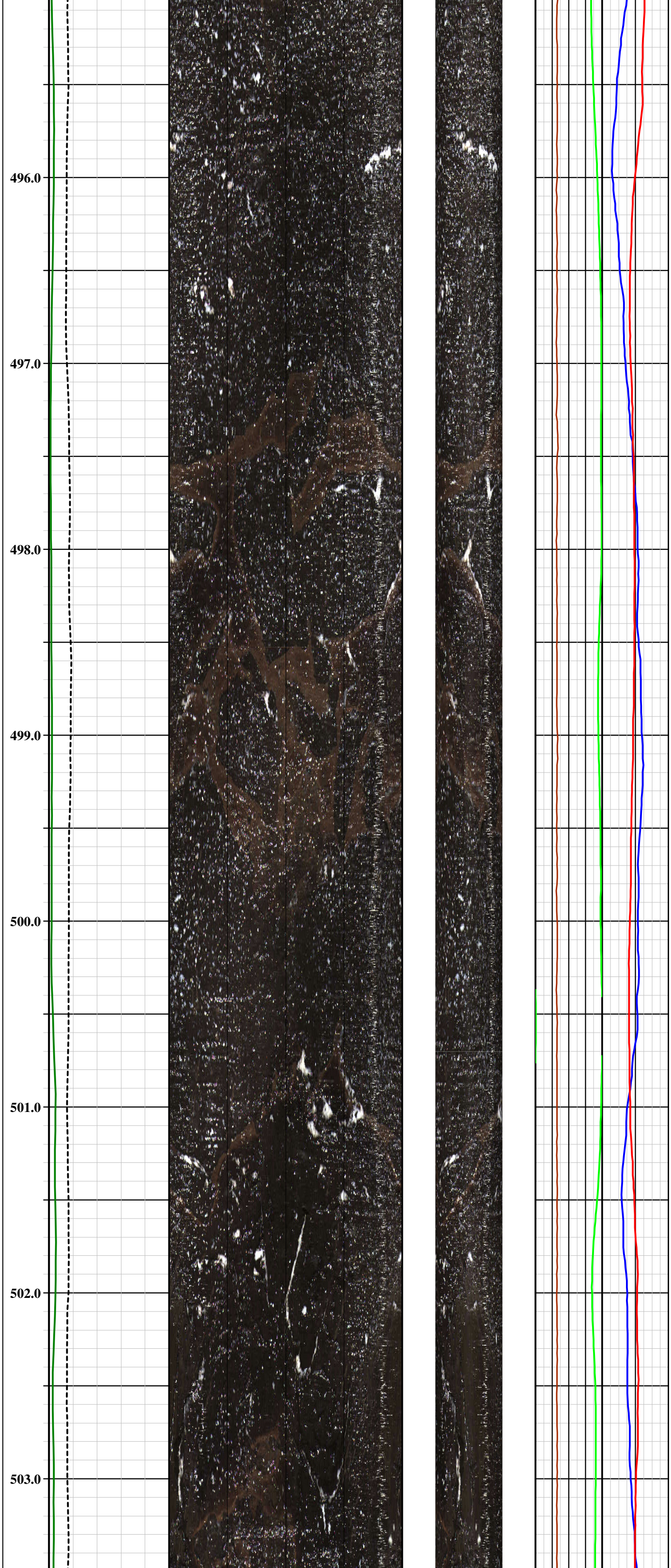
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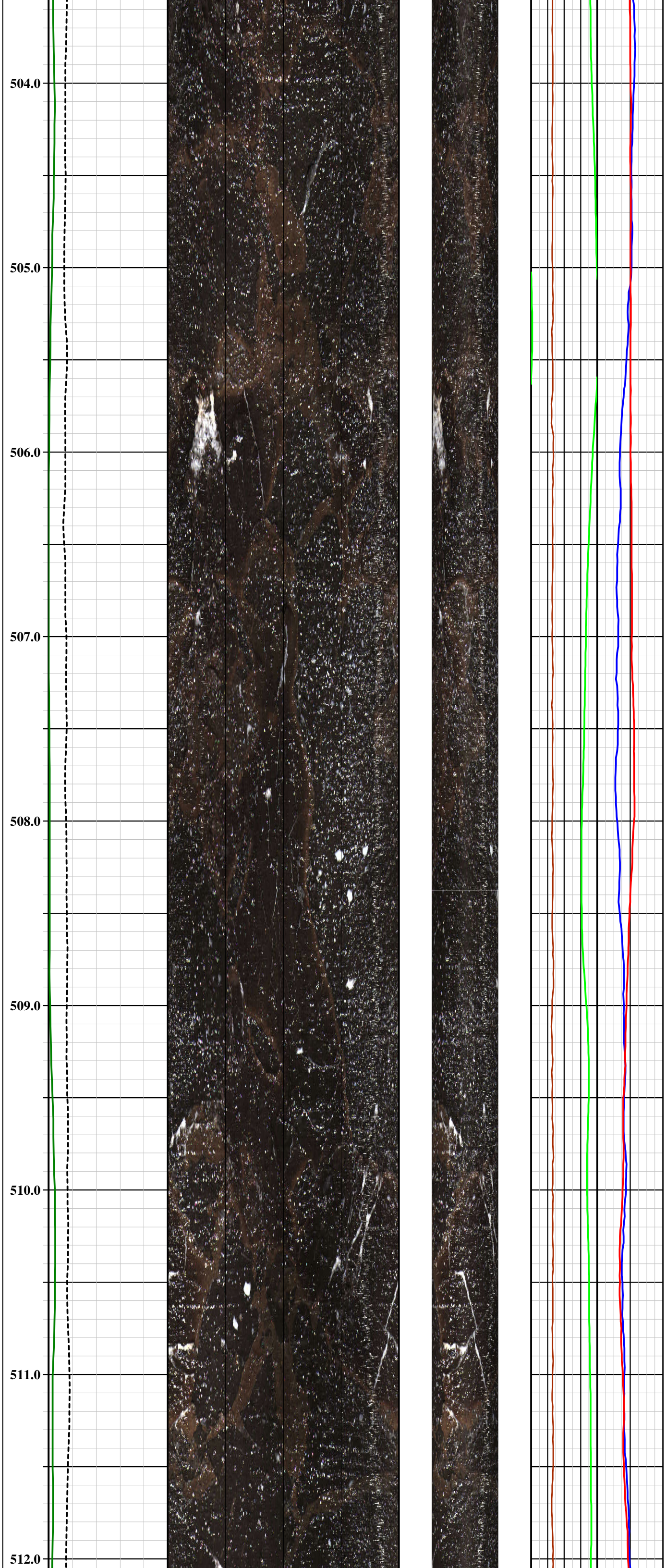

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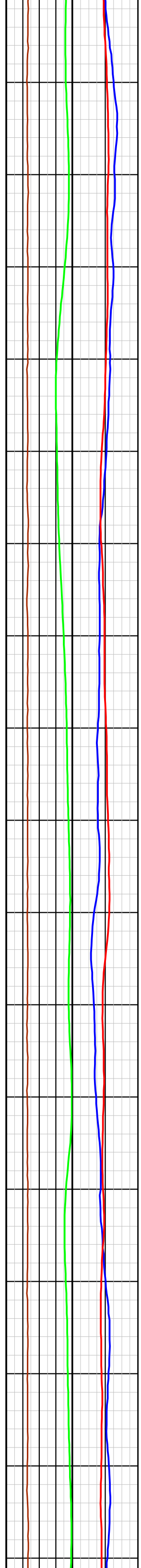

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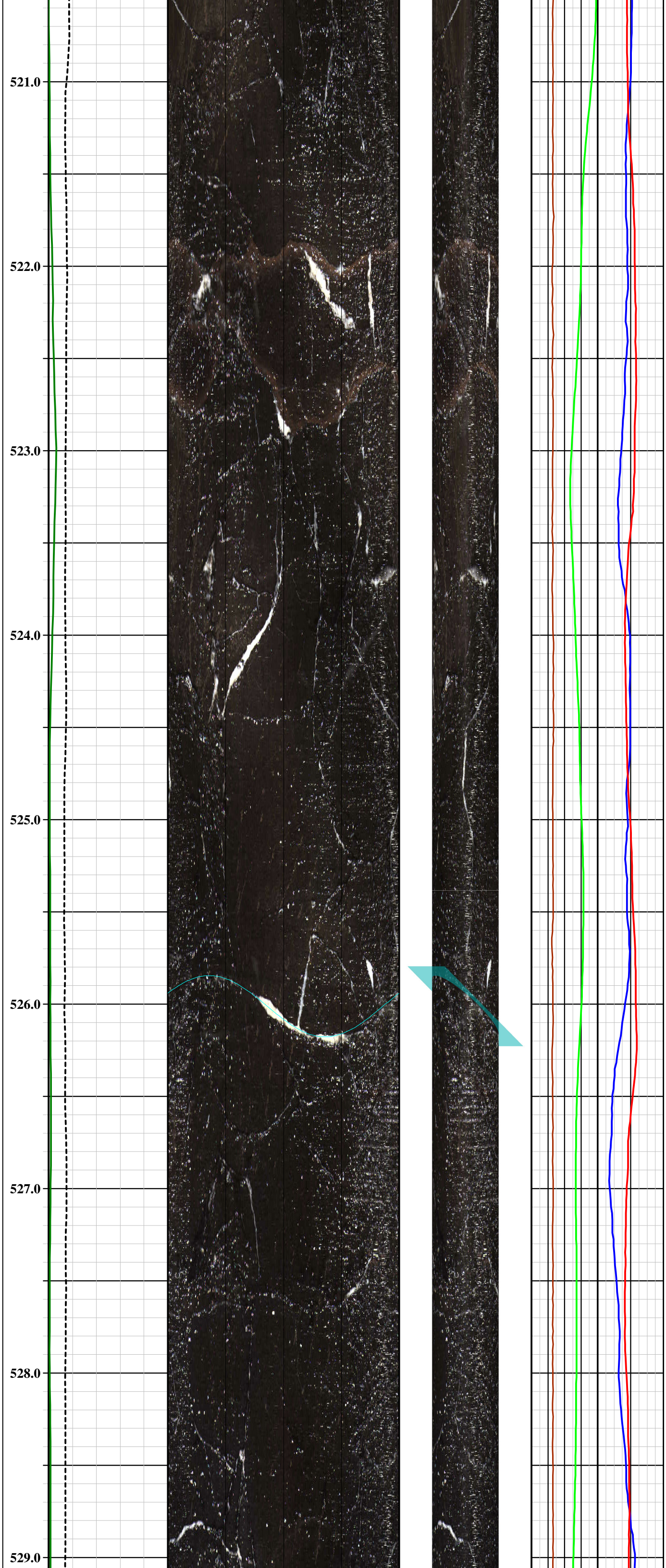

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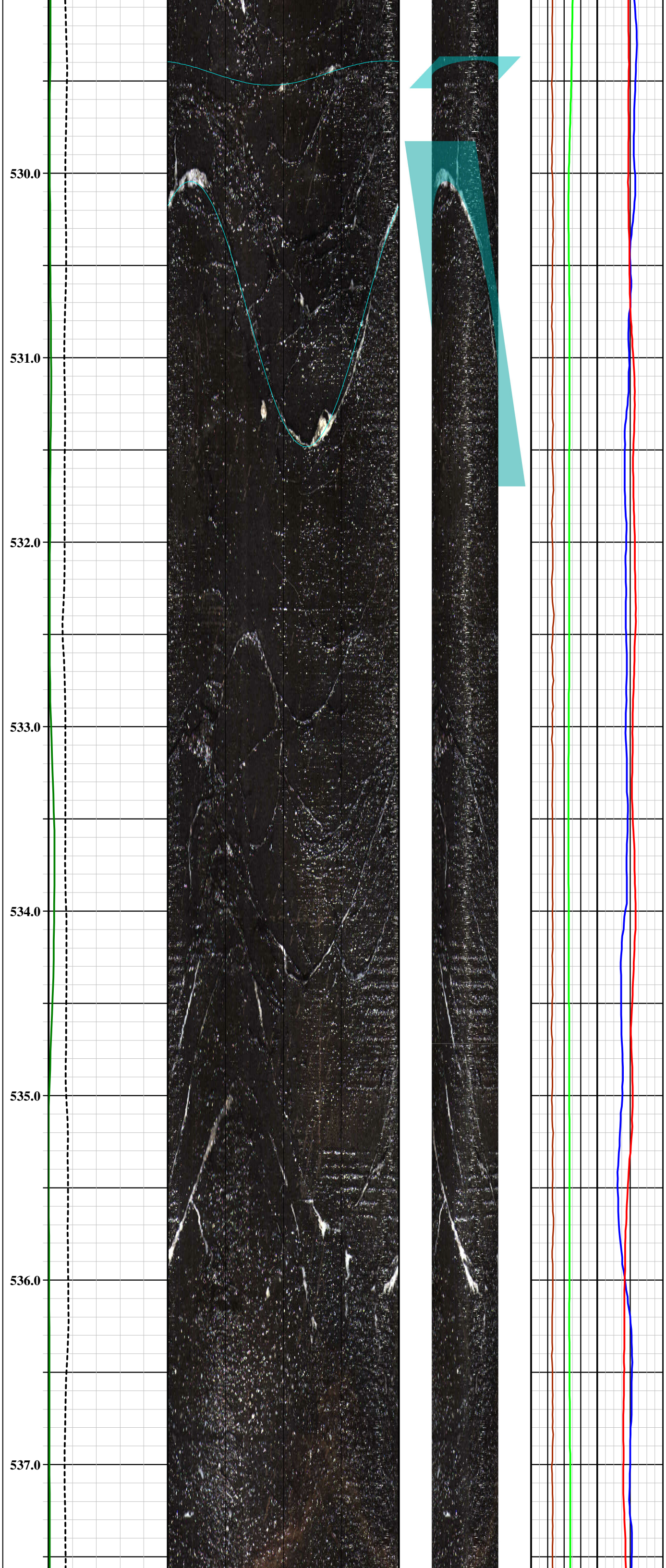

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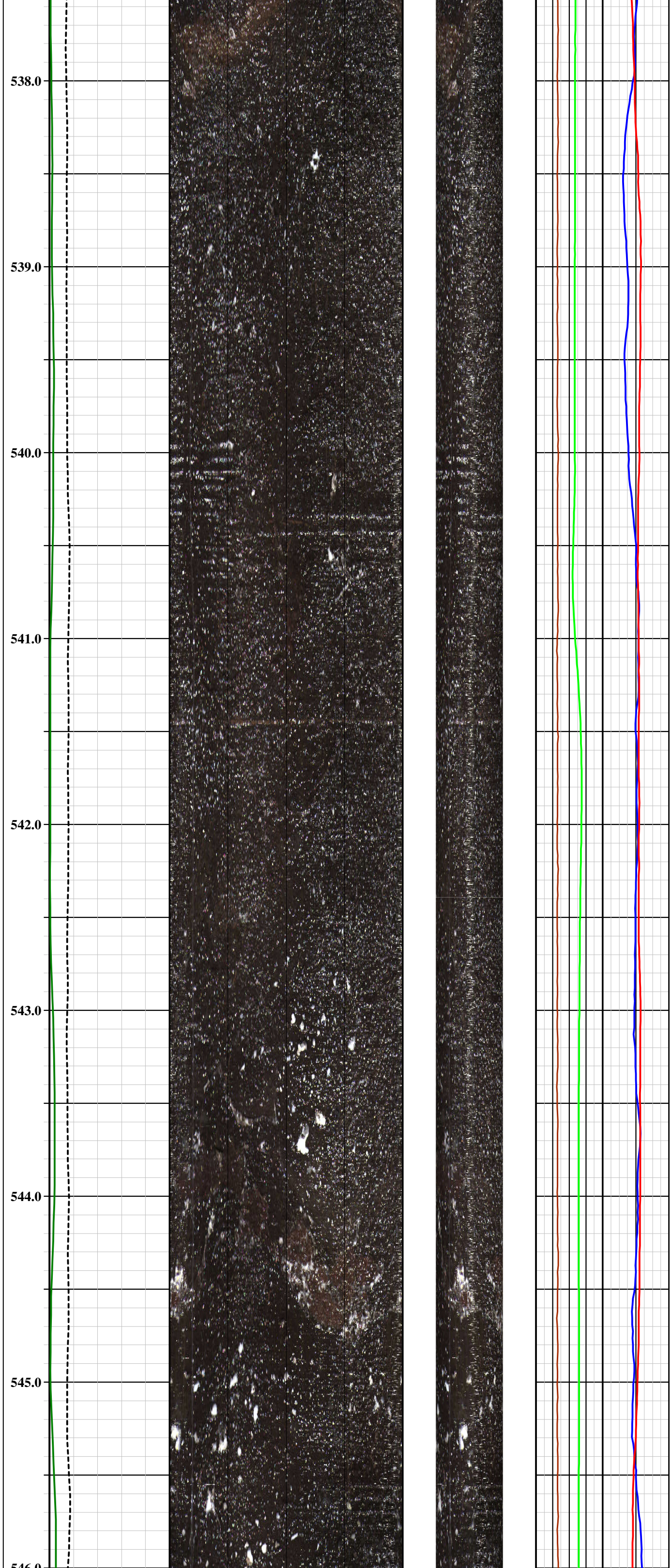

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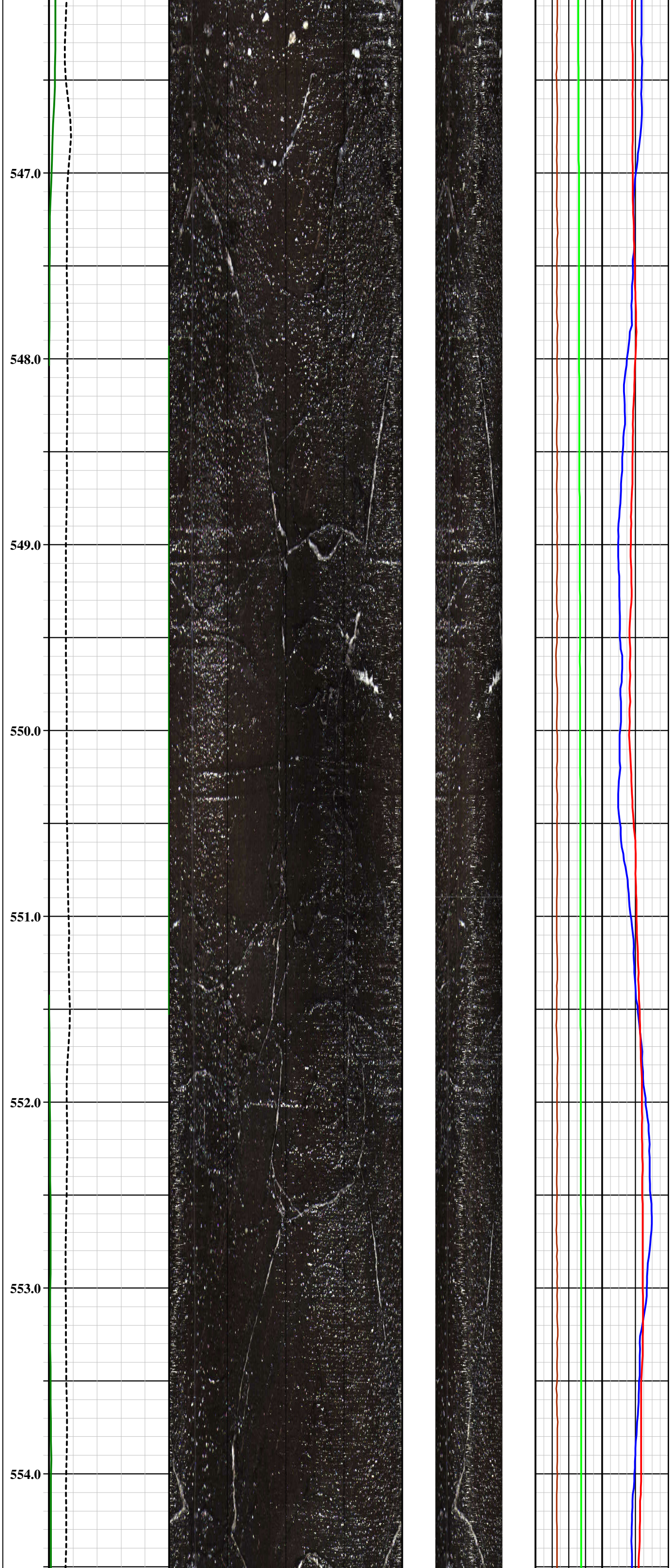

