

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 095 - 02597 County Tyler District Meade
Quad Middlebourne 7.5' Pad Name Sine Field/Pool Name -----
Farm name James Sine ET AL Well Number Alpine East Unit 2H
Operator (as registered with the OOG) Antero Resources Corporation
Address 1615 Wynkoop Street City Denver State CO Zip 80202

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4362852m Easting 503691m
Landing Point of Curve Northing 4363011m Easting 503950m
Bottom Hole Northing 4367451m Easting 502364m

Elevation (ft) 799' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
Air - Foam & 4% KCL
Mud - Polymer

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FEB 17 2023
WV Department of
Environmental Protection

Date permit issued 3/27/2019 Date drilling commenced 1/22/2020 Date drilling ceased 6/4/2020
Date completion activities began 9/6/2020 Date completion activities ceased 10/17/2020
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 42' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1269, 1274' Void(s) encountered (Y/N) depths No
Coal depth(s) ft 154, 278' Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

APPROVED

Reviewed by: [Signature]
05/19/2023
3/16/23

API 47-095 - 02597 Farm name James Sine ET AL Well number Alpine East Unit 2H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	26"	20"	110'	New	94#, H-40	N/A	Y
Surface	17-1/2"	13-3/8"	391'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2618'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	22152'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6180'		4.7#, P-110		
Packer type and depth set		N/A					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.20	245	0'	8 Hrs.
Surface	Class A	405 sx	15.8	1.17	474	0'	8 Hrs.
Coal							
Intermediate 1	Class A	878 sx	15.8	1.17	1027	0'	8 Hrs.
Intermediate 2							
Intermediate 3							
Production	Class H	4012 sx (Tail)	13.5 (Lead), 15.2(Tail)	1.16 (Tail)	4654	~500' into Intermediate Casing	8 Hrs.
Tubing							

Drillers TD (ft) 22152' MD, 6034' TVD (BHL), 6081' (Deepest Point Drilled) Loggers TD (ft) 22152' MD

Deepest formation penetrated Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 5416'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____

Conductor - 0
Surface - 1 above guide shoe, 1 above insert float, 1 every 4th joint to surface
Intermediate - 1 above float joint, 1 above float collar, 1 every 4th joint to surface
Production - 1 above float joint, 1 below float collar, 1 every 3rd joint to top of cement

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Office of Oil and Gas

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____ FEB 17 2023

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____ WV Department of Environmental Protection

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED N/A

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API 47-095 - 02597 Farm name James Sine ET AL Well number Alpine East Unit 2H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
*PLEASE SEE ATTACHED EXHIBIT 1					

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
*PLEASE SEE ATTACHED EXHIBIT 2								

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Please insert additional pages as applicable.

05/19/2023
JM
3/16/23

LATITUDE 39°25'00"

11,477'

LATITUDE 39°27'30"

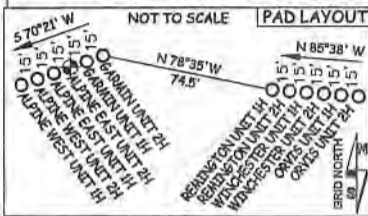
LONGITUDE 80°57'30"

569' LONGITUDE 80°55'00"

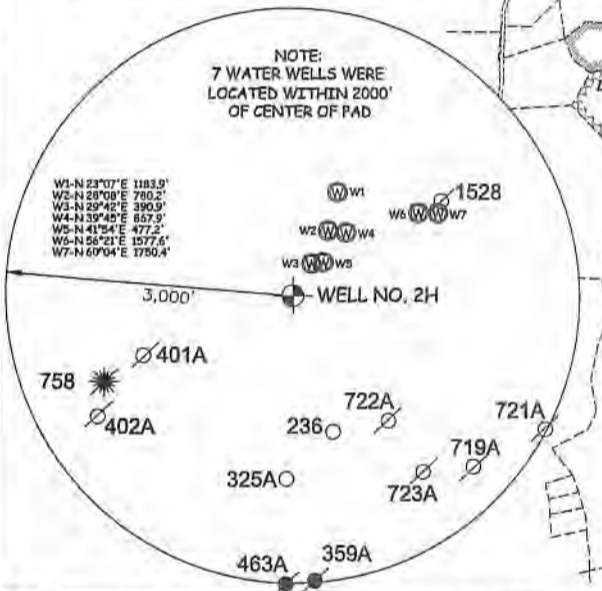
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POLICRY HERDS...

AS DRILLED DATA: WELL 2H TOP HOLE INFORMATION: N: 336,639ft E: 1,588,288ft LAT: 39°24'54.37" LON: 80°57'26.25" BOTTOM HOLE INFORMATION: N: 351,802ft E: 1,584,183ft LAT: 39°27'23.56" LON: 80°58'21.71" WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. ZONE WAS DERIVED FROM MEASUREMENTS TAKEN WITH TRIMBLE GEOXT SUBMETER MAPPING GRADE GPS UNIT. PLAT ORIENTATION, CORNER, AND WELL REFERENCE TIE LINES ARE BASED ON GRID NORTH.

(NAD) 83 (UTM) ZONE 17 COORDS: WELL 2H TOP HOLE INFORMATION: N: 4,362,852m E: 503,691m BOTTOM HOLE INFORMATION: N: 4,367,451m E: 502,364m



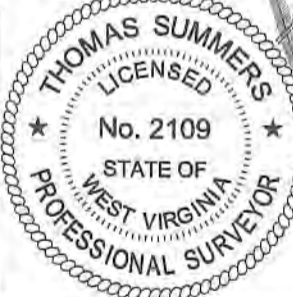
NOTE: 7 WATER WELLS WERE LOCATED WITHIN 2000' OF CENTER OF PAD



I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS. WILLOW LAND SURVEYING PLLC, 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415



JOB # 17-005WA, DRAWING # ALPINEEAST2H830AD, SCALE 1" = 2000', MINIMUM DEGREE OF ACCURACY SUBMETER, PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS, STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND: Surface Owner Boundary Lines +/-, Interior Surface Tracts +/-, Proposed Well Path, As Drilled Well Path. THOMAS SUMMERS P.S. 2109, DATE 01/19/21, OPERATOR'S WELL# ALPINE EAST UNIT #2H

WELL 2H POINT OF ENTRY INFORMATION: N: 337,147ft E: 1,589,146ft LAT: 39°24'59.53" LON: 80°57'15.42" (NAD) 83 (UTM) ZONE 17 COORDS: N: 4,363,011m E: 503,950m