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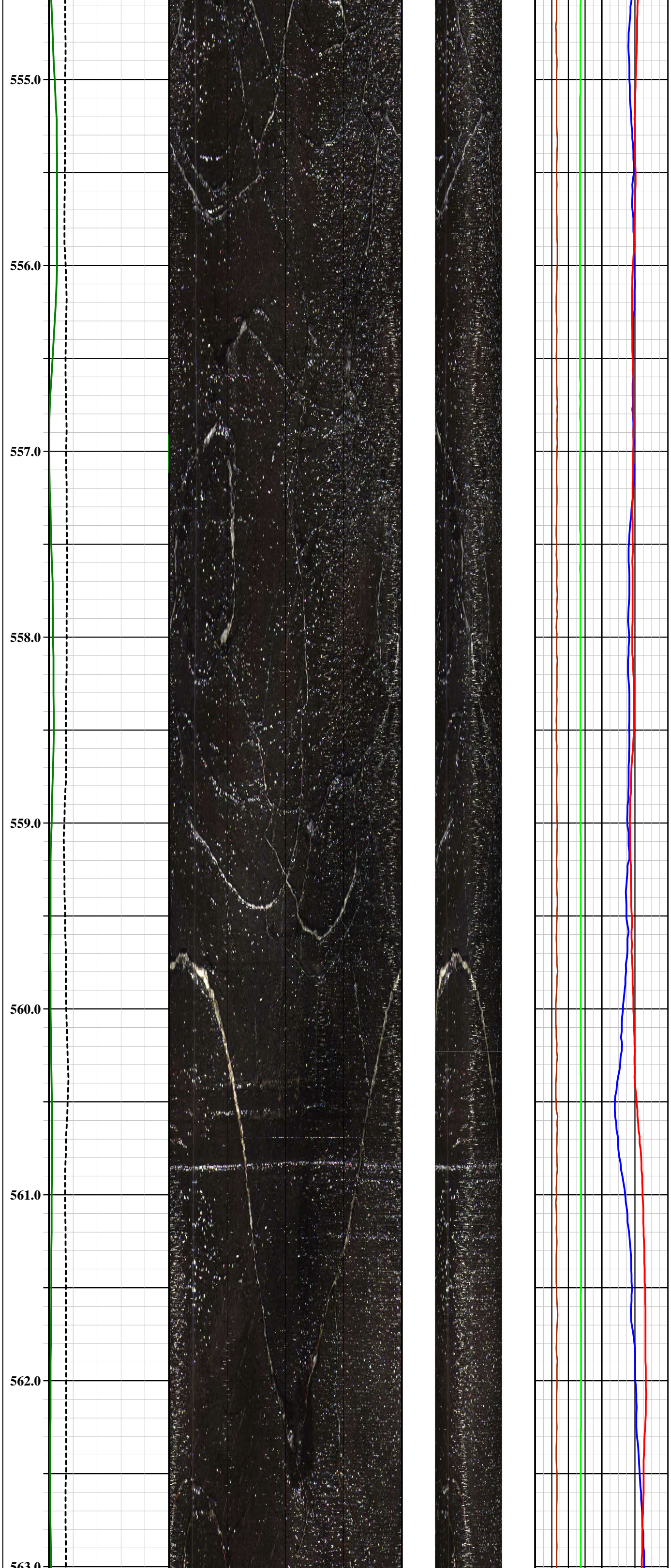

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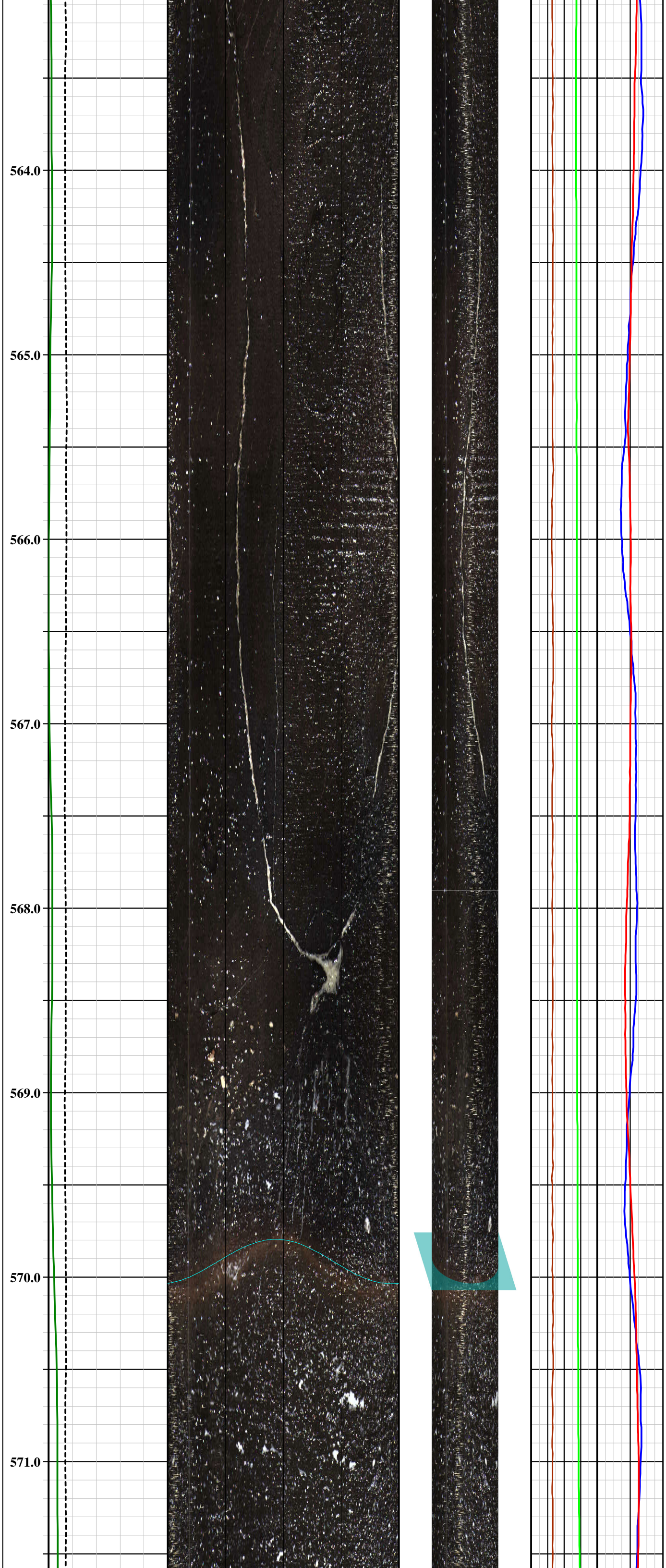

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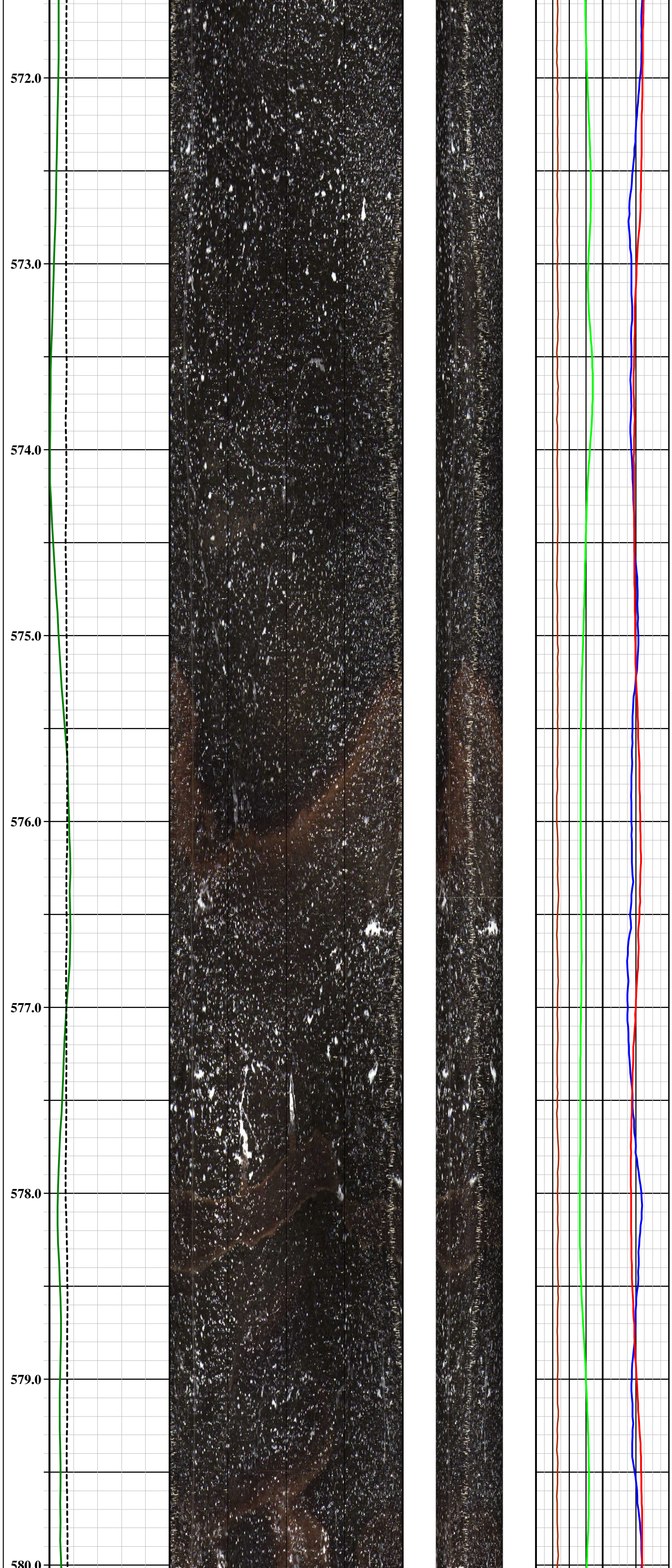

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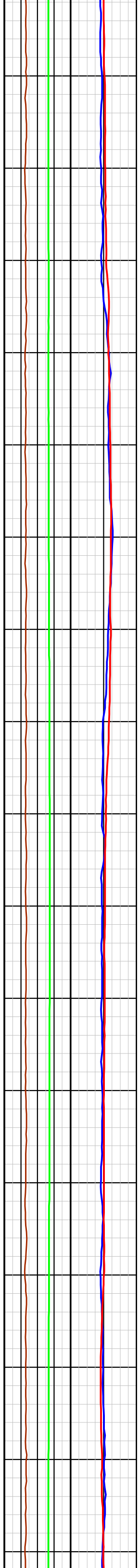

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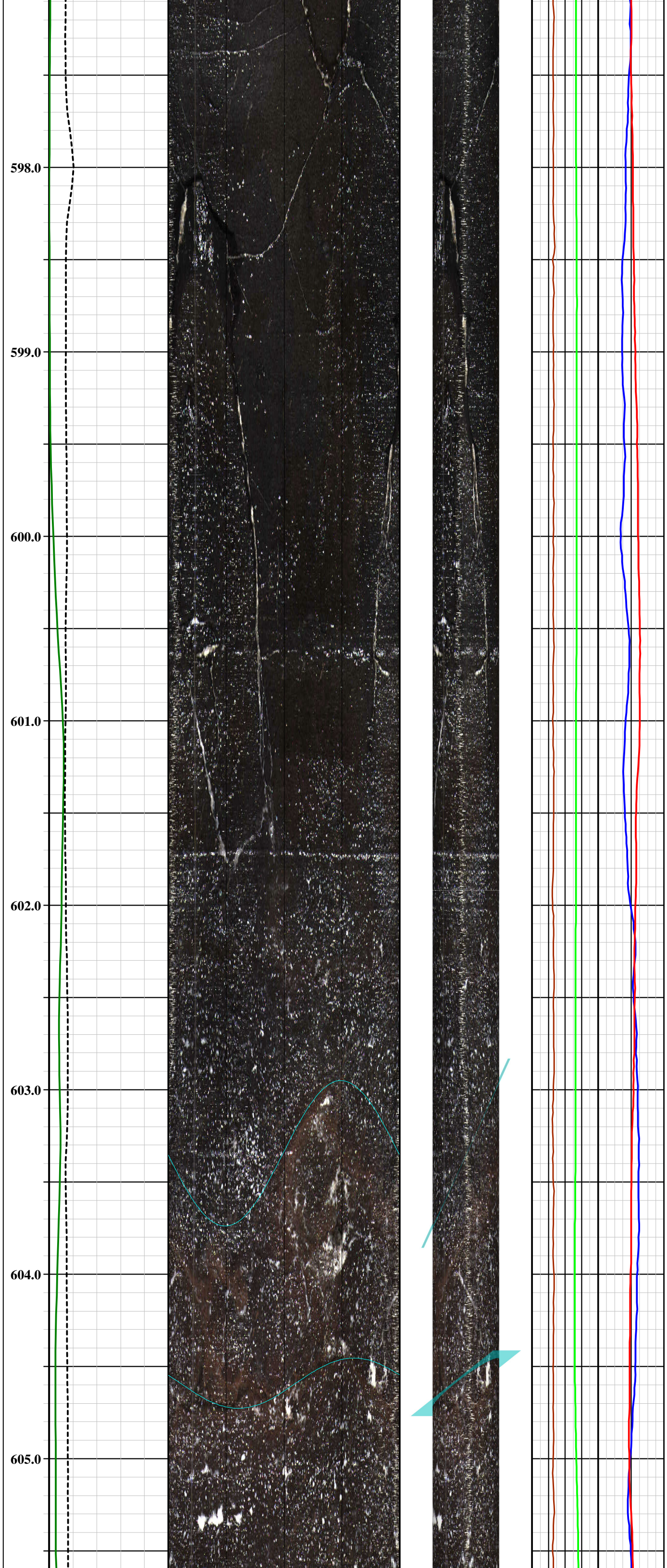

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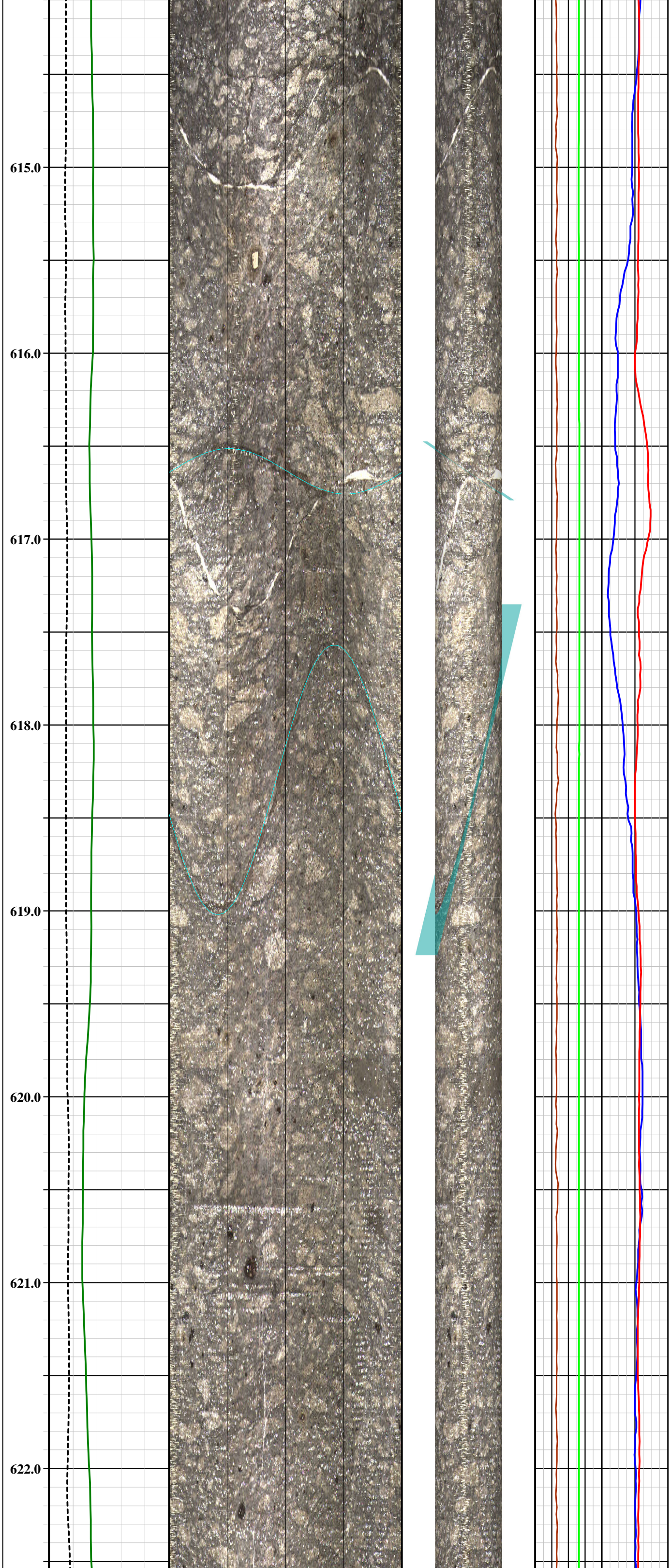
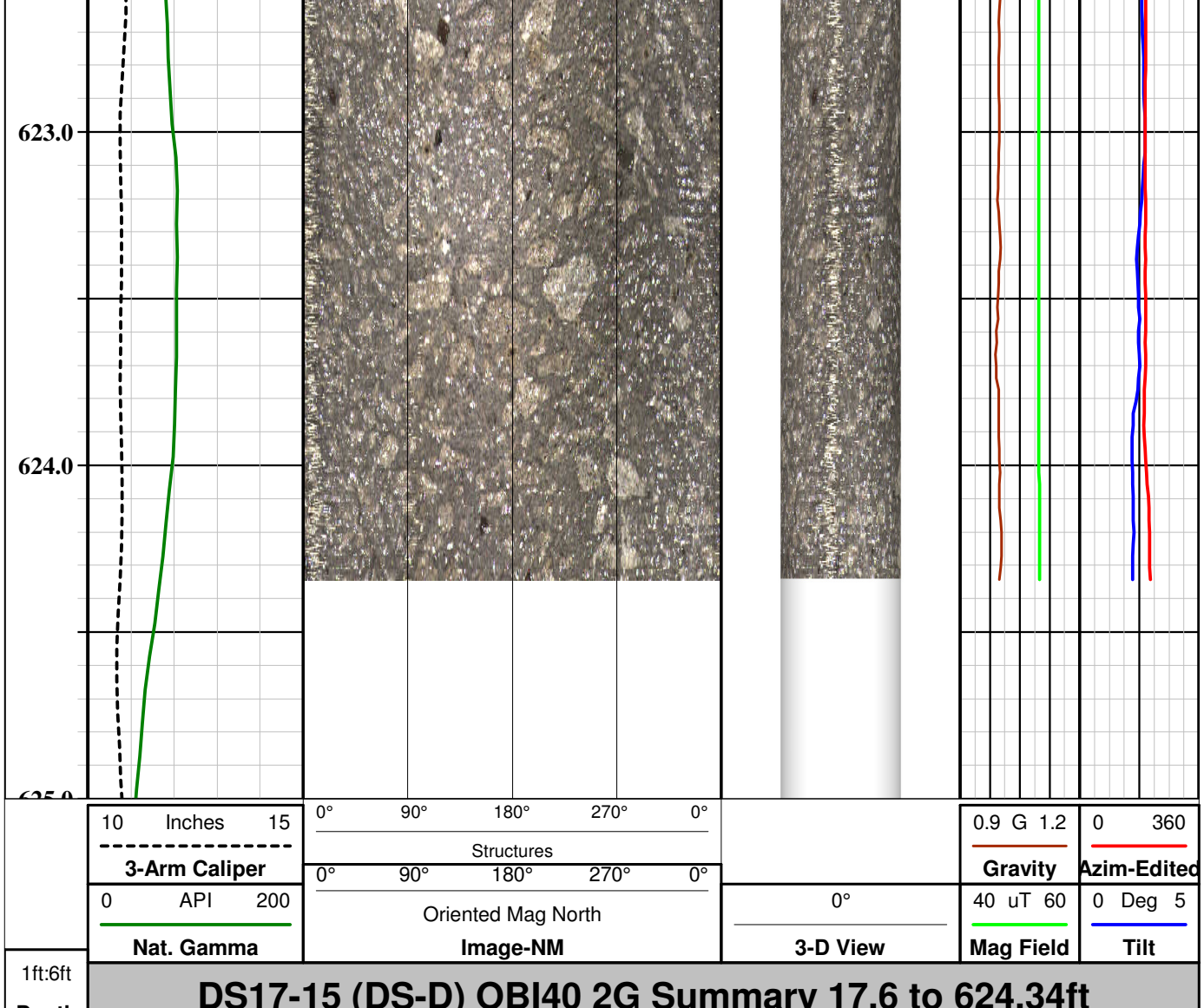




QL OBI-40 2G Optical Borehole Imager

Probe Top = Depth Ref.

Tool SN: 145010 & 152511



APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.66 m or 5.46 ft

Probe Weight = 5.3 kg or 11.7 lbs

Distance from Optical Image Window to Orientation Sensor = 0.9 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.0 deg

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

External Bow Spring Centralizers

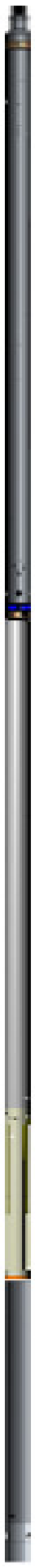
Operates in dry or clear water conditions.



1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Single Conductor MSI Probe Top

Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)

Natural Gamma Ray = 0.76 m (29.75 in)

3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC
borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS17-15
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary

Southwest Exploration Services, LLC

borehole geophysics & video services

COMPANY RESOLUTION COPPER MINING
WELL ID DS17-16 (DS-E) 55-920157
FIELD NEAR WEST
COUNTY PINAL STATE ARIZONA

TYPE OF LOGS: OPTICAL TELEVIEWER
MORE: GAMMA - CALIPER

LOCATION
D (1-11)01adb

SEC 1 TWP 1S RGE 11E

OTHER SERVICES
TEMP / FLUID COND.
DUAL INDUCTION
GYRO
VIDEO

PERMANENT DATUM	ELEVATION 2425 FT.	K.B.
LOG MEAS. FROM	GROUND LEVEL ABOVE PERM. DATUM	D.F.
DRILLING MEAS. FROM	GROUND LEVEL	G.L.

DATE	02-01-17	TYPE FLUID IN HOLE	FORMATION WATER
RUN No	2	MUD WEIGHT	N/A
TYPE LOG	OPTICAL TELEVIEWER	VISCOSITY	N/A
DEPTH-DRILLER	600.0 FT	LEVEL	~ 540 FT
DEPTH-LOGGER	600.0 FT	MAX. REC. TEMP.	N/A
BTM LOGGED INTERVAL	531.0 FT	IMAGE ORIENTED TO:	MAGNETIC NORTH
TOP LOGGED INTERVAL	SURFACE	SAMPLE INTERVAL	0.030 FT
DRILLER / RIG#	NATIONAL	LOGGING TRUCK	TRUCK #310
RECORDED BY / Logging Eng.	K. MITCHELL	TOOL STRING/SN	ALT QL OBI40 2G SN 145010
WITNESSED BY	MATT - M & A	LOG TIME:ON SITE/OFF SITE	7:00 AM

RUN	BOREHOLE RECORD			CASING RECORD			
NO.	BIT	FROM	TO	SIZE	WGT.	FROM	TO
1	?	SURFACE	21 FT	12 IN	STEEL	SURFACE	21 FT
2	10 1/2 IN	21 FT	500 FT				
3	6 1/2 IN	500 FT	TOTAL DEPTH				

COMMENTS: UNABLE TO GET PAST REDUCTION WITH COMBO TOOL OR DUAL INDUCTION.

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Tool Summary:

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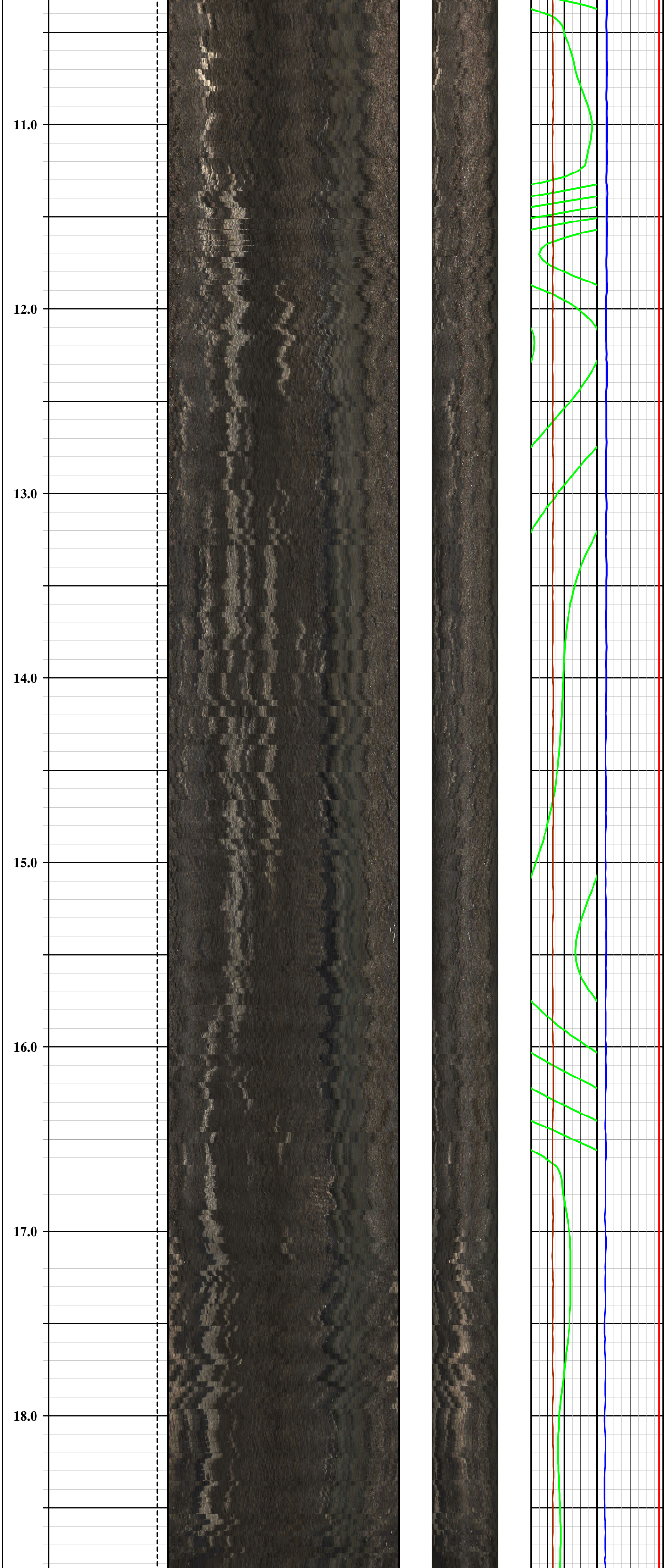


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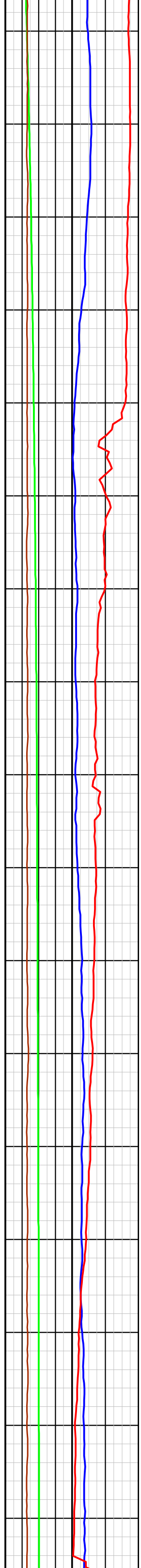

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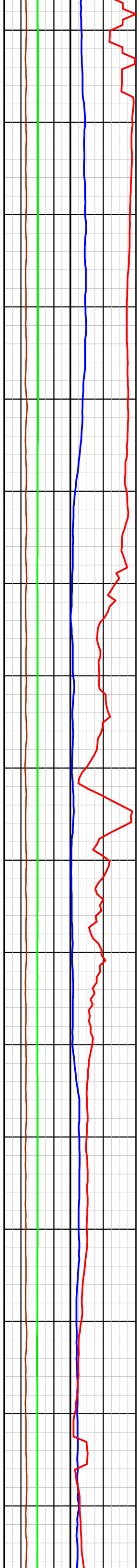

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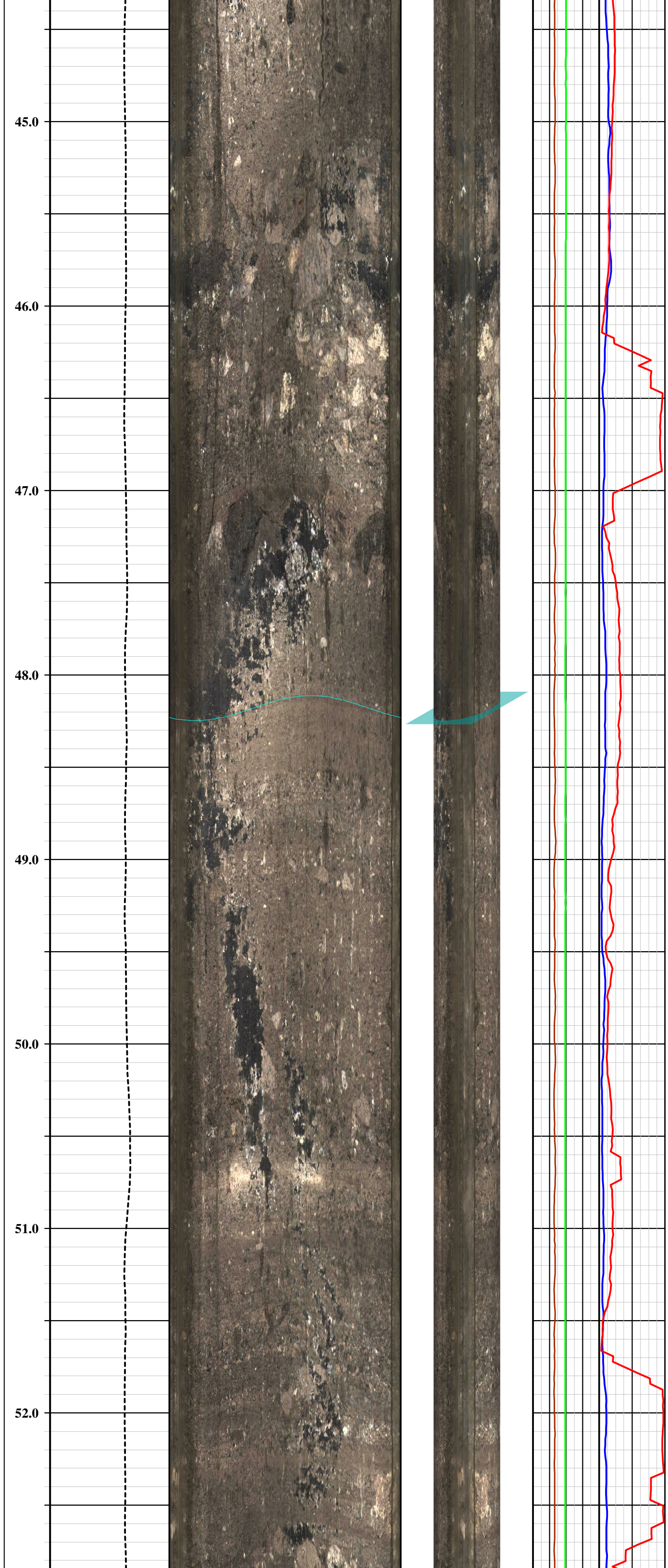

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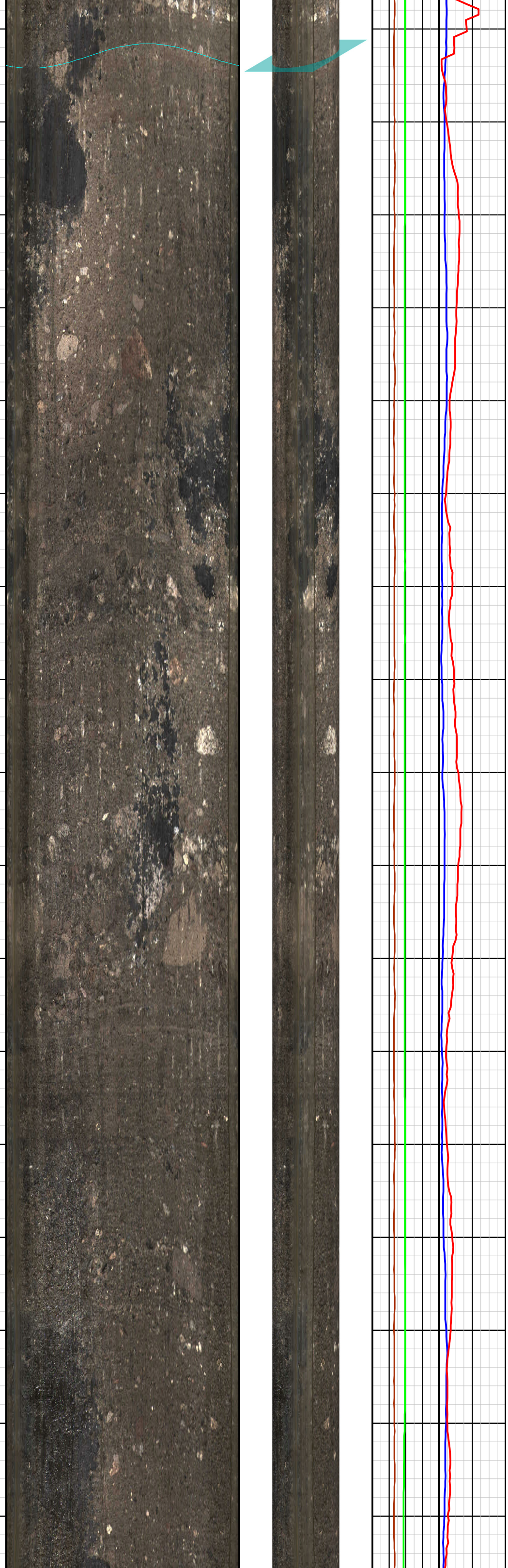

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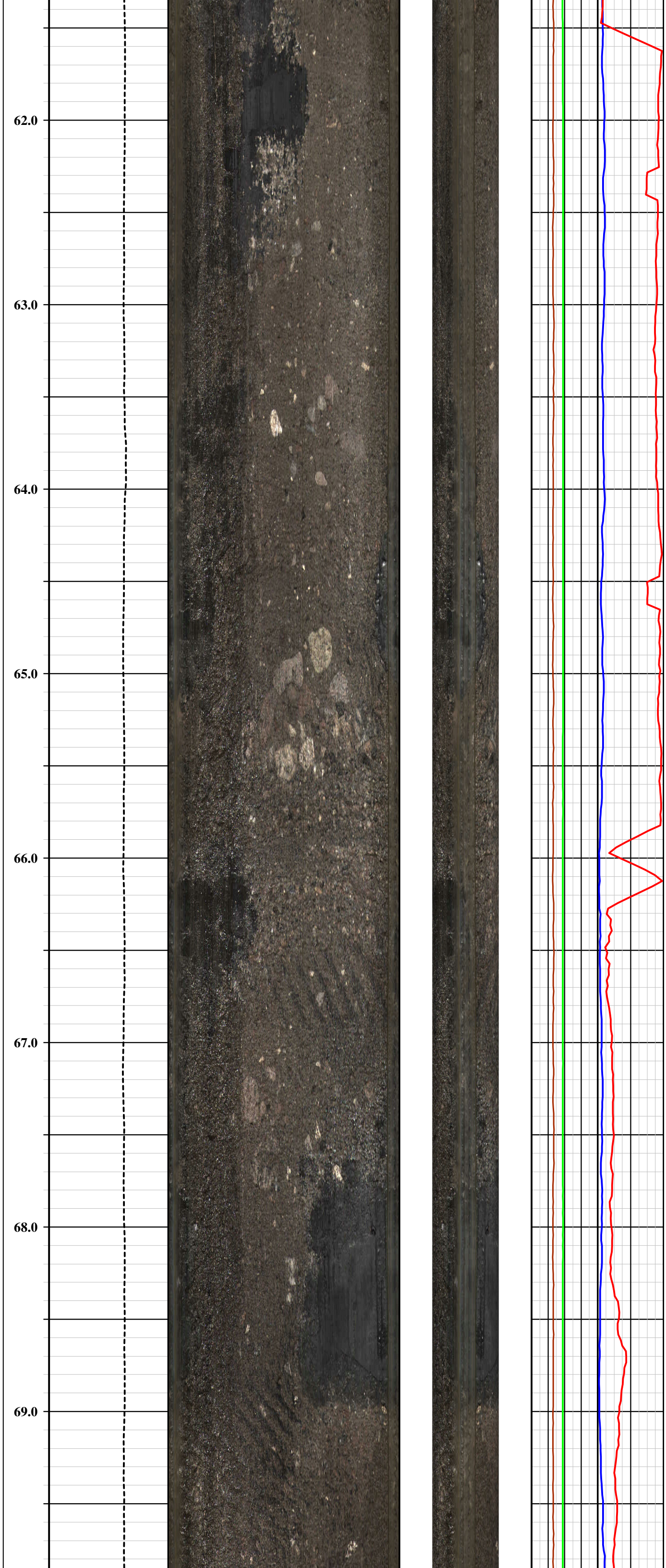

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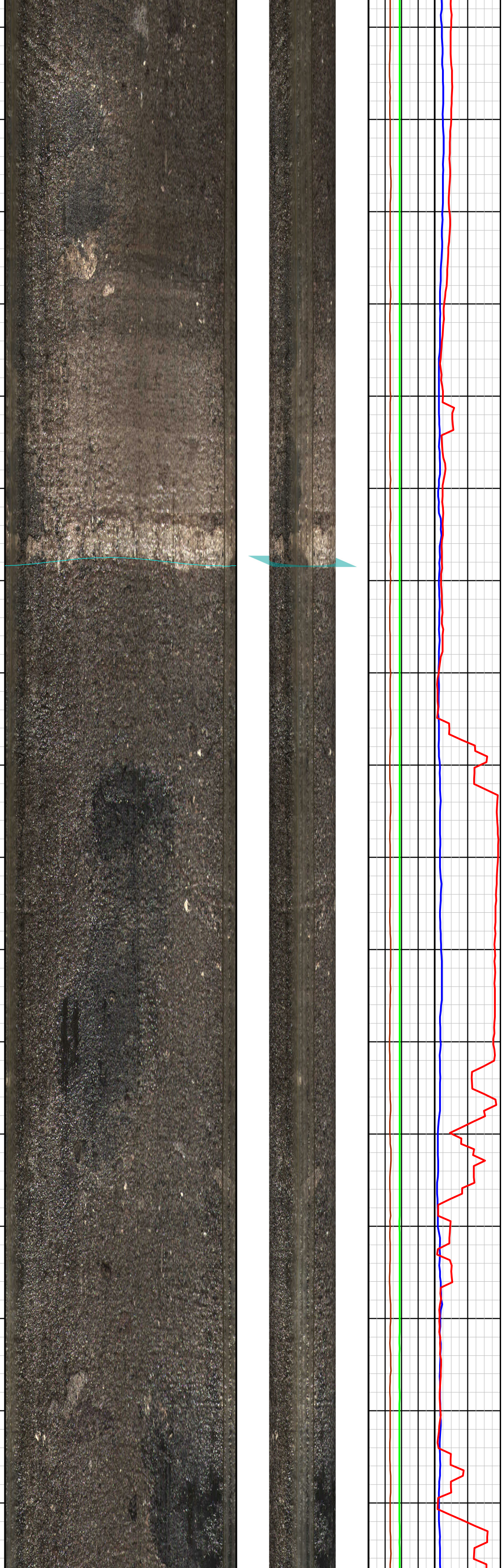

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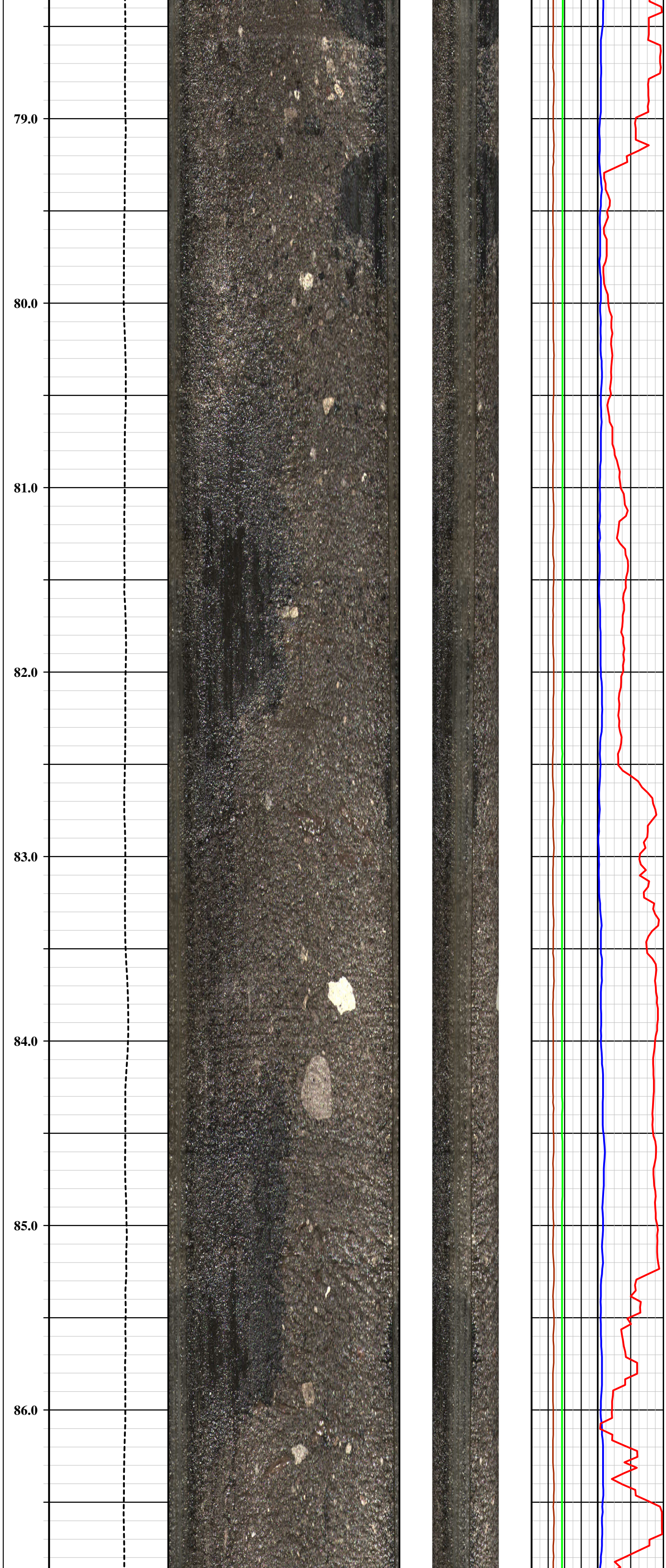

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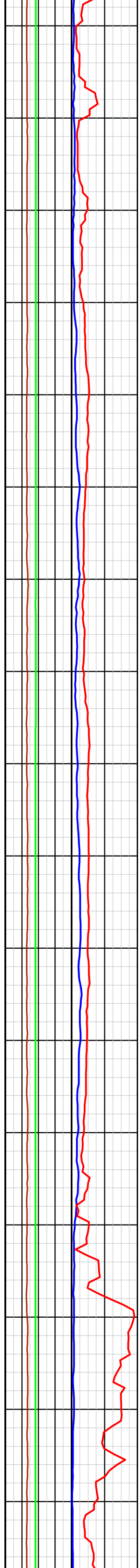