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02597 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X LOCATION: ELEVATION 799'-AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK QUADRANGLE MIDDLEBOURNE 7.5 DISTRICT MEADE COUNTY PERMIT SURFACE OWNER JAMES SINE ET AL ACREAGE 32.395 ACRES +/- LEASE ACREAGE 54.74 ACRES+; 140 ACRES+; 2.94 ACRES+; 2.59 ACRES+; 4.66 ACRES+; 41 ACRES+; 98.06 ACRES+; 204.88 ACRES+; 173.65 ACRES+; 60 ACRES+; 46.3 ACRES+; 73.23 ACRES+; 5.66 ACRES+; 84.67 ACRES+; 25.413 ACRES+; 138.58 ACRES+; 43.25 ACRES+ PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) AS DRILLED PLUG & ABANDON CLEAN OUT & REPLUG TARGET FORMATION MARCELLUS ESTIMATED DEPTH 6,034' TVD 22,152' MD WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD DENVER, CO 80202 CHARLESTON, WV 25313

COUNTY NAME PERMIT

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SM

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11,477'

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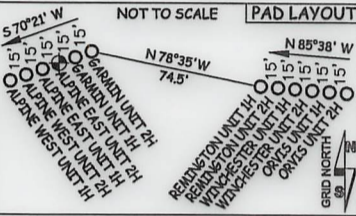
LONGITUDE 80°57'30"

569' LONGITUDE 80°55'00"

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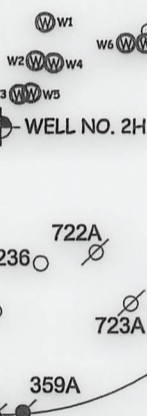
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NOTE: 7 WATER WELLS WERE LOCATED WITHIN 2000' OF CENTER OF PAD

- W1-N 23°07'E 1183.9'
W2-N 28°08'E 780.2'
W3-N 29°42'E 390.9'
W4-N 39°48'E 867.9'
W5-N 41°54'E 477.2'
W6-N 56°21'E 1577.6'
W7-N 60°04'E 1750.4'

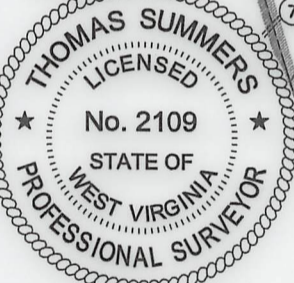


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STATE OF WEST VIRGINIA, DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

WILLOW LAND SURVEYING PLLC 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415



JOB # 17-005WA
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SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY SUBMETER
PROVEN SOURCE OF ELEV. SUBMETER MAPPING GRADE GPS
STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY DIVISION OF OIL AND GAS

LEGEND

- Surface Owner Boundary Lines +/-
Interior Surface Tracts +/-
Proposed Well Path
As Drilled Well Path

THOMAS SUMMERS P.S. 2109

DATE 01/19/21

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LOCATION: ELEVATION 799' - AS BUILT WATERSHED OUTLET MIDDLE ISLAND CREEK QUADRANGLE MIDDLEBOURNE 7.5 DISTRICT MEADE COUNTY TYLER
SURFACE OWNER JAMES SINE ET AL ACREAGE 32.395 ACRES +/-
OIL & GAS ROYALTY OWNER JAMES SINE ET UX; ROBERT S. CARSE ET UX; LILLIAN LEE EDDY; DONALD E. ROBINSON ET UX; EARL G. GLENDENNING; JANIE DENOON TRUST; DONALD E. ROBINSON ET UX; JAMES M. UTT; DONALD L. BAKER ET UX; ROGER L. STEVENS ET UX; ALLIANCE PETROLEUM CORP.; STAR FURNITURE CO.; GEORGE ALLAN EDDY; HAROLD E. ANDREWS ET UX; ALFRED EDWARD TUTTLE ET AL; GEORGE E. POST ET UX
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ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD
FORM WW-6 DENVER, CO 80202 CHARLESTON, WV 25313

05/19/2023

COUNTY NAME PERMIT

API 47-095-02597 Farm Name James Sine ET AL Well Number Alpine East Unit 2H

Exhibit 1

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	9/6/2020	22034	0	60	Marcellus
2	9/6/2020	21948.14286	21770.8571	60	Marcellus
3	9/7/2020	21697.14286	21519.8571	60	Marcellus
4	9/8/2020	21446.14286	21268.8571	60	Marcellus
5	9/8/2020	21195.14286	21017.8571	60	Marcellus
6	9/9/2020	20944.14286	20766.8571	60	Marcellus
7	9/10/2020	20693.14286	20515.8571	60	Marcellus
8	9/10/2020	20442.14286	20264.8571	60	Marcellus
9	9/11/2020	20191.14286	20013.8571	60	Marcellus
10	9/11/2020	19940.14286	19762.8571	60	Marcellus
11	9/12/2020	19689.14286	19511.8571	60	Marcellus
12	9/12/2020	19438.14286	19260.8571	60	Marcellus
13	9/13/2020	19187.14286	19009.8571	60	Marcellus
14	9/13/2020	18936.14286	18758.8571	60	Marcellus
15	9/14/2020	18685.14286	18507.8571	60	Marcellus
16	9/14/2020	18434.14286	18256.8571	60	Marcellus
17	9/15/2020	18183.14286	18005.8571	60	Marcellus
18	9/15/2020	17932.14286	17754.8571	60	Marcellus
19	9/16/2020	17681.14286	17503.8571	60	Marcellus
20	9/16/2020	17430.14286	17252.8571	60	Marcellus
21	9/17/2020	17179.14286	17001.8571	60	Marcellus
22	9/17/2020	16928.14286	16750.8571	60	Marcellus
23	9/17/2020	16677.14286	16499.8571	60	Marcellus
24	9/17/2020	16426.14286	16248.8571	60	Marcellus
25	9/18/2020	16175.14286	15997.8571	60	Marcellus
26	9/18/2020	15924.14286	15746.8571	60	Marcellus
27	9/19/2020	15673.14286	15495.8571	60	Marcellus
28	9/19/2020	15422.14286	15244.8571	60	Marcellus
29	9/19/2020	15171.14286	14993.8571	60	Marcellus
30	9/20/2020	14920.14286	14742.8571	60	Marcellus
31	9/20/2020	14669.14286	14491.8571	60	Marcellus
32	9/20/2020	14418.14286	14240.8571	60	Marcellus
33	9/21/2020	14167.14286	13989.8571	60	Marcellus
34	9/21/2020	13916.14286	13738.8571	60	Marcellus
35	9/21/2020	13665.14286	13487.8571	60	Marcellus
36	9/22/2020	13414.14286	13236.8571	60	Marcellus
37	9/22/2020	13163.14286	12985.8571	60	Marcellus
38	9/23/2020	12912.14286	12734.8571	60	Marcellus
39	9/23/2020	12661.14286	12483.8571	60	Marcellus
40	9/23/2020	12410.14286	12232.8571	60	Marcellus
41	9/24/2020	12159.14286	11981.8571	60	Marcellus
42	9/24/2020	11908.14286	11730.8571	60	Marcellus
43	9/24/2020	11657.14286	11479.8571	60	Marcellus
44	9/25/2020	11406.14286	11228.8571	60	Marcellus
45	9/25/2020	11155.14286	10977.8571	60	Marcellus
46	9/25/2020	10904.14286	10726.8571	60	Marcellus
47	9/25/2020	10653.14286	10475.8571	60	Marcellus
48	9/26/2020	10402.14286	10224.85714	60	Marcellus
49	9/26/2020	10151.14286	9973.857143	60	Marcellus
50	9/26/2020	9900.142857	9722.857143	60	Marcellus
51	9/27/2020	9649.142857	9471.857143	60	Marcellus
52	9/27/2020	9398.142857	9220.857143	60	Marcellus
53	9/27/2020	9147.142857	8969.857143	60	Marcellus
54	9/27/2020	8896.142857	8718.857143	60	Marcellus
55	9/28/2020	8645.142857	8467.857143	60	Marcellus
56	9/28/2020	8394.142857	8216.857143	60	Marcellus
57	9/28/2020	8143.142857	7965.857143	60	Marcellus
58	9/29/2020	7892.142857	7714.857143	60	Marcellus
59	9/29/2020	7641.142857	7463.857143	60	Marcellus
60	9/29/2020	7390.142857	7212.857143	60	Marcellus
61	9/29/2020	7139.142857	6961.857143	60	Marcellus
62	9/30/2020	6888.142857	6710.857143	60	Marcellus
63	9/30/2020	6637.142857	6459.857143	60	Marcellus