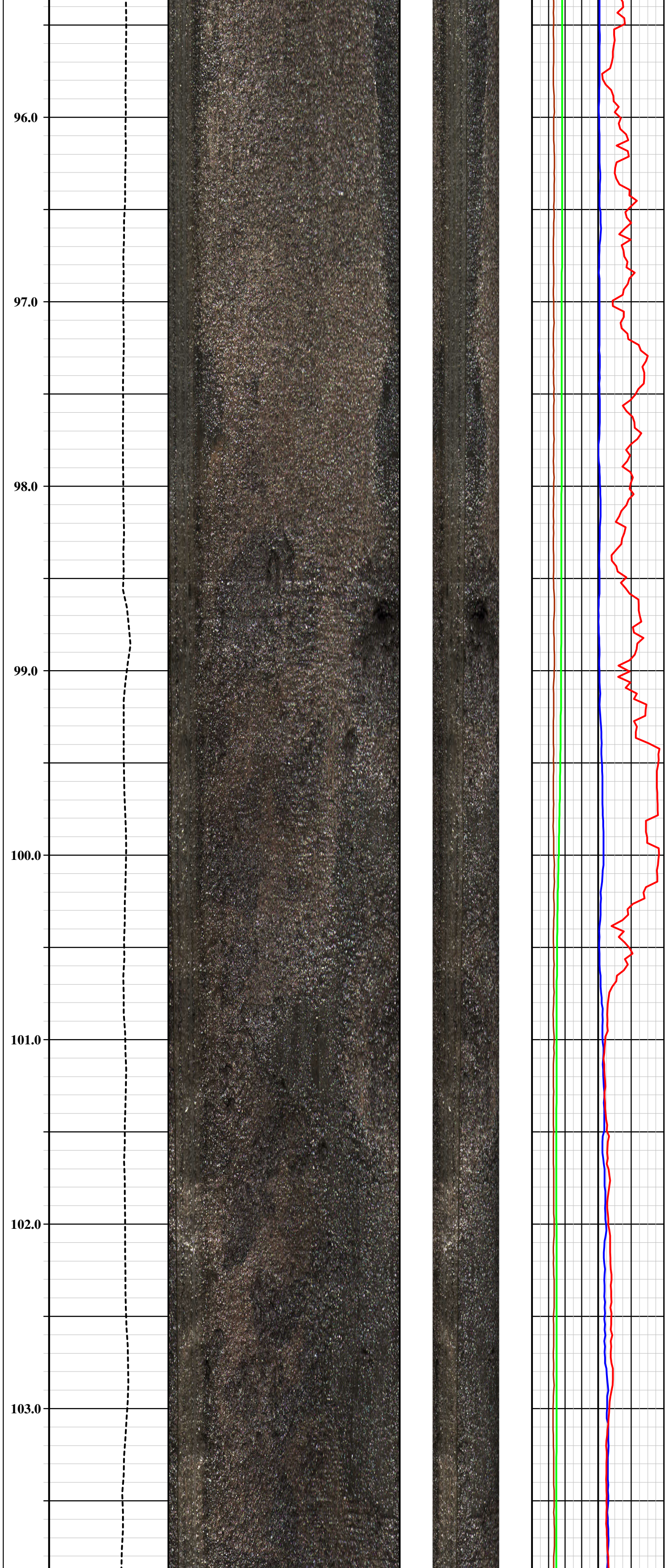
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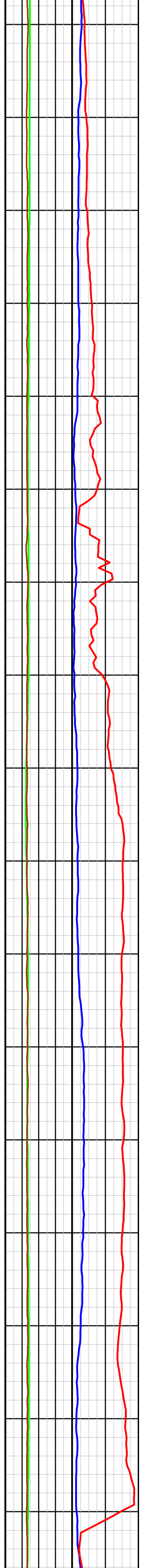

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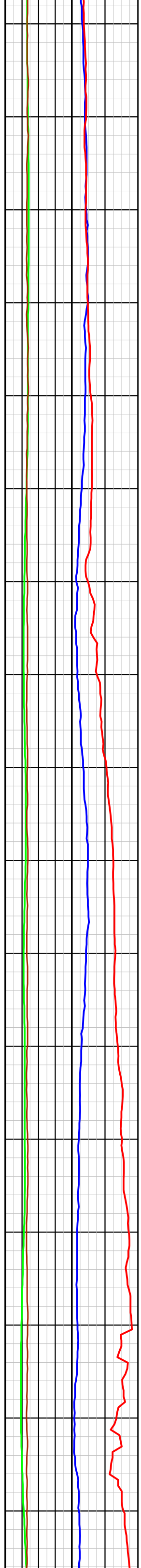

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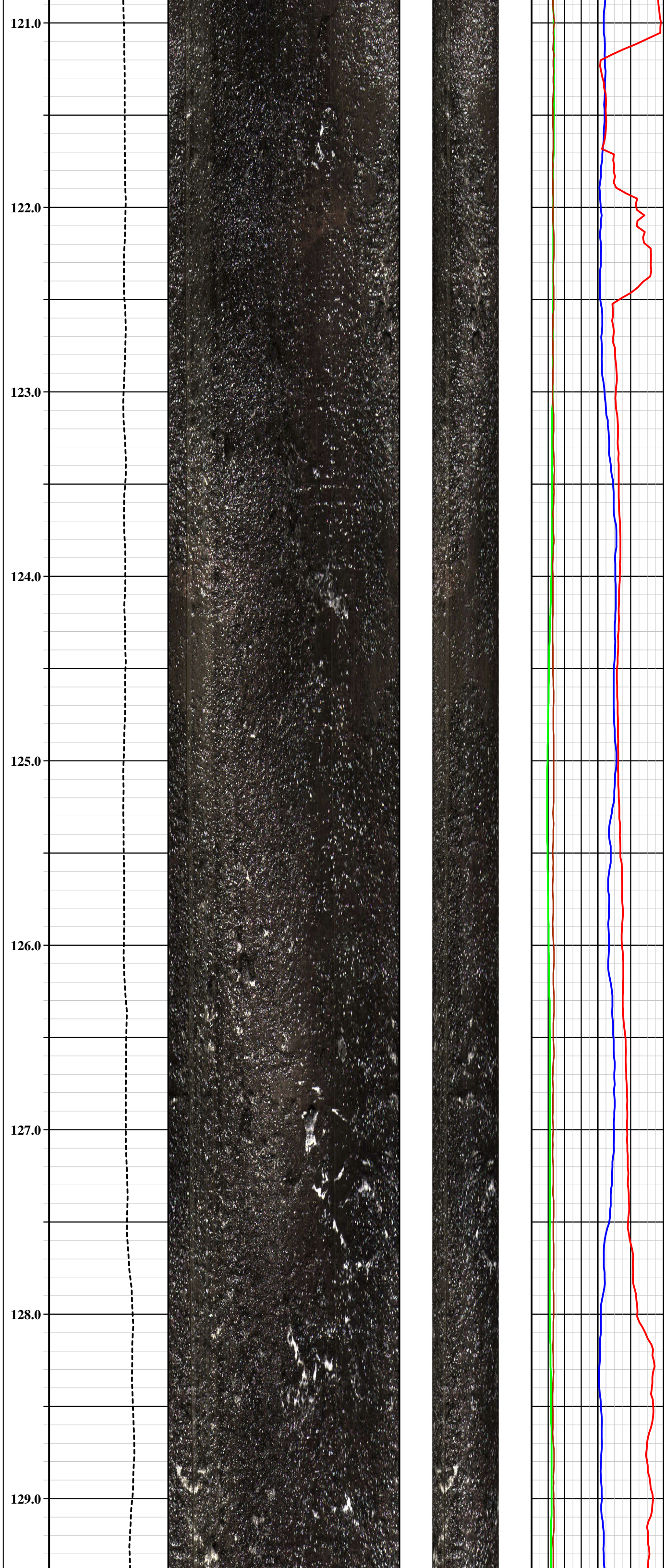

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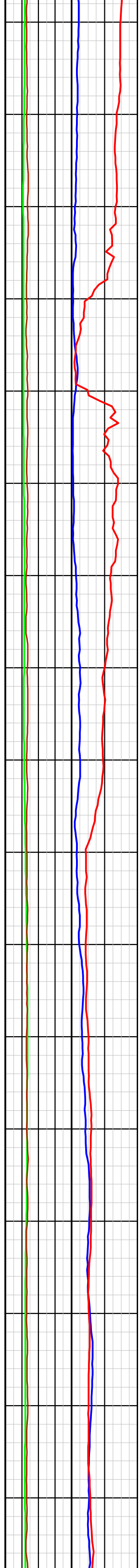

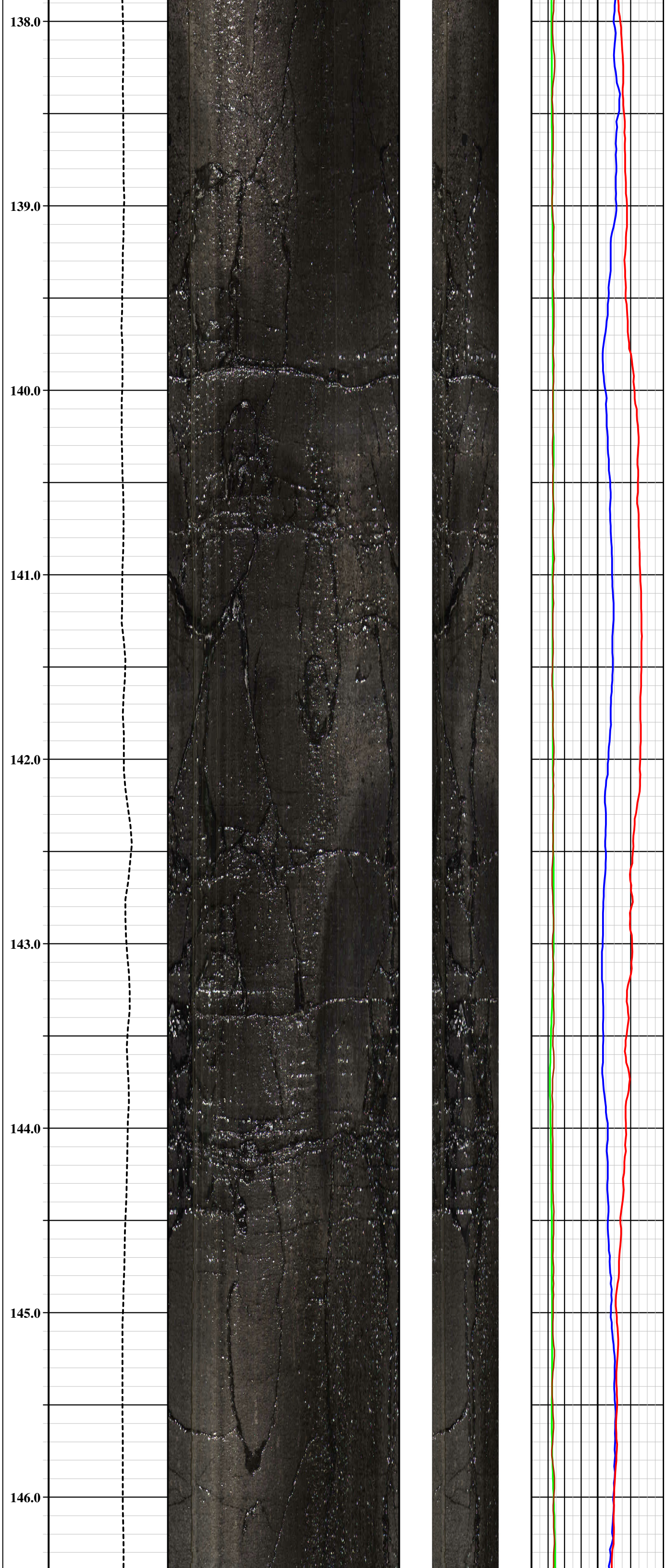
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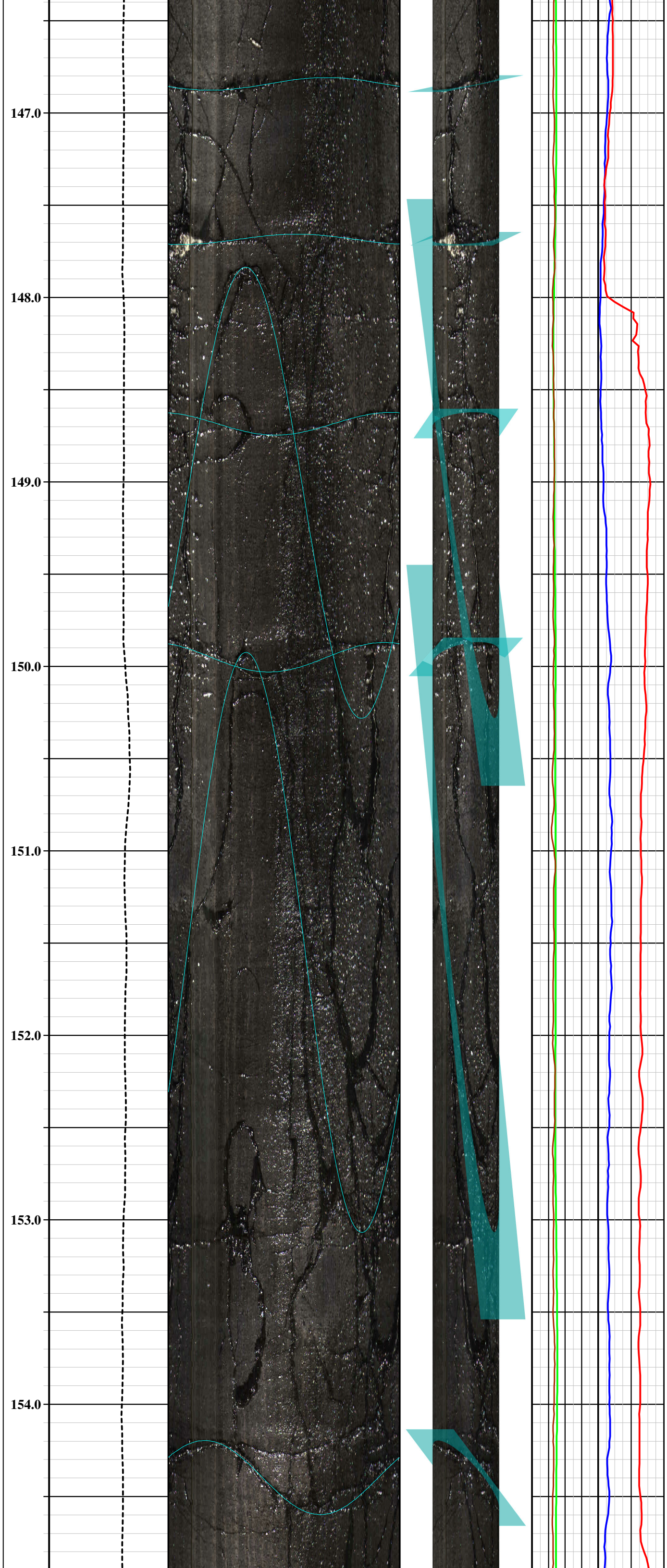

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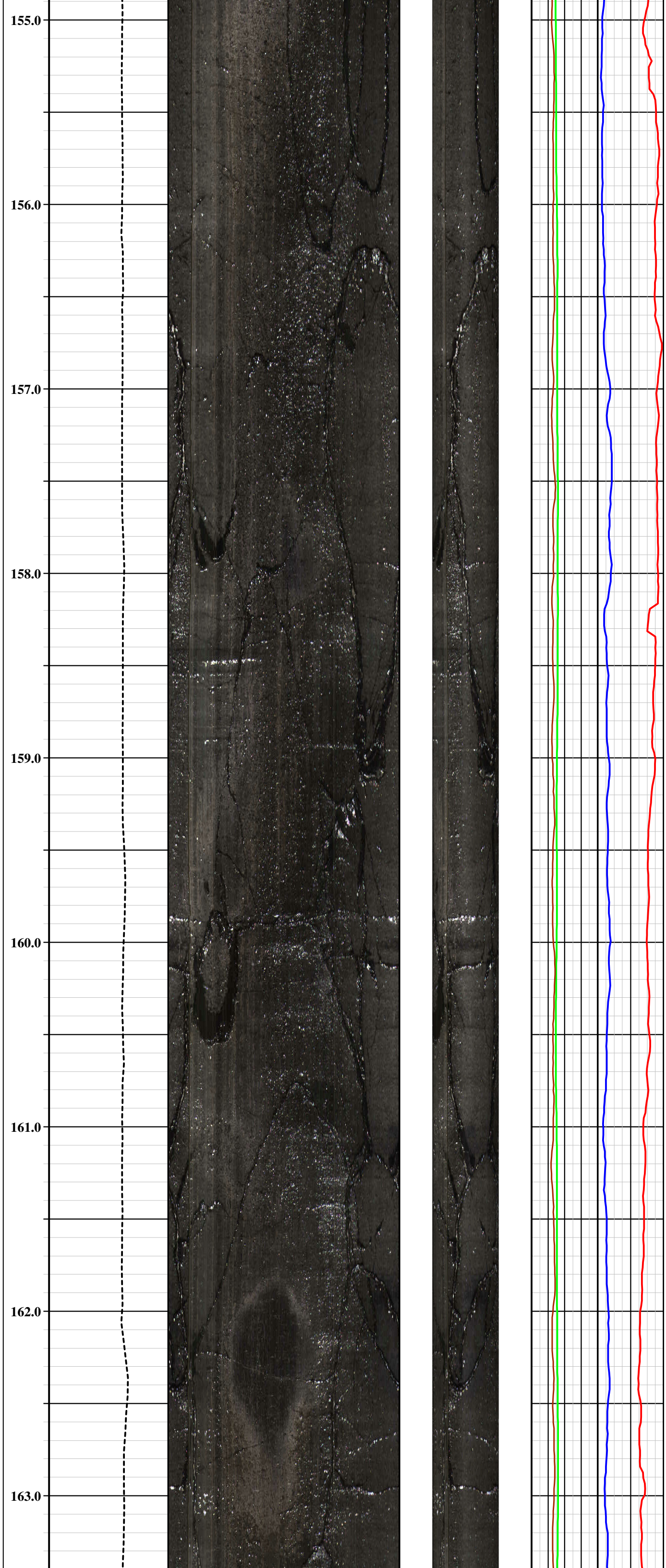

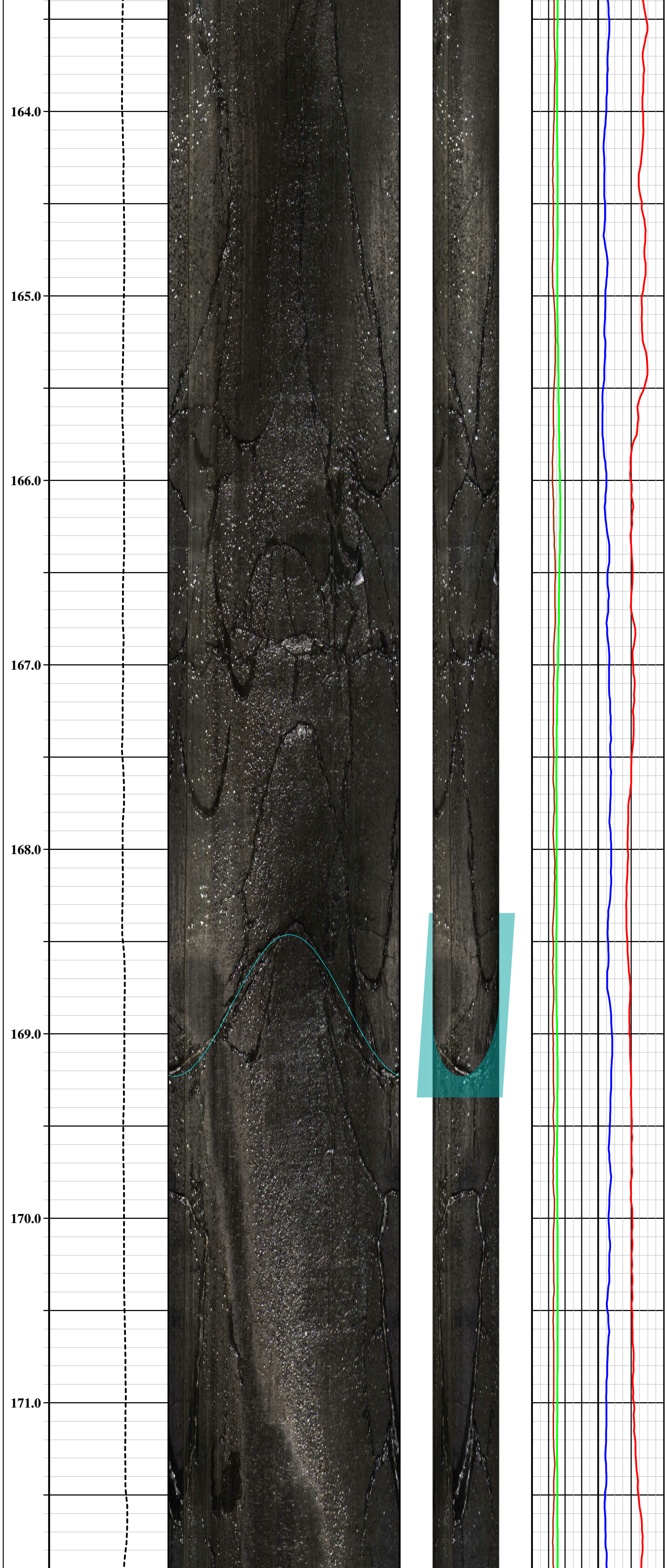
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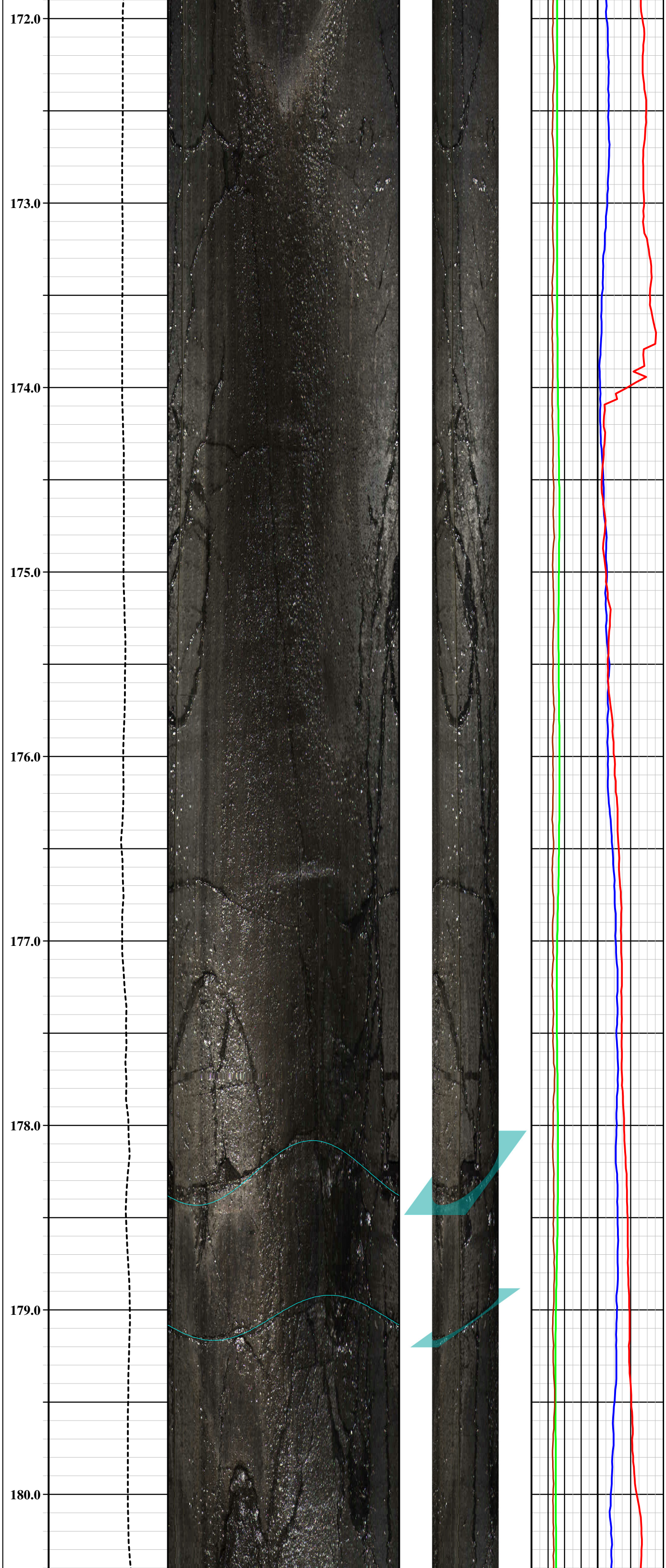