SM

05/19/2023

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	9/6/2020	85.84	10658	0	3425.29	189610	5521.881	N/A
2	9/6/2020	85.69	9157	5387	3323.33	526850	10840.29	N/A
3	9/7/2020	90.78	10088	5328	3455.91	526030	10008.76	N/A
4	9/8/2020	99.19	10476	5305	3435.24	526730	9932.595	N/A
5	9/8/2020	87.4	9422	4920	3391.12	523080	9917.905	N/A
6	9/9/2020	86.42	9201	5620	3543.96	505780	9847.357	N/A
7	9/10/2020	88.6	10235	5328	3353.61	522500	9827.31	N/A
8	9/10/2020	94.9	10068	6327	3464.95	525998	9854.429	N/A
9	9/11/2020	96.22	10067	5887	3506.74	526638	9664.405	N/A
10	9/11/2020	96.35	10041	5608	3314.33	525280	9588.357	N/A
11	9/12/2020	88.03	8943	6231	3731.93	527927	9577.5	N/A
12	9/12/2020	95.64	9941	6577	3286.07	525630	9662.048	N/A
13	9/13/2020	94.53	9469	5673	3573.74	529152	9580.69	N/A
14	9/13/2020	93.39	9552	6417	3224.6	525950	9639.143	N/A
15	9/14/2020	96.8	9799	5771	3548.03	531680	9566.31	N/A
16	9/14/2020	94.34	9689	4768	3344.08	524610	9601.786	N/A
17	9/15/2020	91.58	9282	6189	3439.84	525900	11028.95	N/A
18	9/15/2020	97.36	9507	5978	3452	527250	9488.929	N/A
19	9/16/2020	97.87	9960	6350	3438.22	524247	9432.238	N/A
20	9/16/2020	95.75	9499	6249	3438	525400	9439.976	N/A
21	9/17/2020	93.57	9015	6595	3355.87	528780	9364.119	N/A
22	9/17/2020	97.58	9077	6270	3649.71	505240	9104.262	N/A
23	9/17/2020	96.31	9072	5949	3613.43	524818	9181.786	N/A
24	9/17/2020	94.34	9040	6018	3681.35	526140	9355.881	N/A
25	9/18/2020	97.86	8997	5517	3771.82	524657	9328.429	N/A
26	9/18/2020	93	8873	5488	3290.32	525990	9282.024	N/A
27	9/19/2020	93.47	9025	5545	4166.19	526870	9304.167	N/A
28	9/19/2020	95.86	8926	5403	3634.11	526463	9175.31	N/A
29	9/19/2020	96.21	8895	6005	7402.8	526280	9335.714	N/A
30	9/20/2020	97.45	8925	5850	3642.82	524950	9294.571	N/A
31	9/20/2020	95.24	8872	5397	4410.69	526940	9218.476	N/A
32	9/20/2020	95.71	8971	5823	4366.29	526140	9090.929	N/A
33	9/21/2020	98.87	9090	5515	3630.13	525730	9106.929	N/A
34	9/21/2020	97.43	8985	5313	3566.81	523109	9104.381	N/A
35	9/21/2020	96.76	8899	5456	4241.54	505280	8870.5	N/A
36	9/22/2020	97.23	8944	6371	3540.65	503840	8836.333	N/A
37	9/22/2020	96.87	9017	4701	3417.21	505540	8900.119	N/A
38	9/23/2020	95.06	8924	5398	3393.7	505480	8893.5	N/A
39	9/23/2020	98.28	9070	5825	4036	503540	8862.929	N/A
40	9/23/2020	95.87	8825	5711	3808.28	504920	8792.857	N/A
41	9/24/2020	98.81	8772	5694	3749	504780	8807.024	N/A
42	9/24/2020	98.02	8956	5910	3925	503160	8685.048	N/A
43	9/24/2020	99.03	8998	5051	4884.64	506380	8796.548	N/A
44	9/25/2020	98.98	8946	4993	4089	505780	8425.381	N/A
45	9/25/2020	95	9012.75	6136.27	3765.9	504200	8548.286	N/A
46	9/25/2020	98.25	8850	5568	3718.56	504600	8583.571	N/A
47	9/25/2020	99.24	8627	5450	3757.94	504540	8596.476	N/A
48	9/26/2020	99.1	8909	5440	3794	505720	8696.857	N/A
49	9/26/2020	98.68	8803	5745	3779	504240	8577.786	N/A
50	9/26/2020	98.87	8861	5220	3828.11	505060	8644.881	N/A
51	9/27/2020	97.12	8559.67	5308	3730.27	505580	8596.833	N/A
52	9/27/2020	98.85	8370	5945	3604	503400	8462.167	N/A
53	9/27/2020	96.56	8283	5601	3705.37	504940	9351.571	N/A
54	9/27/2020	98.91	8187	4060	3678.2	503940	8468.857	N/A
55	9/28/2020	99.5	7965	5599	3731	505480	8529.071	N/A
56	9/28/2020	96.59	8640	5890	3559	505100	8486.143	N/A
57	9/28/2020	99.97	8430	4986	3747.78	3/29/3283	8475.857	N/A
58	9/29/2020	100	8117	5638	3698	5/17/3285	8402.714	N/A
59	9/29/2020	98.55	7711	5763	3937	6/22/3282	8471.476	N/A
60	9/29/2020	99	7870	5757	3715.71	6/7/3281	8489.548	N/A
61	9/29/2020	98.41	7789	5236	3959.12	3/15/3278	8566.833	N/A
62	9/30/2020	99.24	7664	6056	4009	7/8/3279	8361.143	N/A
63	9/30/2020	100.2	7773	5831	4049	3/18/3285	8375.19	N/A
AVG=		96	9,025	5,570	3,742	32,147,749	571,823	TOTAL