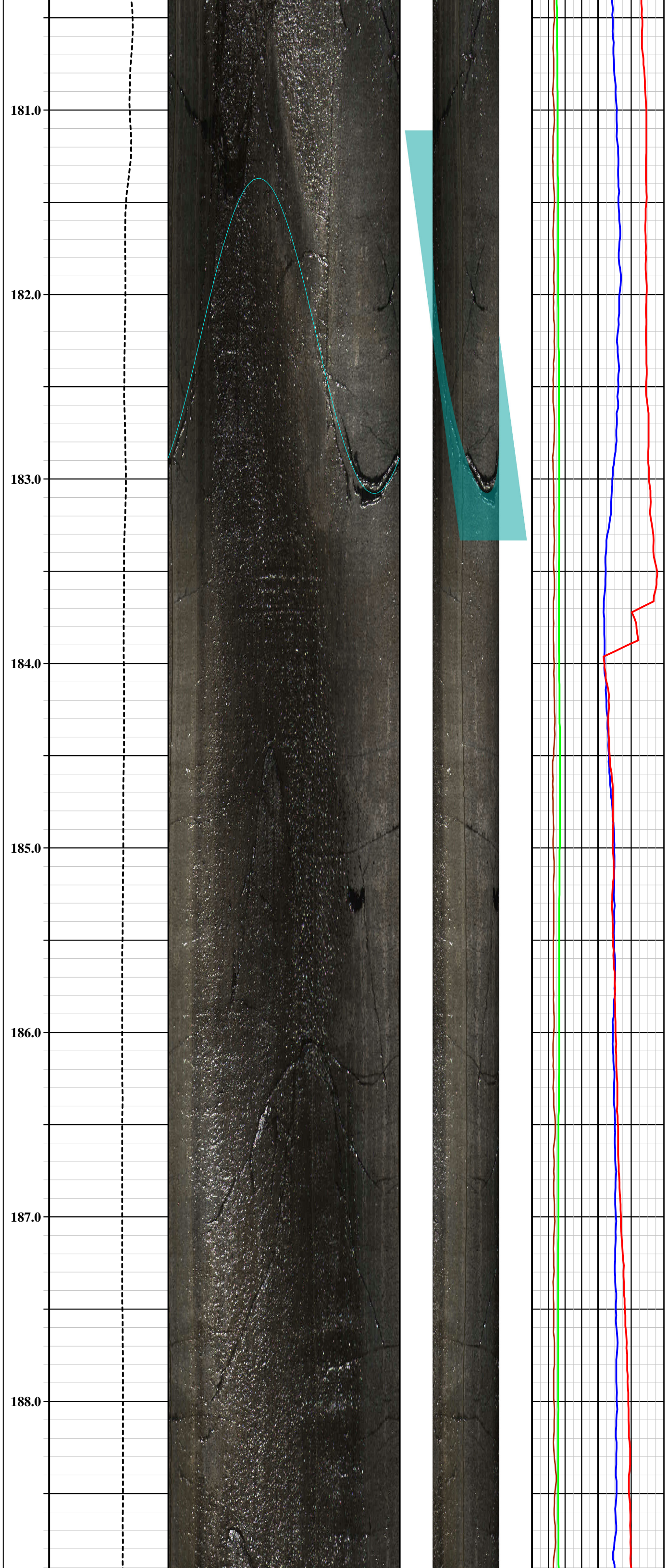
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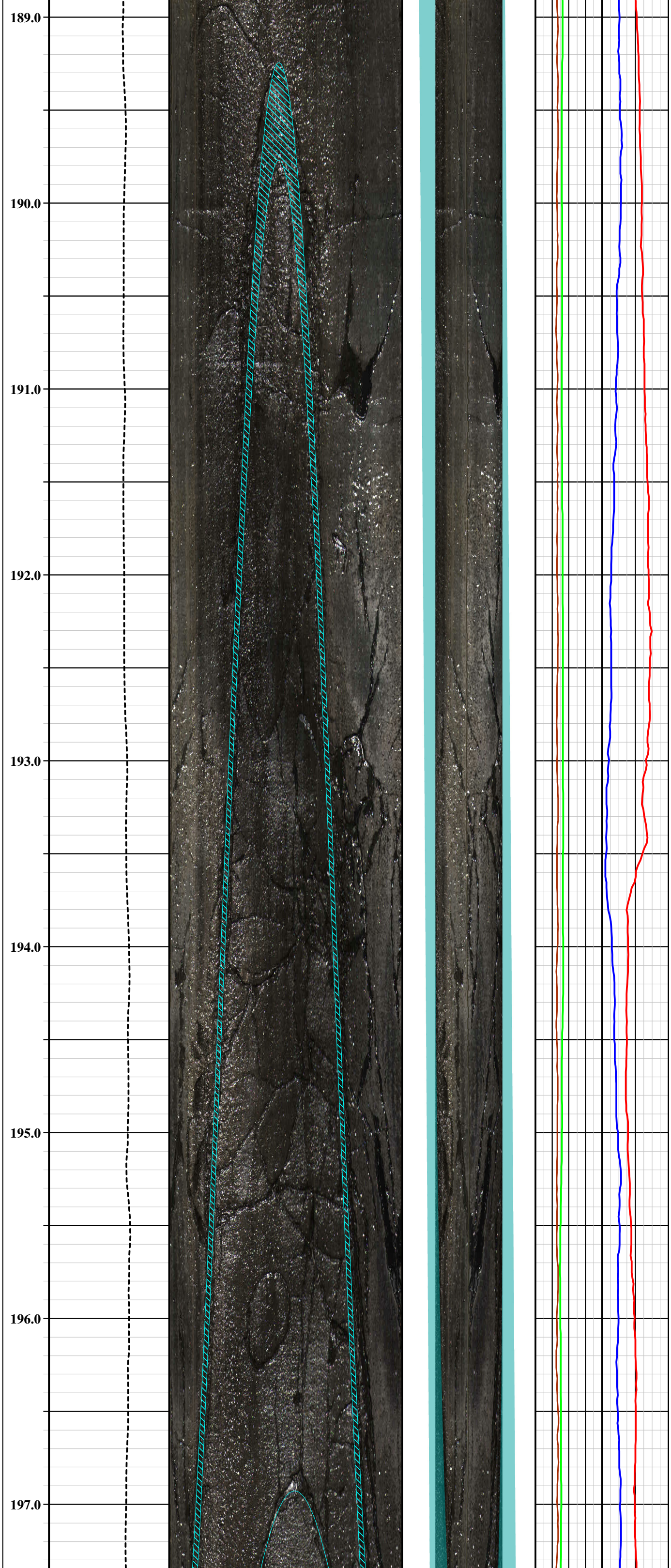
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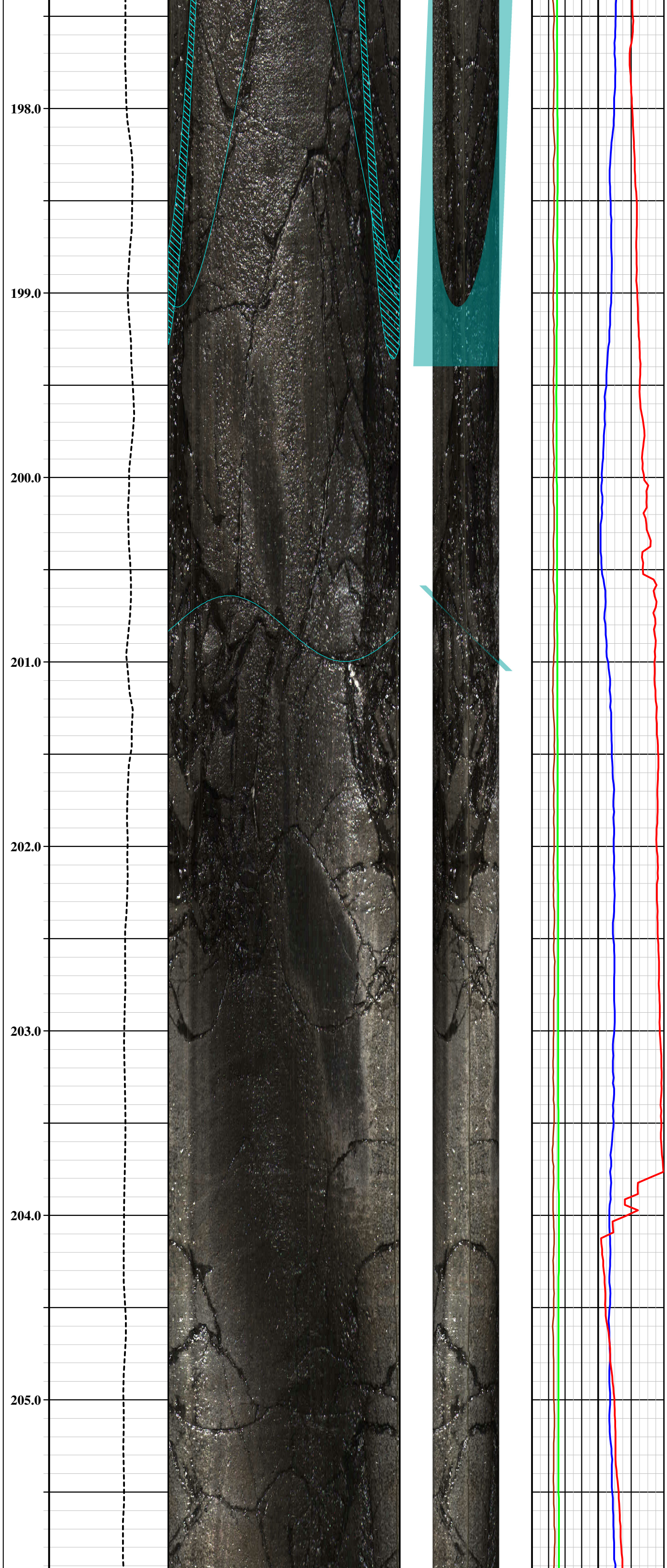

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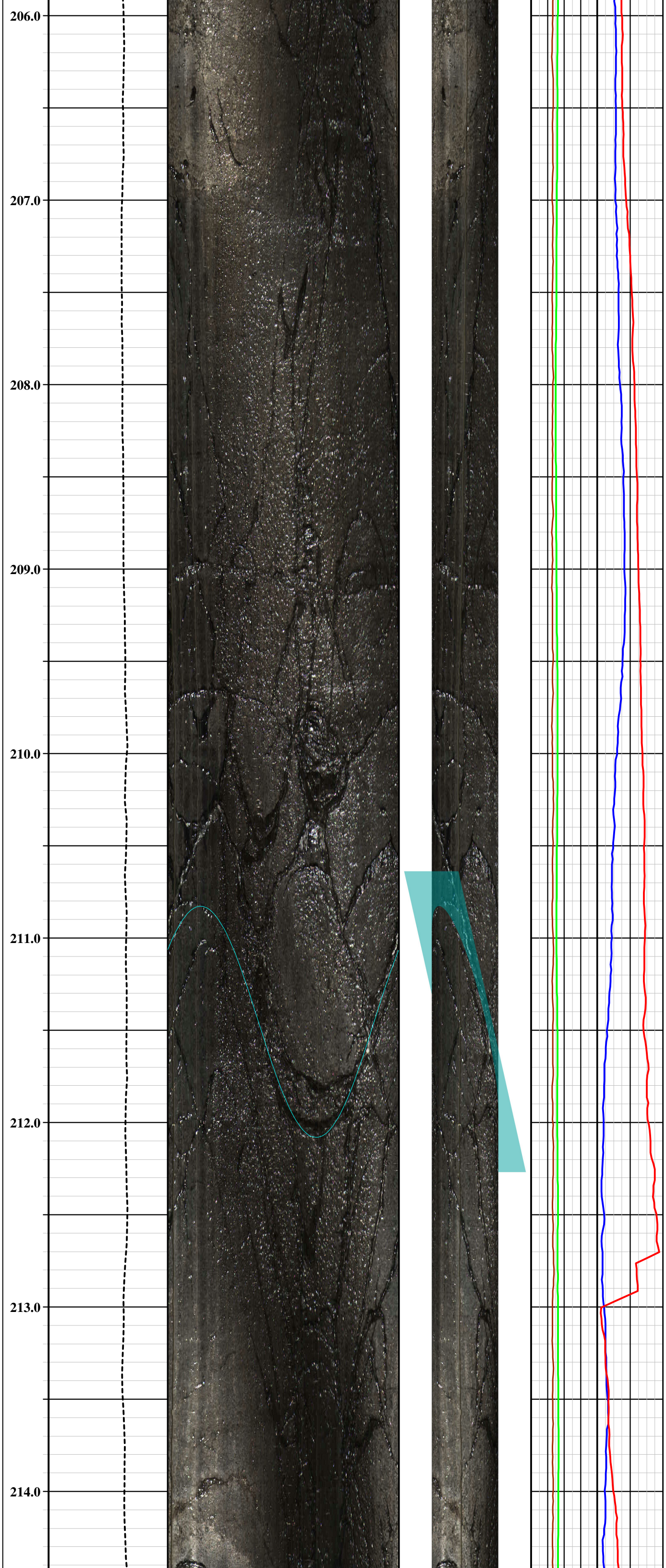

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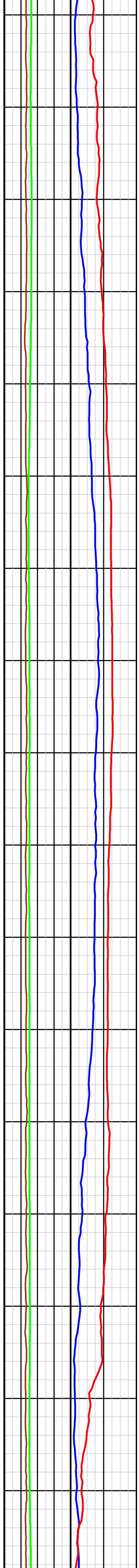

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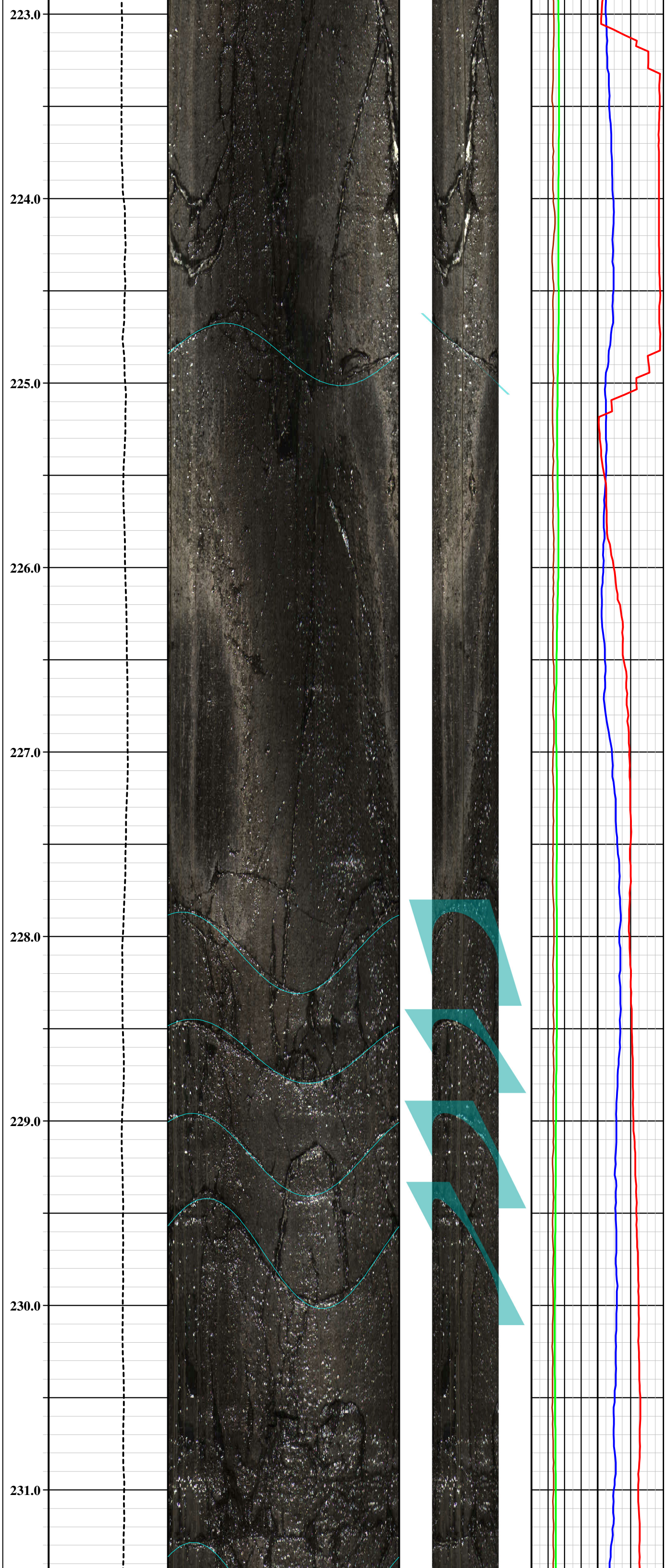

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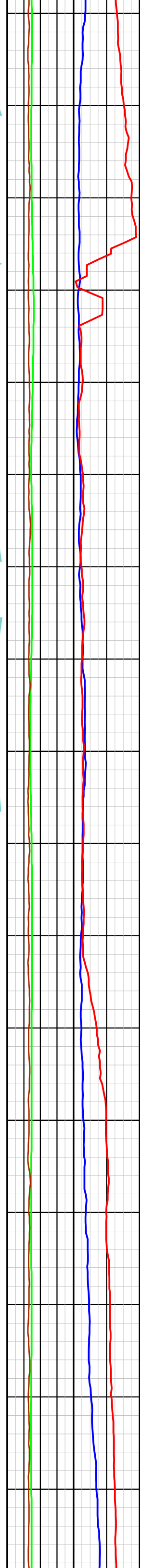

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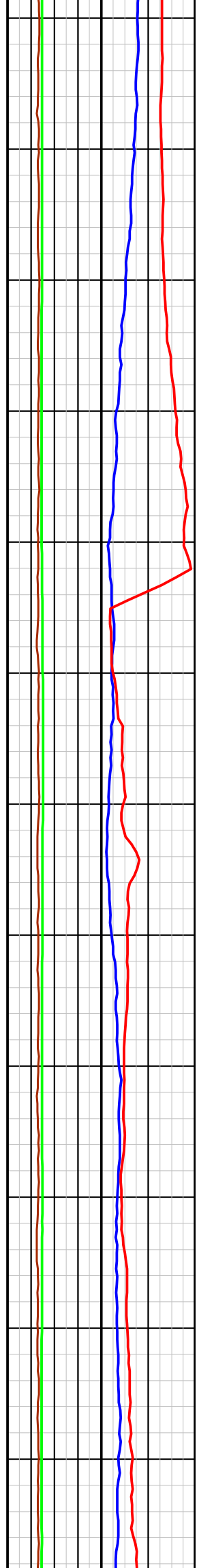