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EXHIBIT 3


LITHOLOGY/ FORMATION	TOP DEPTH (TVD)	BOTTOM DEPTH (TVD)	TOP DEPTH (MD)	BOTTOM DEPTH (MD)
	From Surface	From Surface	From Surface	From Surface
Silty Sandstone	70	190	70	190
Silty Shale	190	240	190	240
shaly sand	240	410	240	410
Shale	410	470	410	470
Dolomitic Shale	470	750	470	750
Shaly Siltstone	750	870	750	870
Silty Sandstone	870	910	870	910
Shaly Sand	910	980	910	980
Sandstone	980	1,120	980	1,120
Silty, Shaly, Sandstone	1,120	1,180	1,120	1,180
Sandstone, Tr Shale, Tr Coal	1,180	1,230	1,180	1,230
Silty Sandstone	1,230	1,510	1,230	1,510
Shaly Siltstone	1,510	1,608	1,510	1,608
Big Lime	1,638	2,461	1,608	2,462
Fifty Foot Sandstone	2,461	2,543	2,432	2,544
Gordon	2,543	2,916	2,514	2,918
Fifth Sandstone	2,916	3,221	2,888	3,225
Bayard	3,221	3,769	3,195	3,790
Speechley	3,769	4,099	3,760	4,145
Balltown	4,099	4,275	4,115	4,331
Bradford	4,275	4,548	4,301	4,622
Benson	4,548	4,703	4,592	4,789
Alexander	4,703	5,925	4,759	6,141
Sycamore	5,794	5,895	5,967	6,111
Middlesex	5,895	5,982	6,111	6,283
Burkett	5,982	6,006	6,283	6,350
Tully	6,006	6,012	6,350	6,372
Marcellus	6,012	NA	6,372	NA

*Please note Antero determines formation tops based on mud logs that are only run on one well on a multi-well pad. The measured depth (MD) data on subsequent wells may be slightly different due to the well's unique departure.

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/6/2020
Job End Date:	9/30/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02597-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Alpine East 2H
Latitude:	39.41510000
Longitude:	-80.95729000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,080
Total Base Water Volume (gal):	23,979,928
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Produced Water Blend	Halliburton	Base Fluid	Water	7732-18-5	100.00000	86.24659	Density = 8.50
Ingredients	Listed Above	Listed Above	Water	7732-18-5	100.00000	0.13298	

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Exceletrate LX-15	Halliburton	Friction Reducer					
				Listed Below			
HAI-501	Halliburton	Acid Corrosion Inhibitor					
				Listed Below			
Sand-Premium White-40/70	Halliburton	Proppant					
				Listed Below			
Sand-Common White-100 Mesh, SSA-2	Halliburton	Proppant					
				Listed Below			
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
				Listed Below			
OPTIFLO-II DELAYED RELEASE BREAKER	Halliburton	Breaker					
				Listed Below			
MC B-8614	Halliburton	Biocide					
				Listed Below			
HYDROCHLORIC ACID, 22 BAUME	Halliburton	Solvent					
				Listed Below			

Items above are Trade Names with the exception of Base Water. Items below are the individual ingredients.

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			Crystalline silica, quartz	14808-60-7	100.00000	13.60273	
			Hydrochloric acid	7647-01-0	30.00000	0.03108	
			Complex Amine Compound	Proprietary	60.00000	0.02104	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01052	
			Guar gum	9000-30-0	100.00000	0.00339	
			Glutaraldehyde	111-30-8	30.00000	0.00250	
			Sobitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00175	
			Surfactant	Proprietary	5.00000	0.00175	
			Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00042	
			Ethoxylated alcohols	Proprietary	5.00000	0.00036	
			Organic chloride compound	Proprietary	1.00000	0.00035	
			Alkoxyated polyhydric alcohol	Proprietary	1.00000	0.00035	
			Methanol	67-56-1	100.00000	0.00028	
			Ammonium persulfate	7727-54-0	100.00000	0.00011	
			Ethanol	64-17-5	1.00000	0.00008	
			Modified thiourea polymer	Proprietary	30.00000	0.00006	
			Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00006	
			Oxylated phenolic resin	Proprietary	30.00000	0.00003	
			Propargyl alcohol	107-19-7	5.00000	0.00001	
			Hexadecene	629-73-2	5.00000	0.00001	
			Phosphoric acid	7664-38-2	0.10000	0.00001	
			Nitrated acetate salt	Proprietary	0.01000	0.00000	
			Acrylamide	79-06-1	0.01000	0.00000	
			Organic salt #1	Proprietary	0.01000	0.00000	

UJ

			Sodium hydroxide	1310-73-2	0.01000	0.00000	
			Formaldehyde	50-00-0	0.01000	0.00000	
			Sodium glycolate	2836-32-0	0.01000	0.00000	
			Organic salt #2	Proprietary	0.01000	0.00000	
			C.I. pigment Orange 5	3468-63-1	1.00000	0.00000	

* Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

*** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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**RADIAL CEMENT BOND LOG
GAMMA RAY / CCL / VDL
TEMP / CEMENT MAP**

Company ANTERO RESOURCES CORPORATION Well ALPINE EAST UNIT 2H Field MARCELLUS County TYLER State WV	Country US	Company	ANTERO RESOURCES CORPORATION	
		Well	ALPINE EAST UNIT 2H	
		Field	MARCELLUS	
		County	TYLER	
	State	WV	Country US	
		Location:	API # : 47095025970000	Other Services
			AFE # A10517	
		SEC	TWP	RGE
		Permanent Datum	GL	Elevation N/A
		Log Measured From	KB	K.B.
		Drilling Measured From	KB 30FT	D.F.
				G.L.