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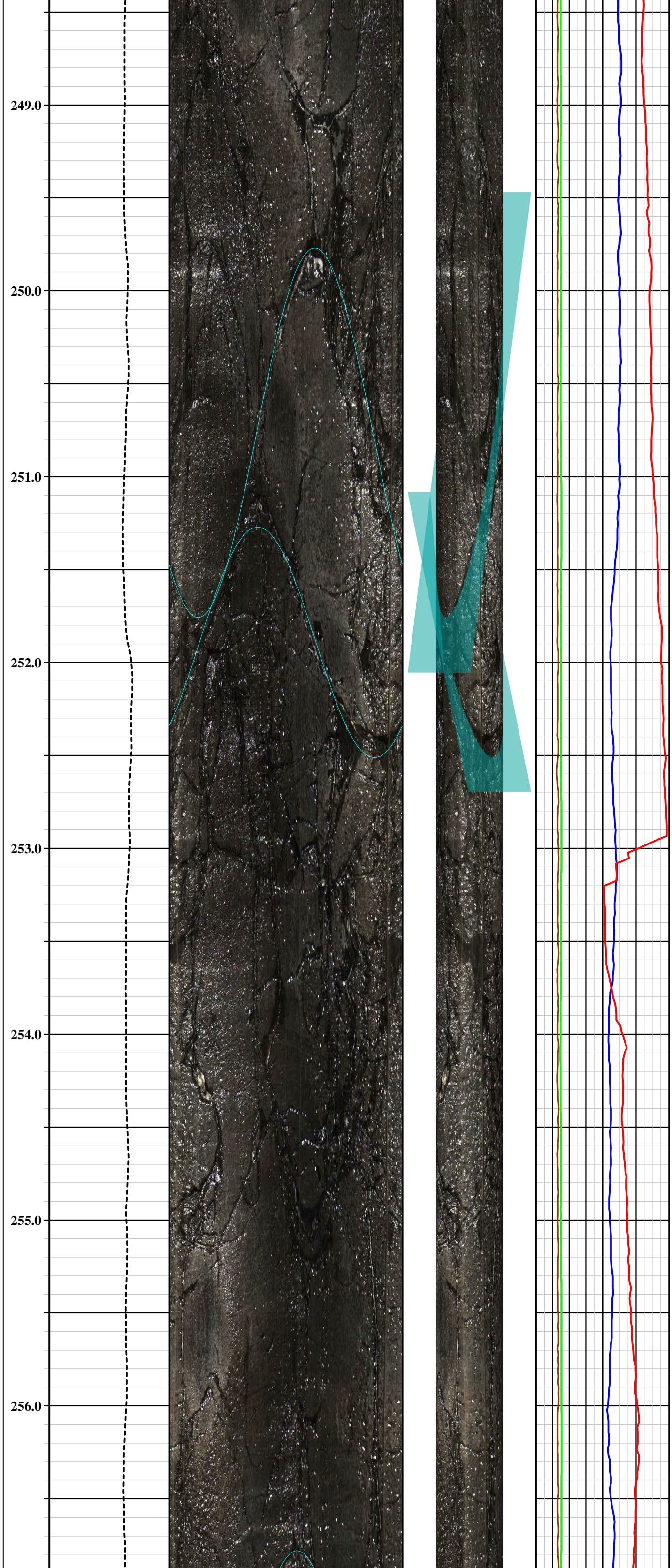

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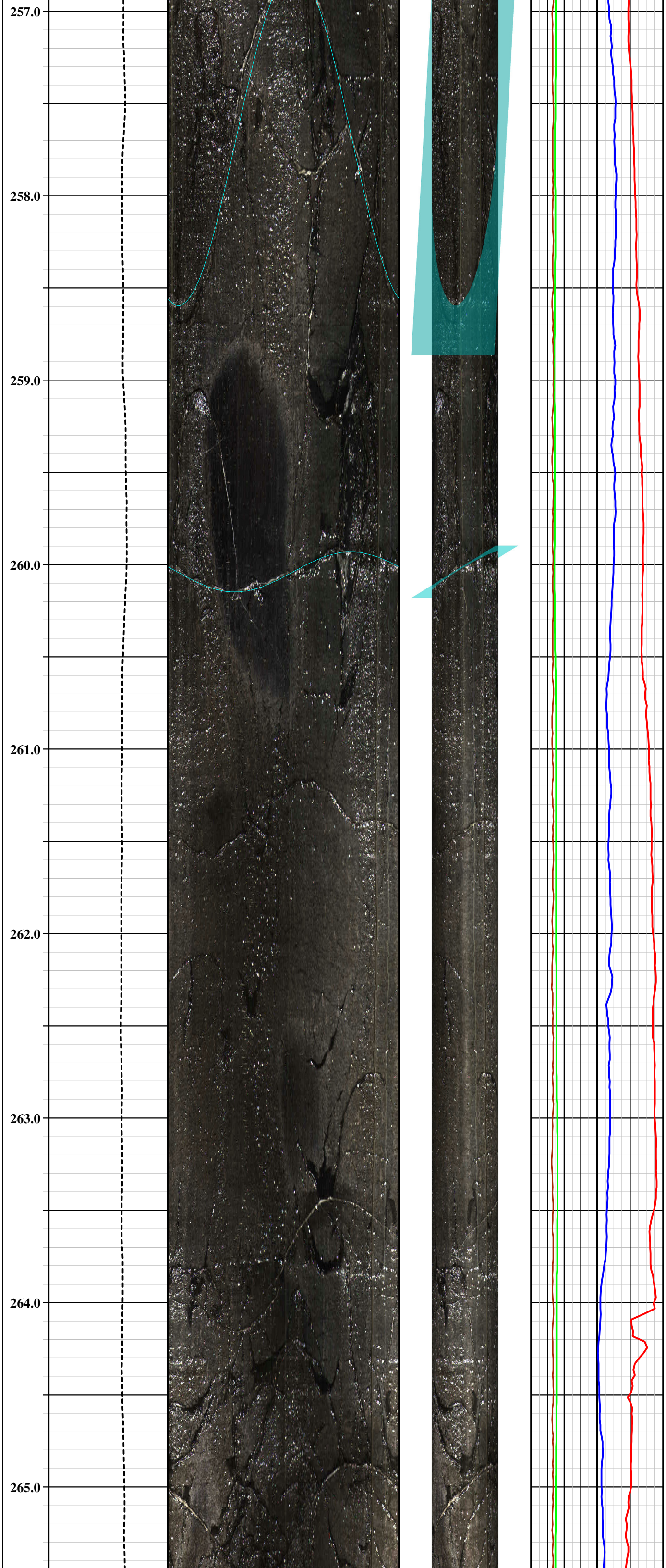

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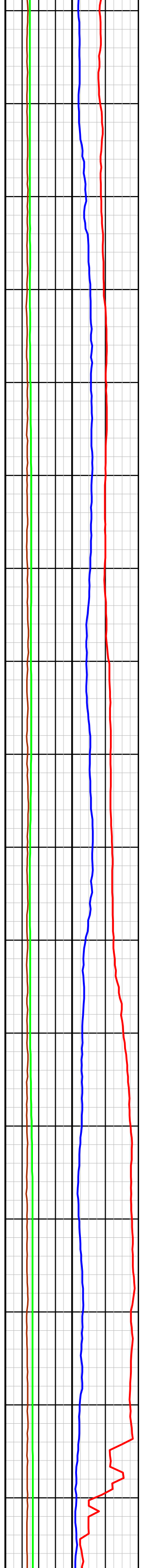

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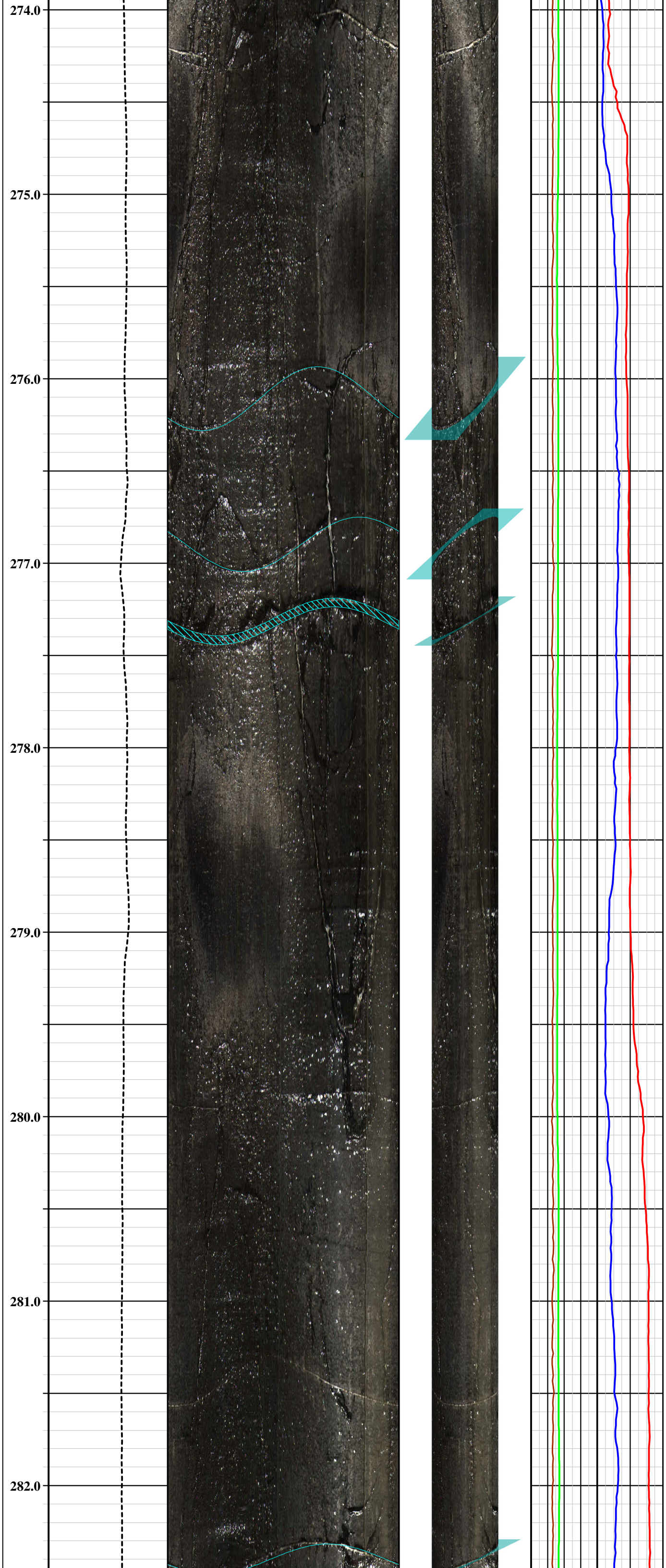

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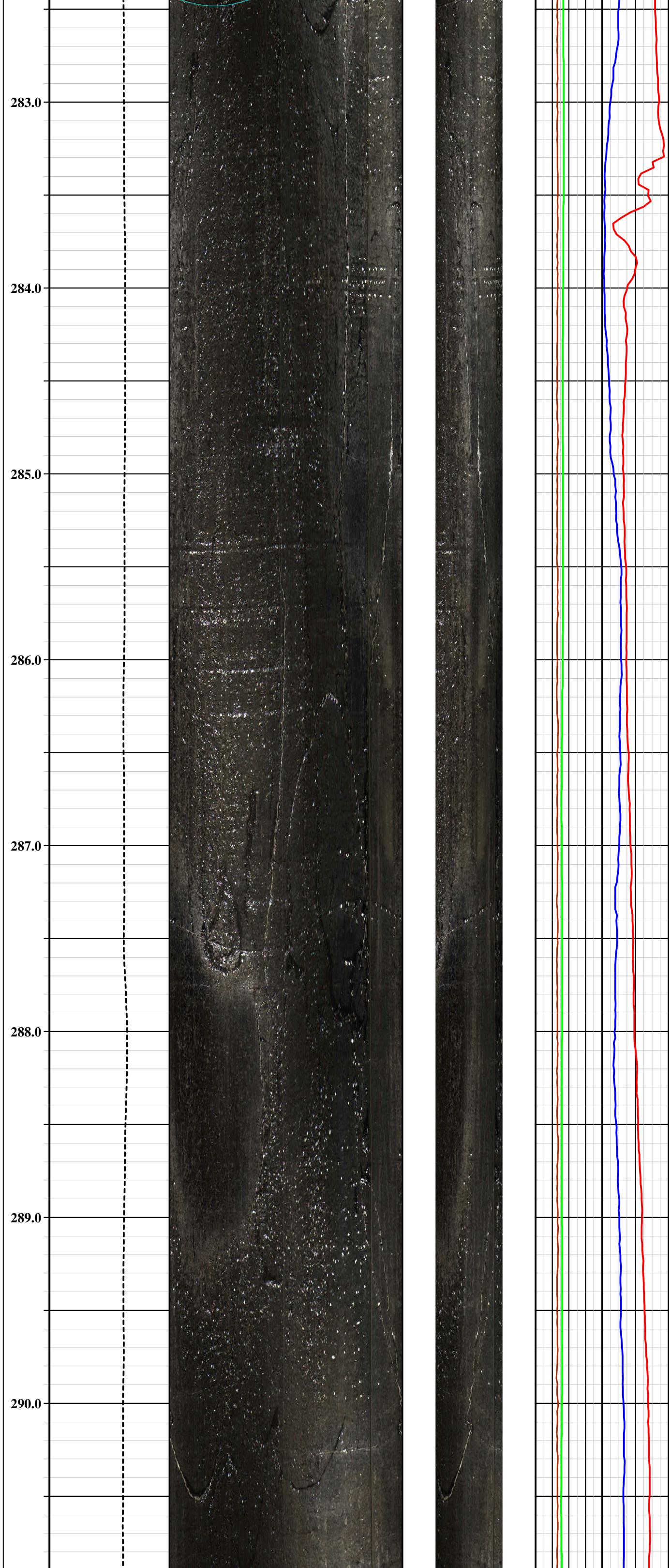

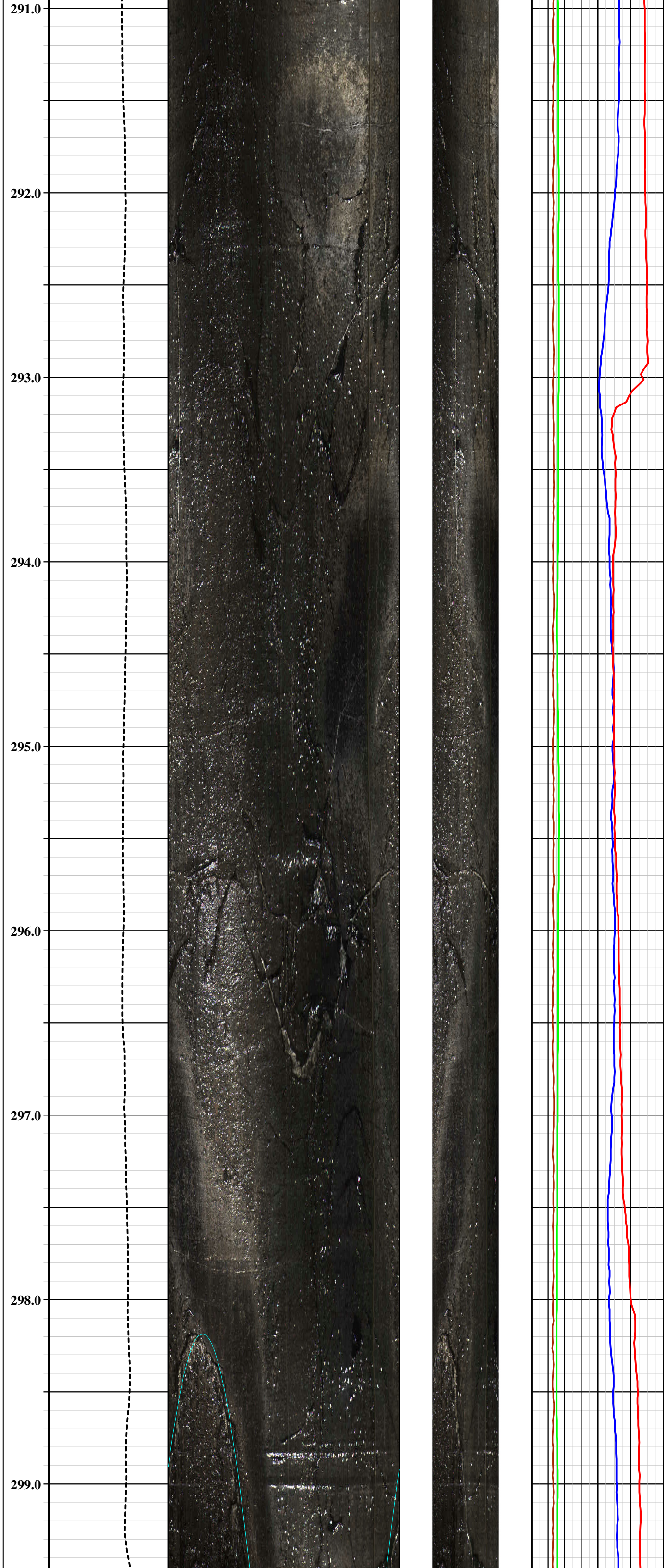
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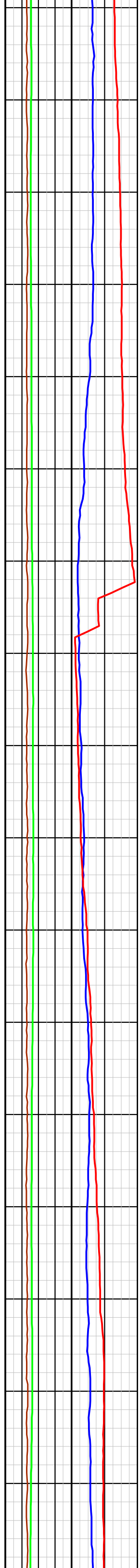

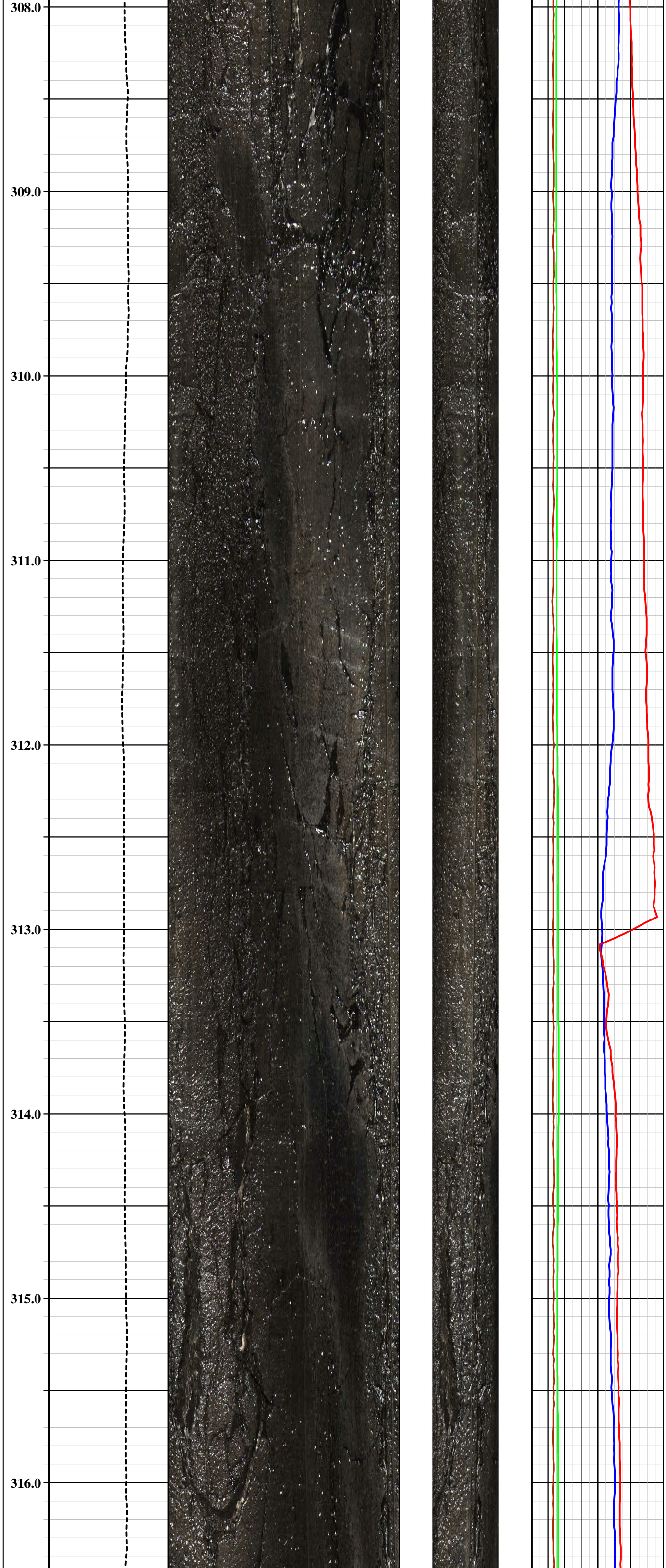
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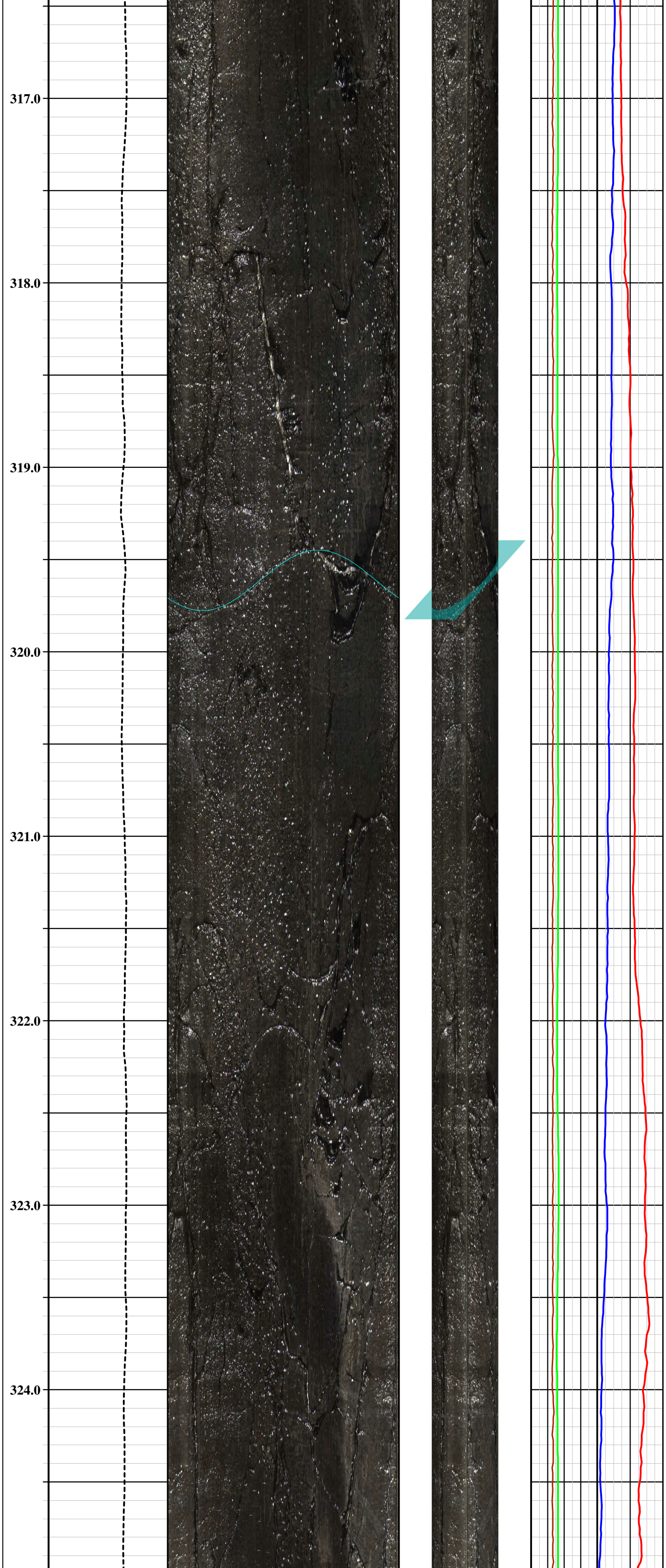

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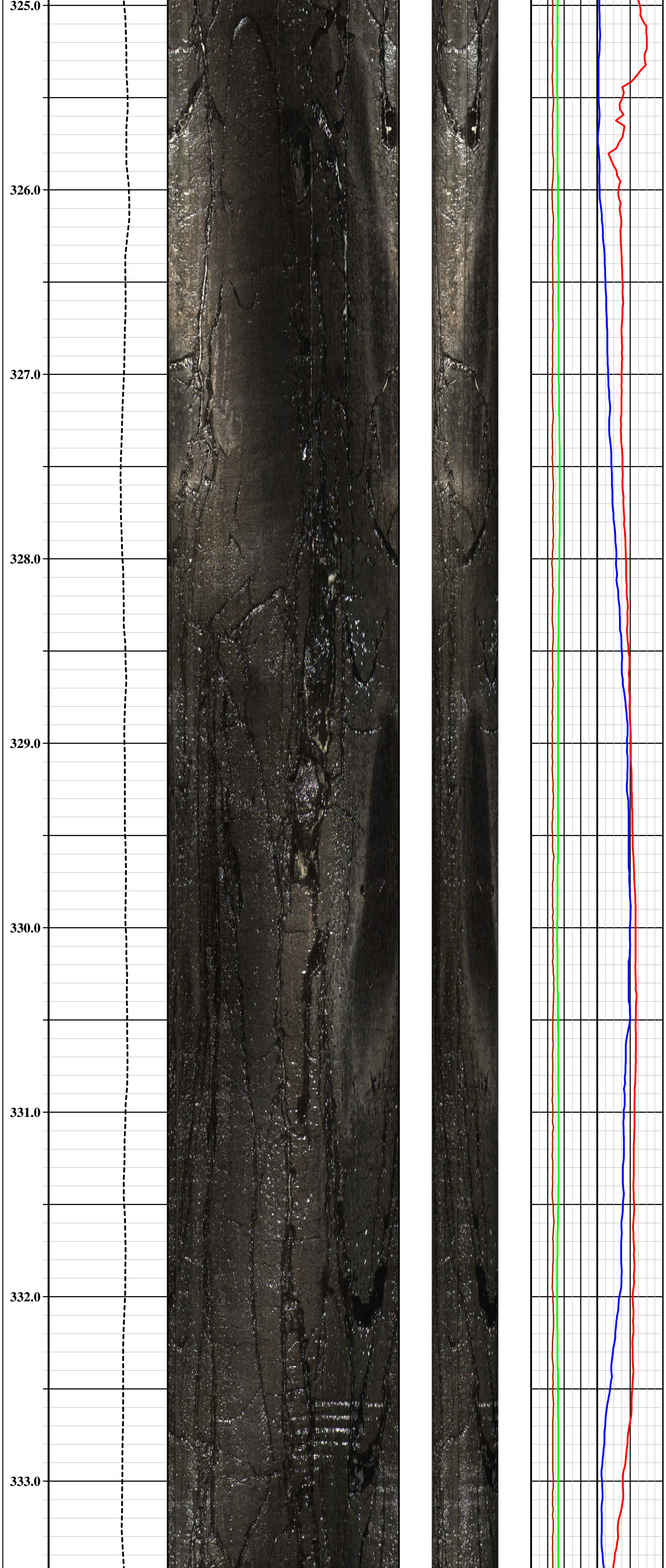

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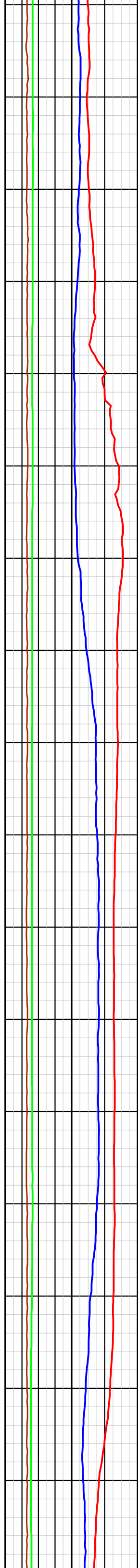

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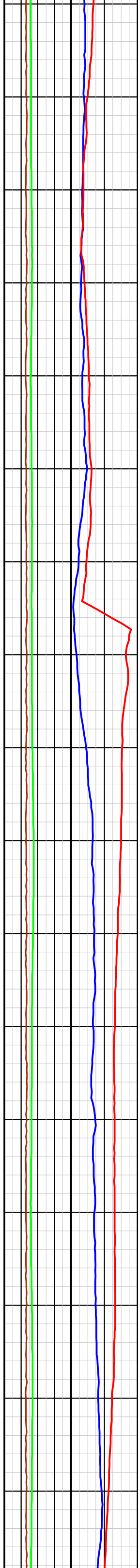

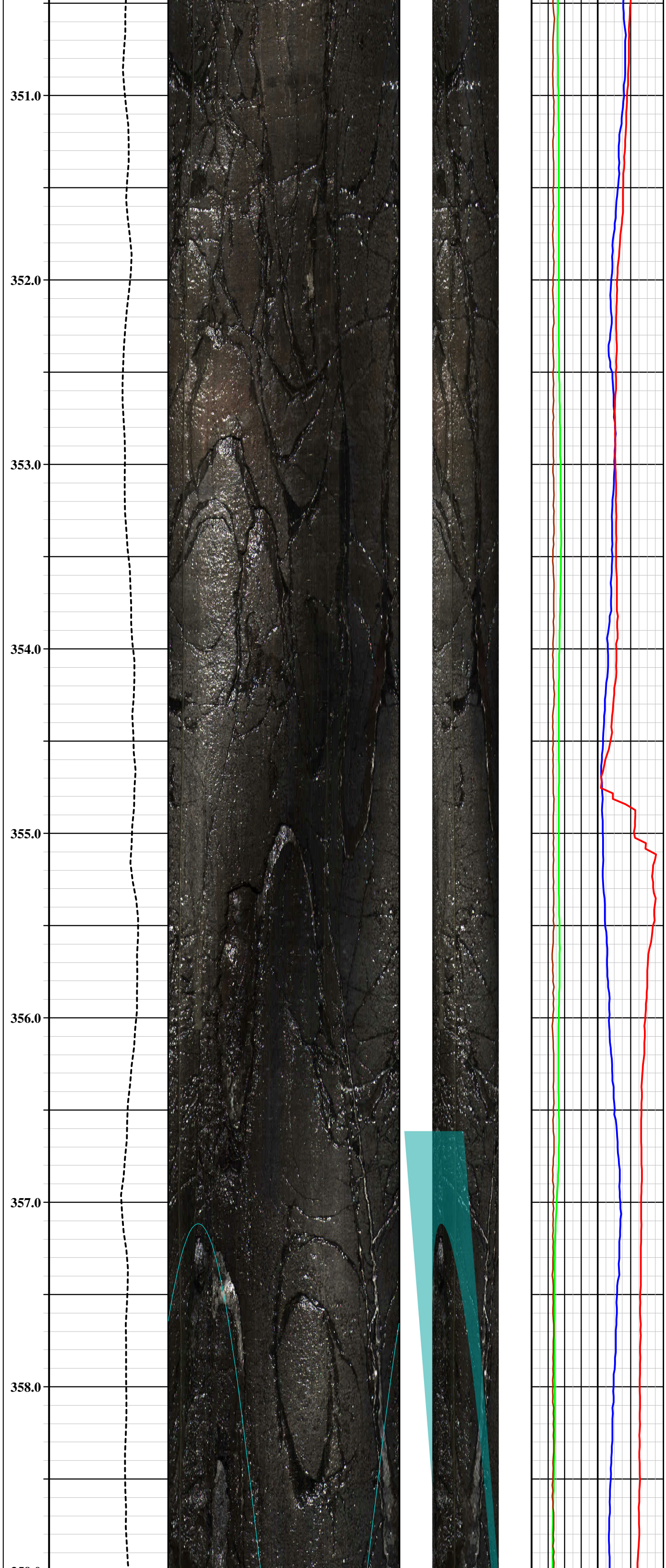
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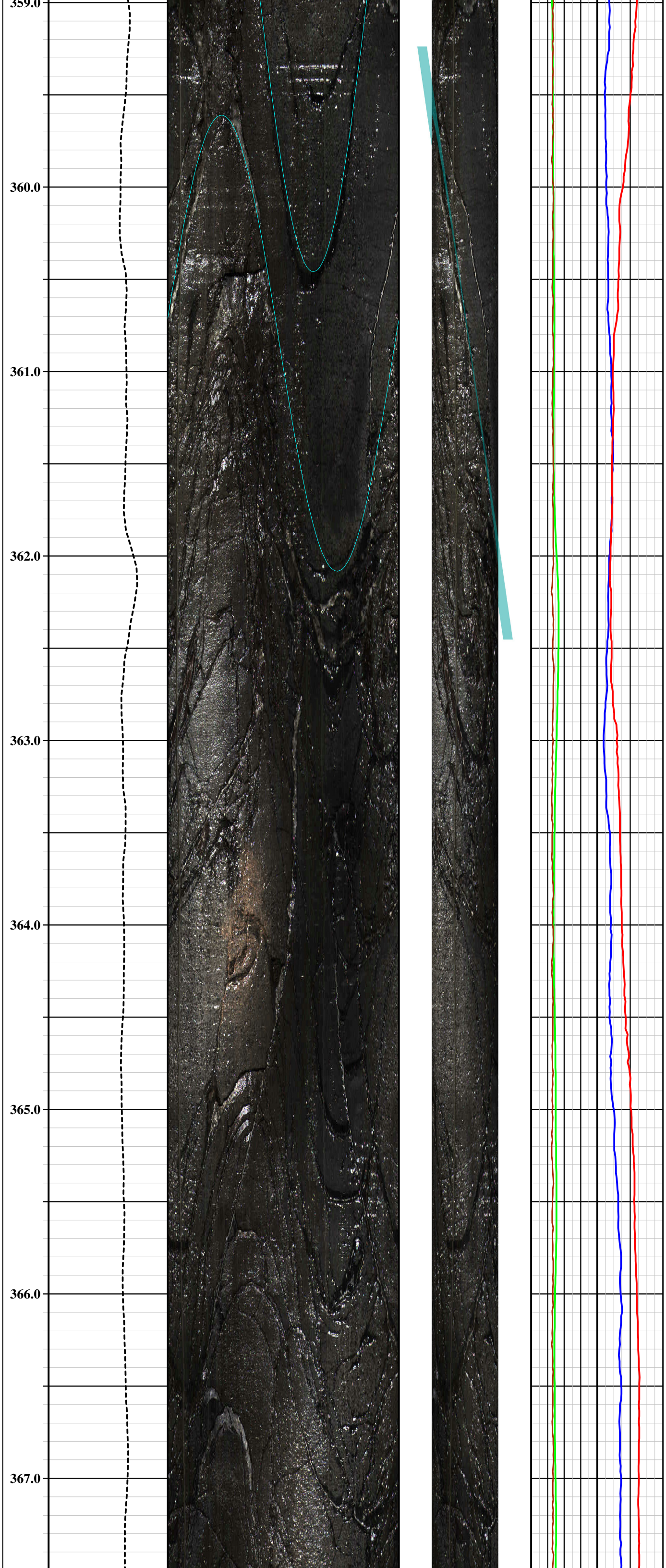

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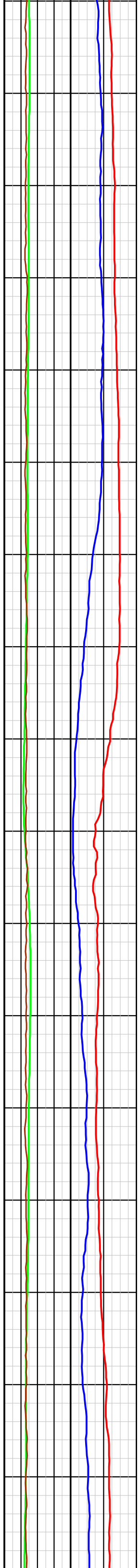

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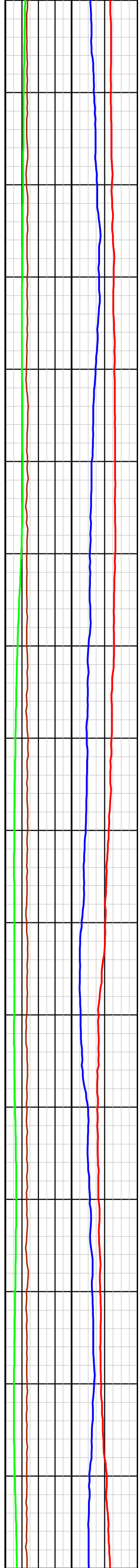

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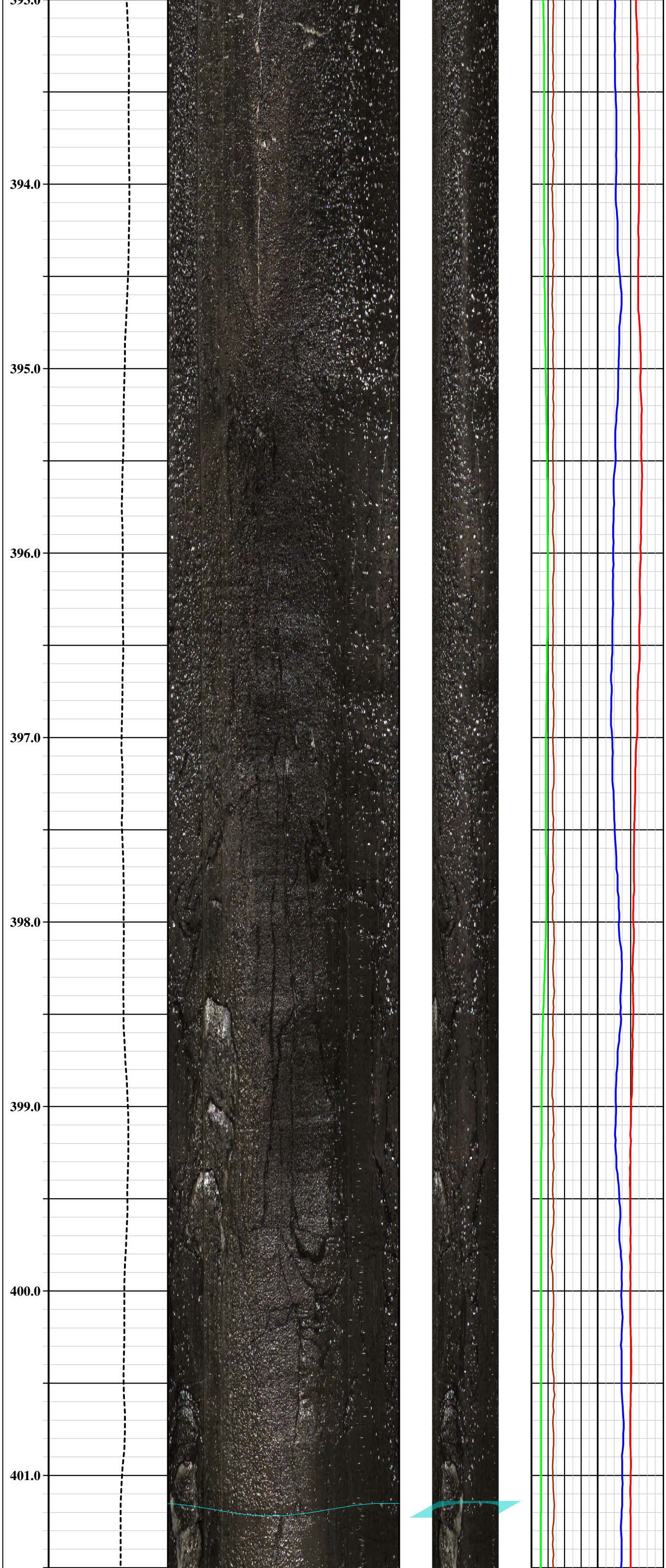

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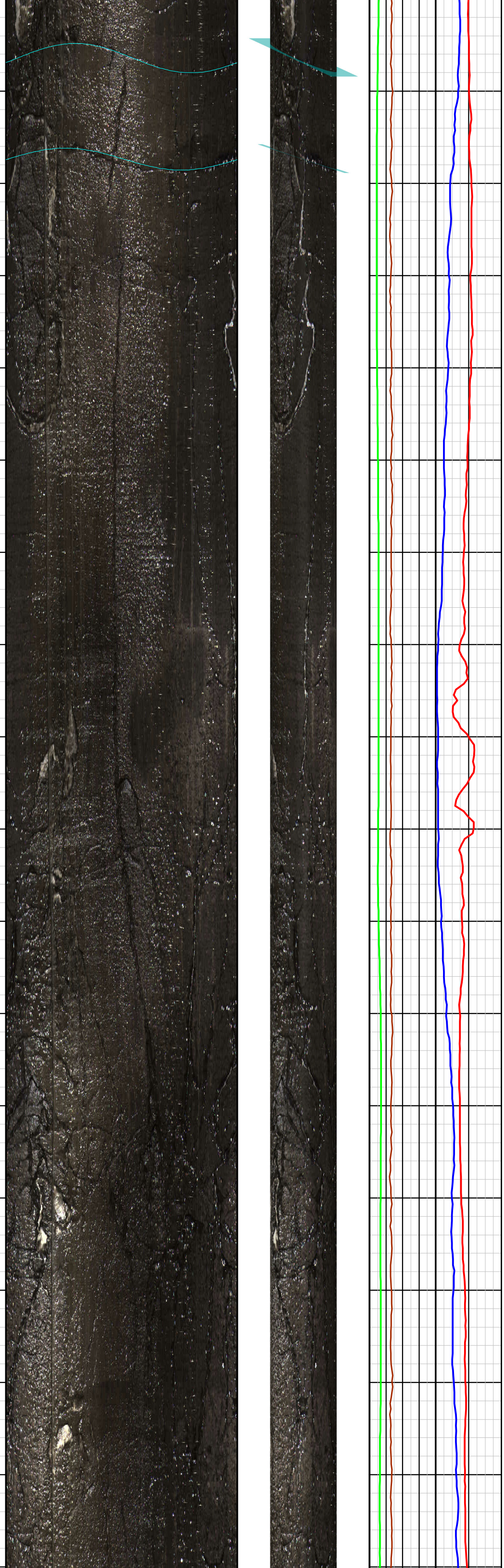