Date	6 AUG 2020
Run Number	1
Depth Driller	22,132
Depth Logger	6382
Bottom Logged Interval	6382
Top Log Interval	SURFACE
Open Hole Size	N/A
Type Fluid	WATER
Density / Viscosity	N/A
Max. Recorded Temp.	136
Estimated Cement Top	4590
Time Well Ready	ON ARRIVAL
Time Logger on Bottom	16:05
Equipment Number	214182
Location	BRIDGEPORT WV
Recorded By	K.LINGER
Witnessed By	MR. CARTER

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
Casing Record		Size	Wgt/Ft	Top	Bottom		
Surface String		13.375	N/A	SURFACE	370		
Prot. String		9.625	N/A	SURFACE	2598		
Production String		5.5	23	SURFACE	22,132		
Liner							

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, 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 officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

LOG RAN UNDER 1500 PSI
CORRELATED TO PIPE TALLY
SHIFTED 0 FT TO MATCH
MARKER JOINT @ 5241-5251
CEMENT TOP @ 4590
TOOL GOT STUCK @ 6250

PULLED THROUGH STUCK SPOT @6250 AFTER 3 ATTEMPTS WITH NO WEIGHT GAIN

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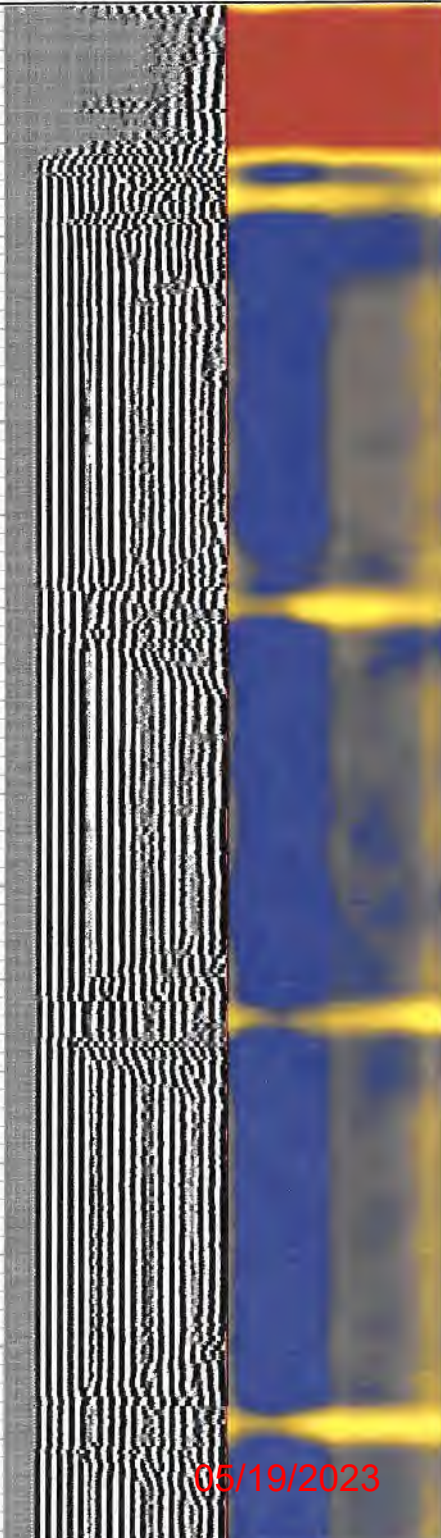
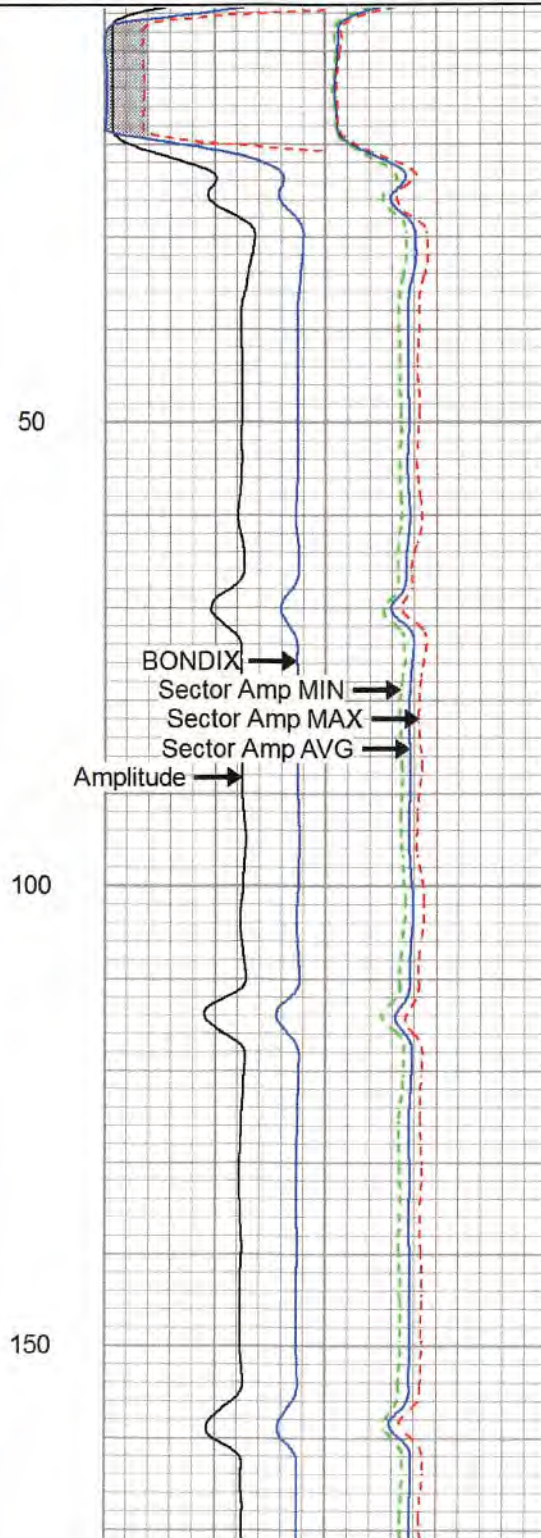
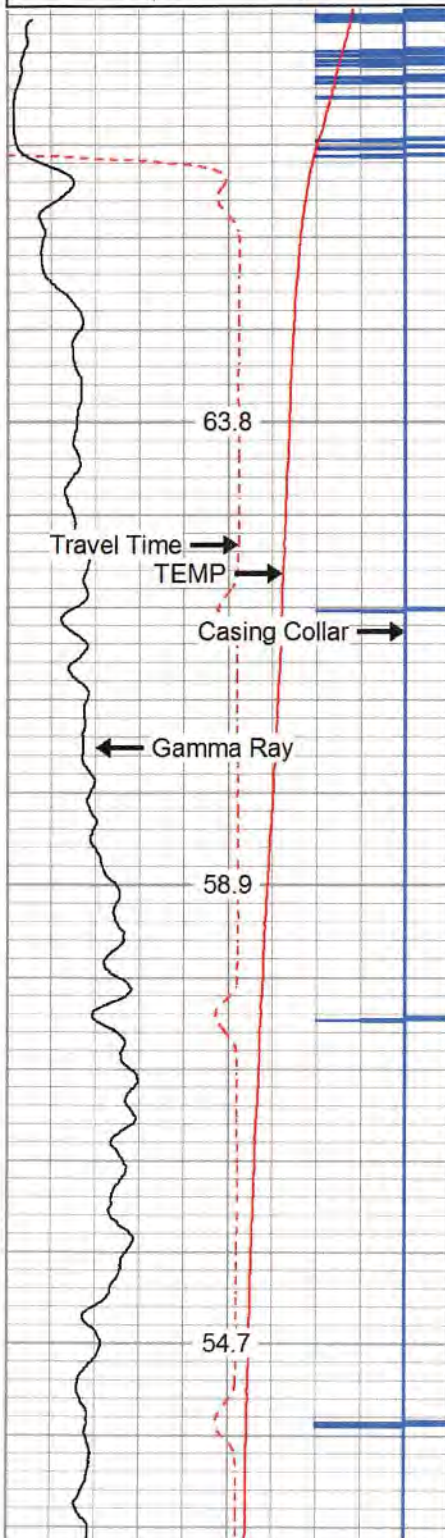
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 Dataset Creation Fri Aug 07 16:34:12 2020
 Charted by Depth in Feet scaled 1:240

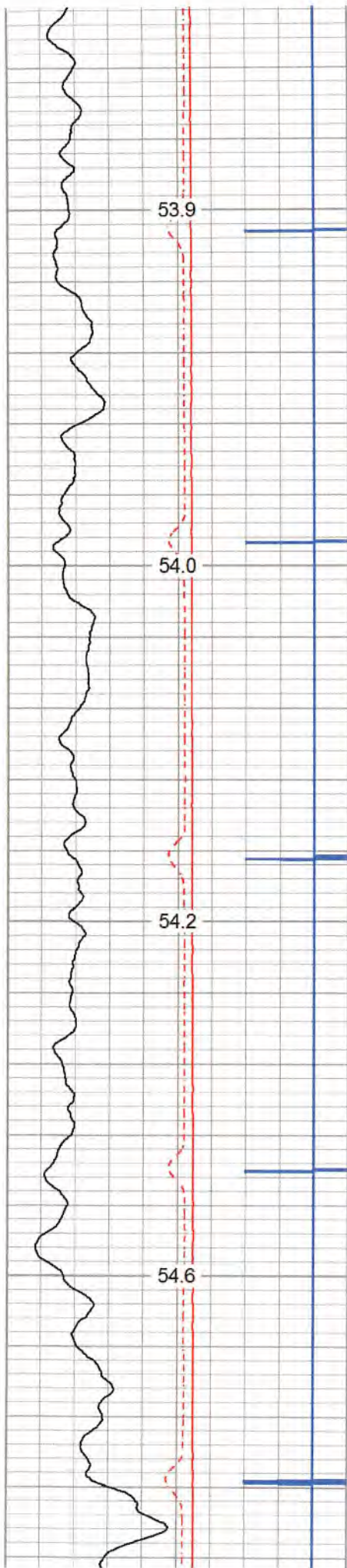
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9	Casing Collar	-1
0	Gamma Ray	180
0	TEMP (degF)	100
180	GR	360

Amplitude		Sector Amp AVG	VDL	1 Sector Map 12
0	(mV) 100	Sector Amp MAX		
Amp X5		Sector Amp MIN	200 (usec) 1200	
0	(mV) 20			
1	BONDIX	0		

TEMP (degF)



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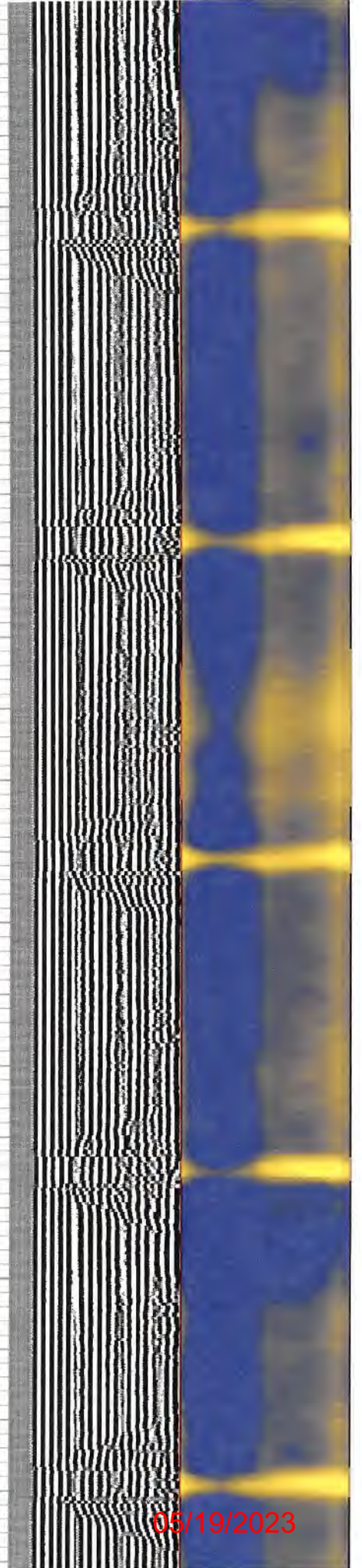
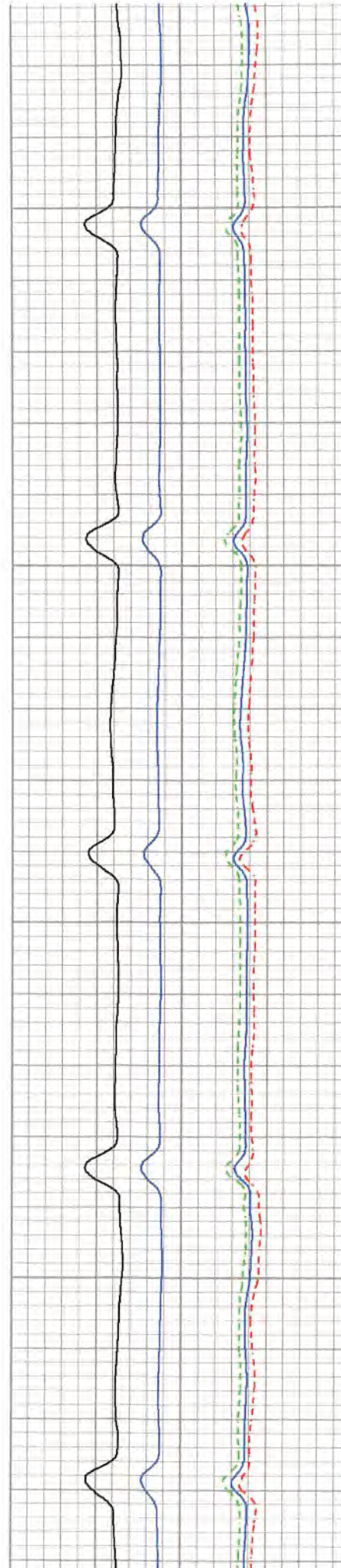