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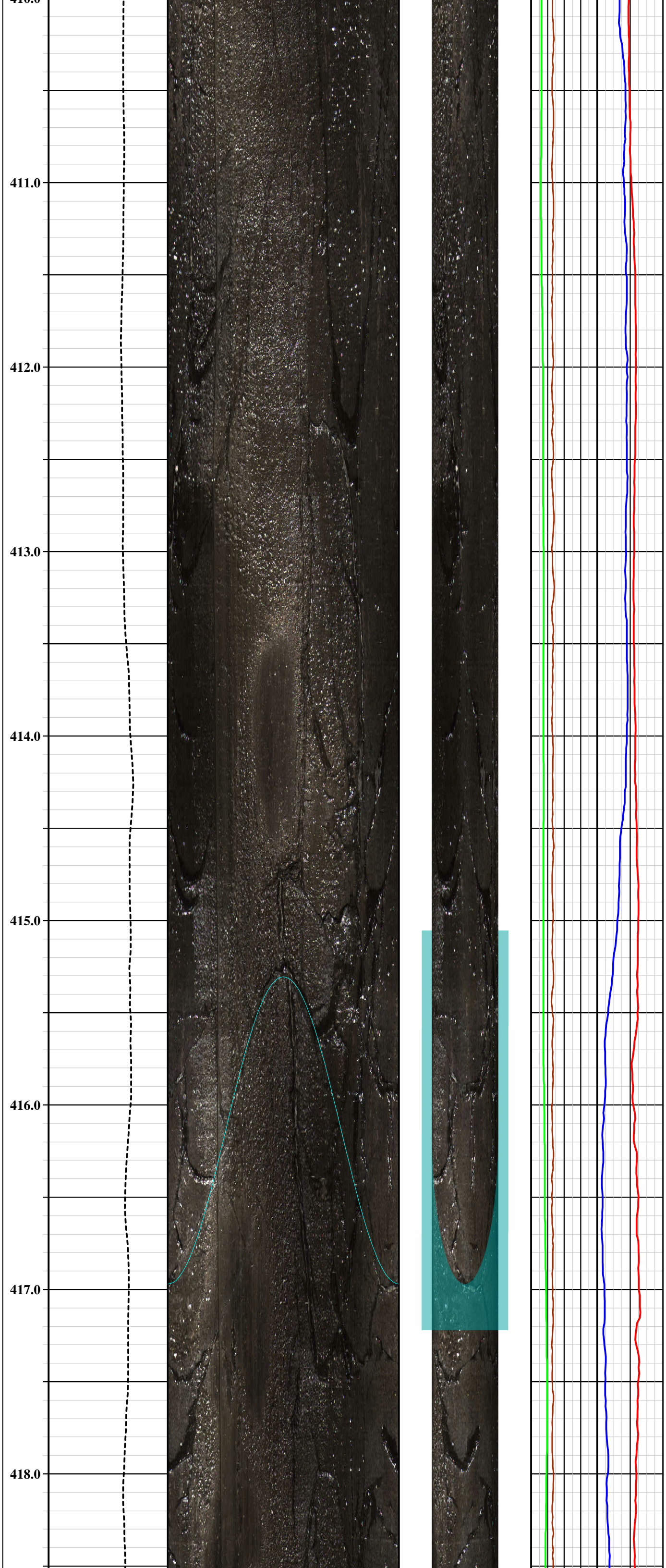

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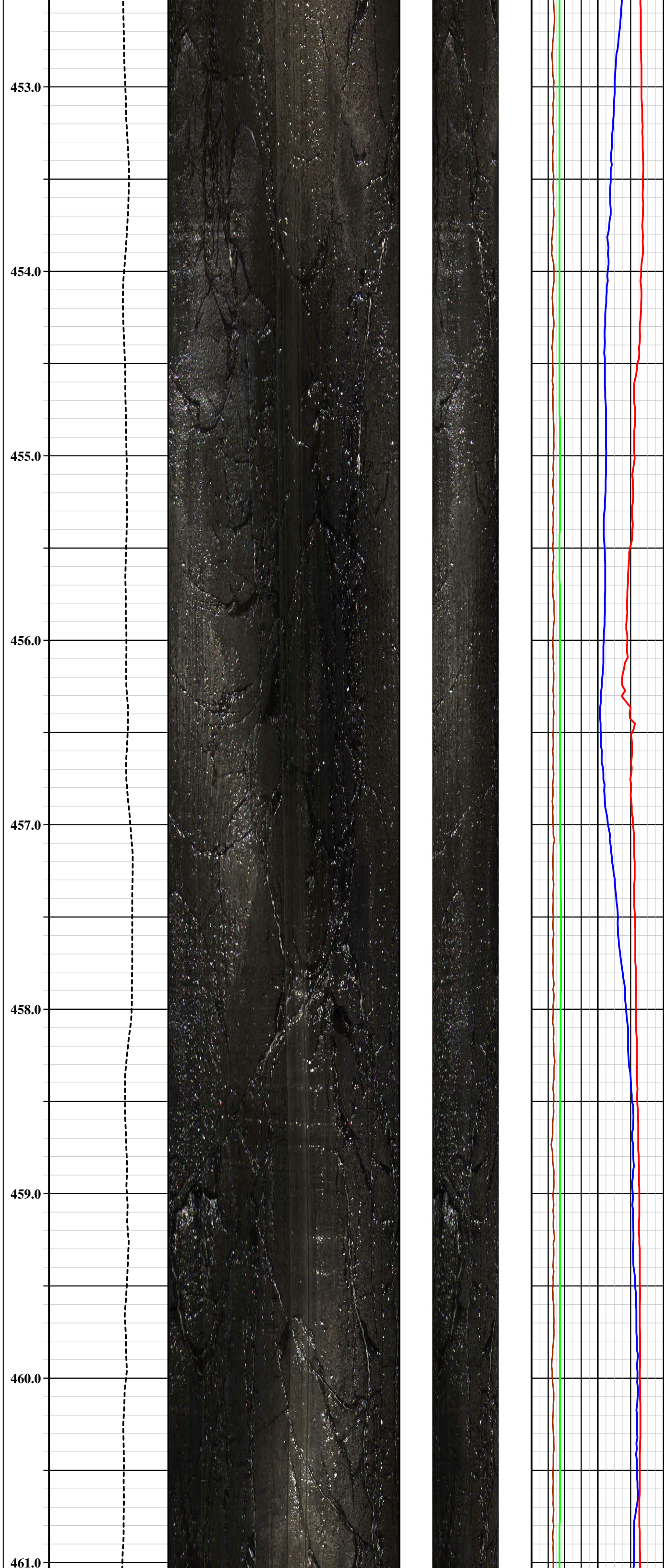
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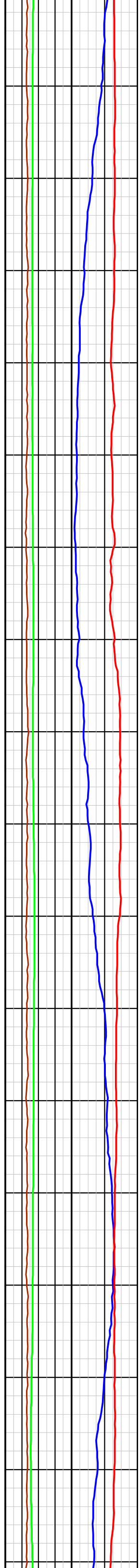

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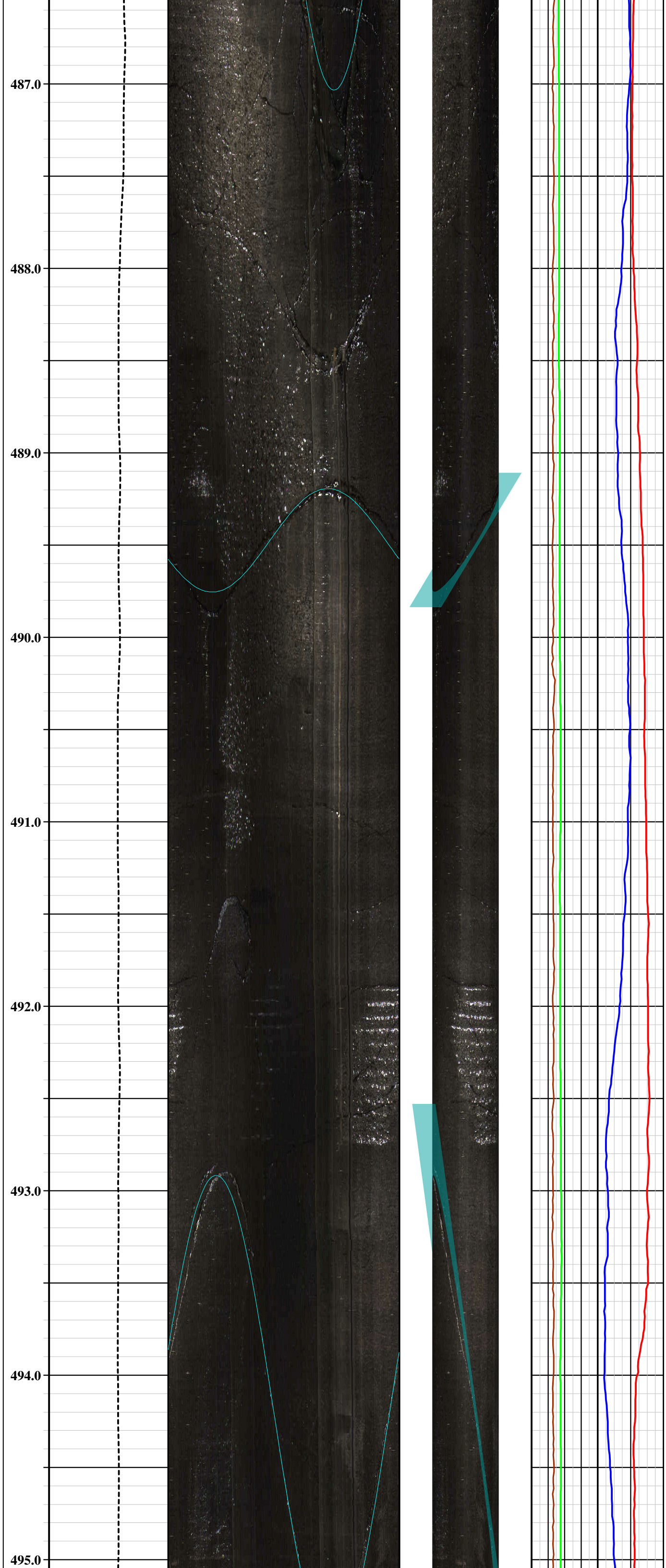
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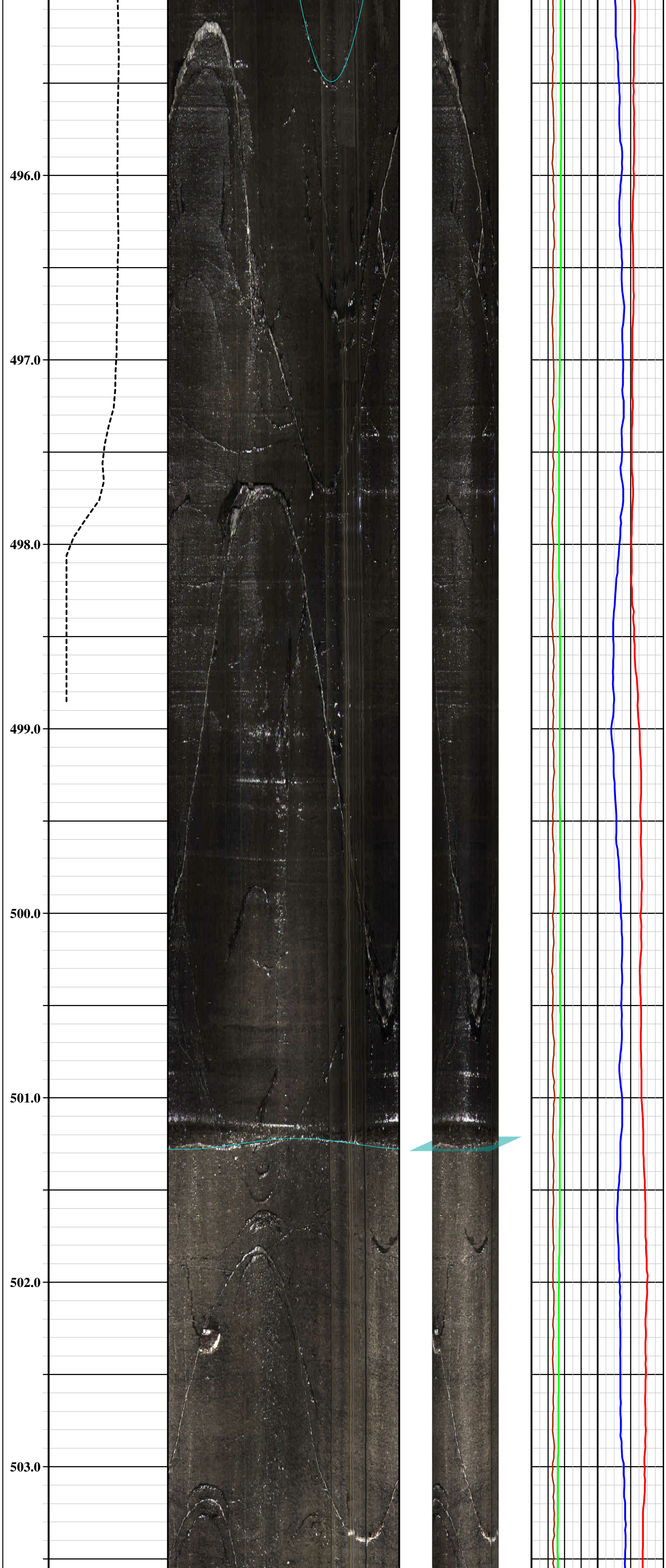

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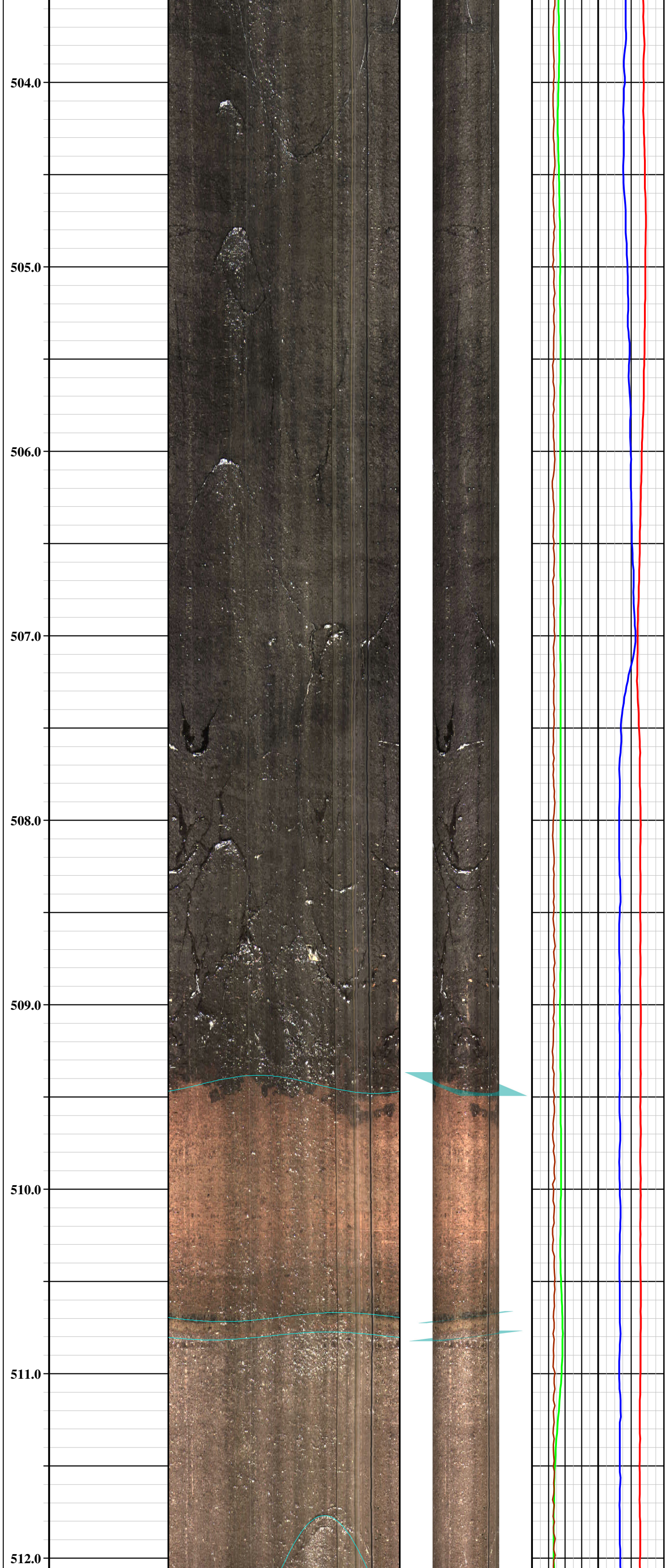

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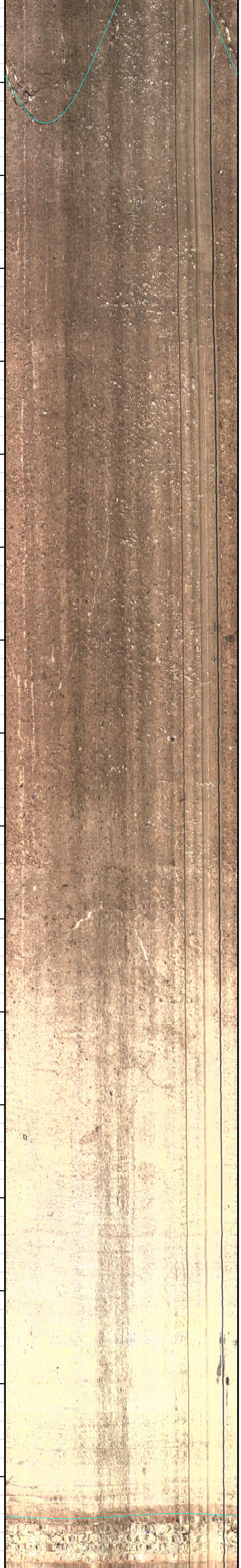



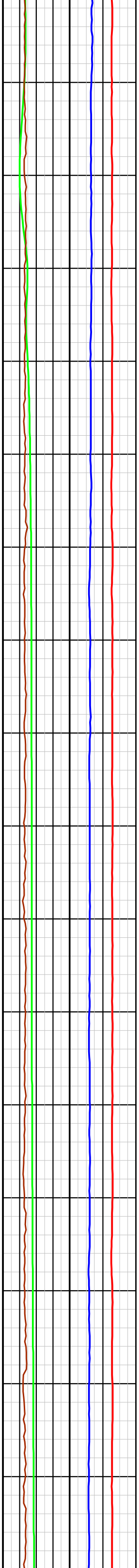

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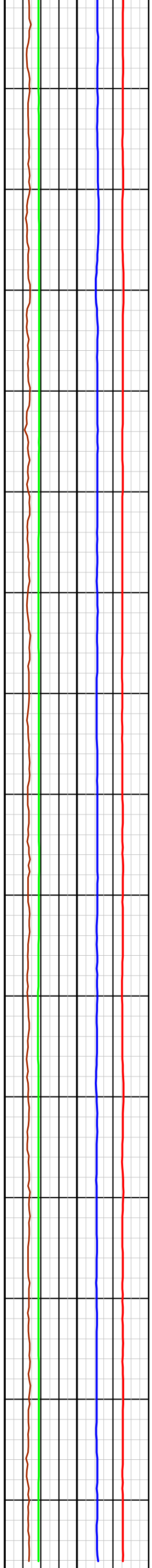


	8 Inches 13	0° 90° 180° 270° 0°		0.9 G 1.2	0 360
	3-Arm Caliper	Structures		Gravity	Azim-Edited
	0 API 300	0° 90° 180° 270° 0°	0°	40 uT 60	0 Deg 5
	Nat. Gamma	Oriented Mag North Image-NM (Corrected)	3-D View	Mag Field	Tilt
1ft:6ft					

QL OBI-40 2G Optical Borehole Imager

Probe Top = Depth Ref.

Tool SN: 145010 & 152511



APS Probe Orientation Sensor
3-Axis Magnetometer
3-Axis Accellerometer

Probe Length = 1.66 m or 5.46 ft

Probe Weight = 5.3 kg or 11.7 lbs

Distance from Optical Image Window to Orientation Sensor = 0.9 m or 3 ft

Inclination Accuracy = +/- 0.5 deg
Azimuth Accuracy = +/- 1.0 deg

Temperature Range: 0 - 70 Deg C (32 - 158 Deg F)
Pressure Range: 0 - 200 bar (0 - 2900 psi)

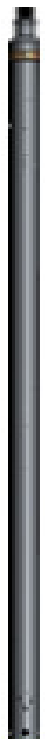
External Bow Spring Centralizers

Operates in dry or clear water conditions.

1.6" or 40 mm Diameter

MSI Gamma-Caliper-Temperature-Fluid Resistivity SN 4953

Probe Top = Depth Ref.



Probe Length = 2.59 m or 8.5 ft
Probe Weight = 6.80 kg or 15.0 lbs

Natural Gamma and Caliper can only be collected logging up hole.

Fluid Temperature/Resistivity can only be collected logging down hole.

Temperature Rating: 70 Deg C (158 Deg F)
Presure Rating: 200 bar (2900 psi)



3-Arm Caliper = 1.44 m (56.75 in)

Distance from tool top: 2.20 m (86.5 in)

Available Arm Sizes: 3", 9", and 15"

TFR (Temperature/Fluid Resistivity) = 0.39 m (15.5 in)

1.375" or 34.9 mm Diameter

Southwest Exploration Services, LLC

borehole geophysics & video services

Company	RESOLUTION COPPER MINING
Well	DS17-16
Field	NEAR WEST
County	PINAL
State	ARIZONA

Preliminary