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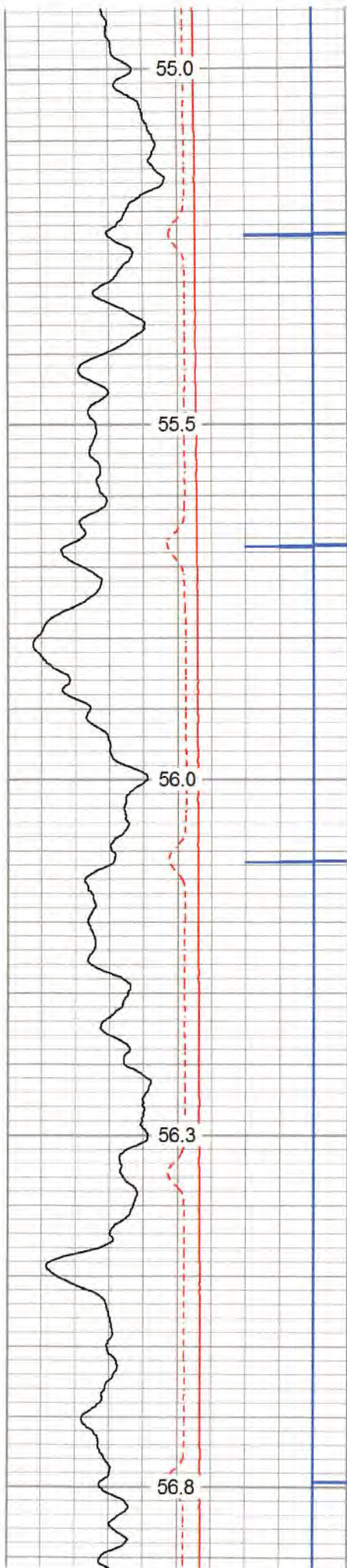
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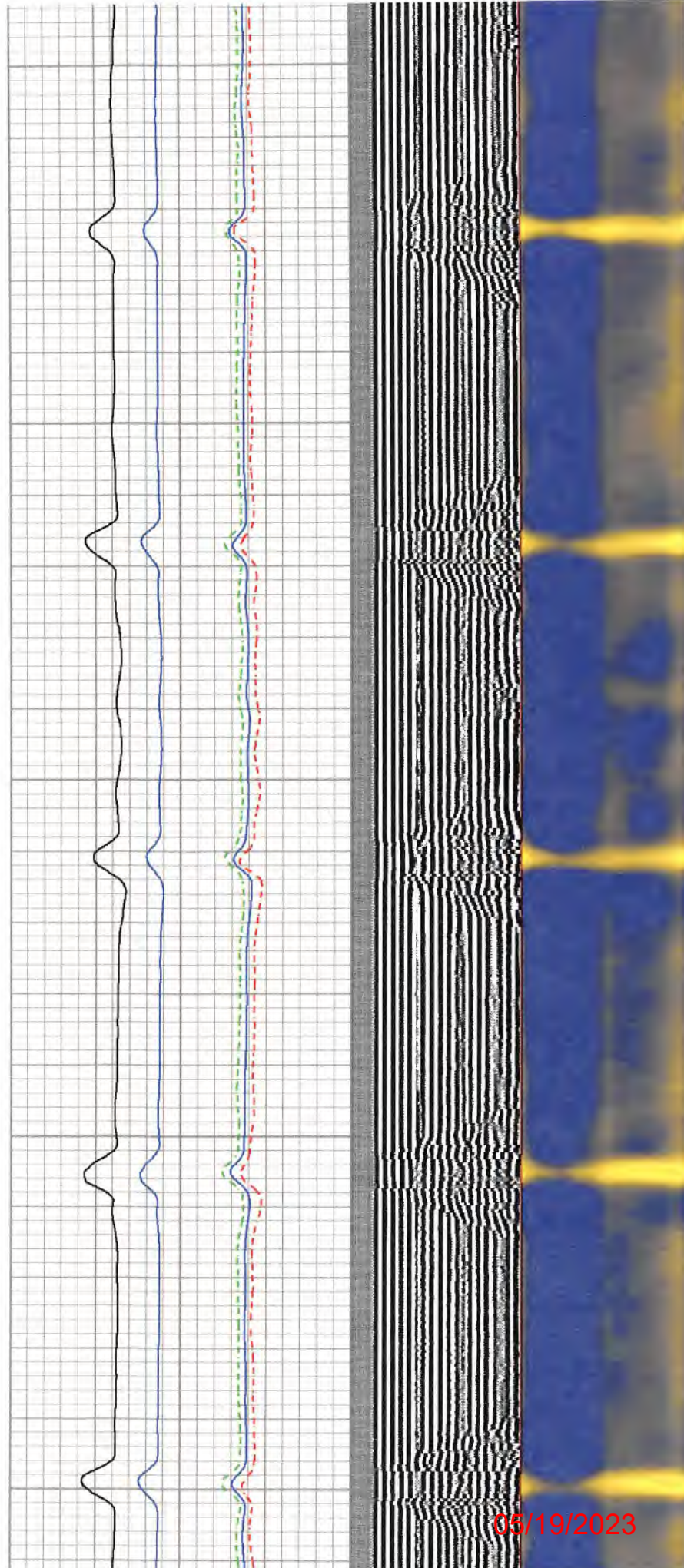
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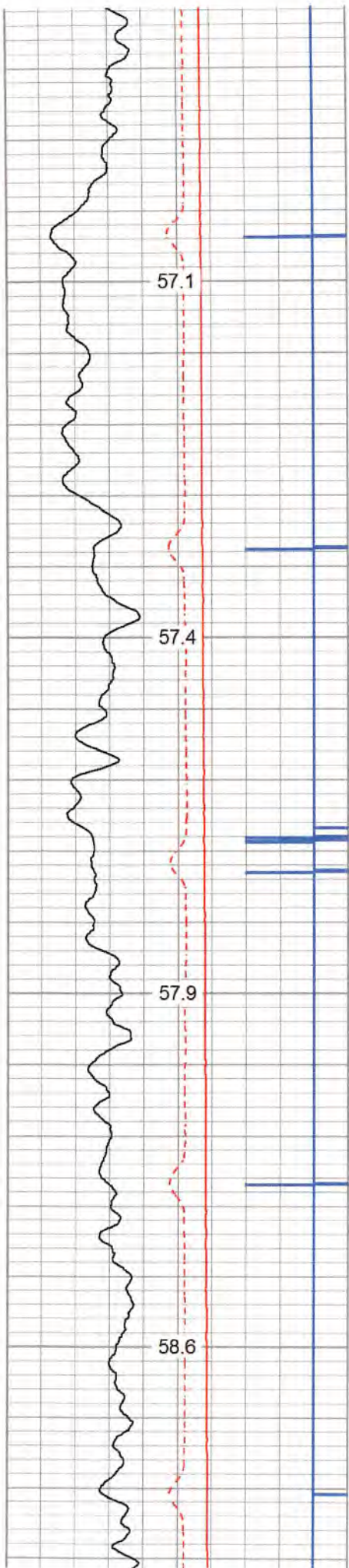
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400
450
500
550
600



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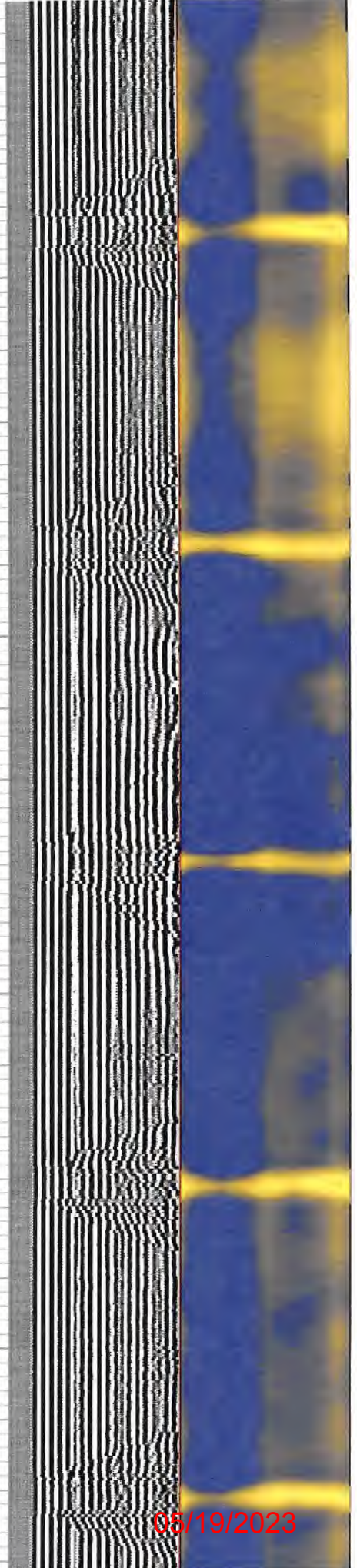
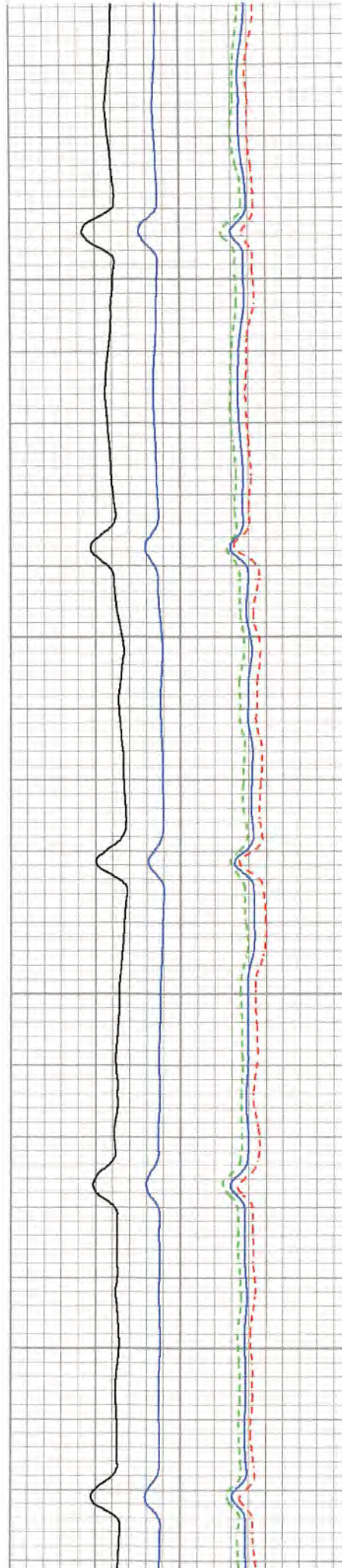


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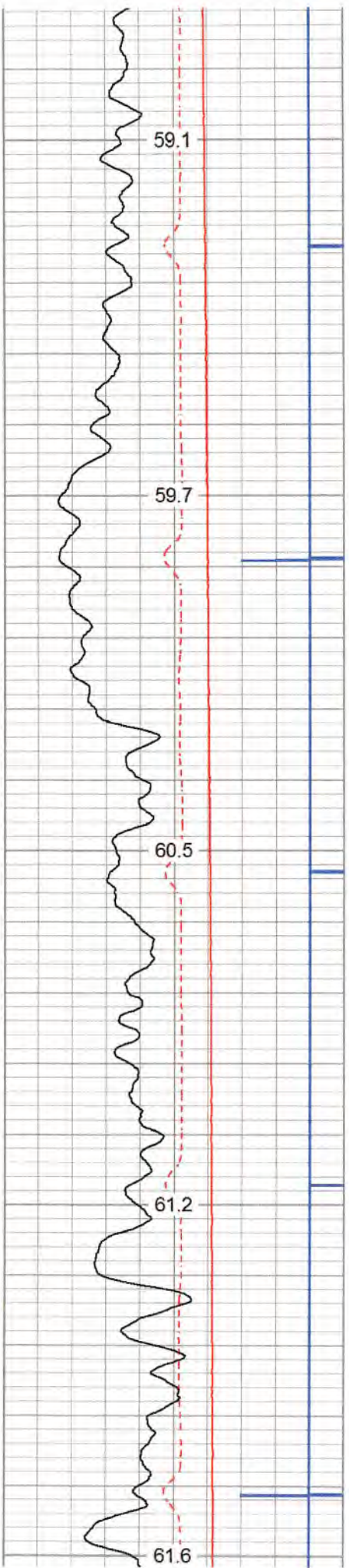
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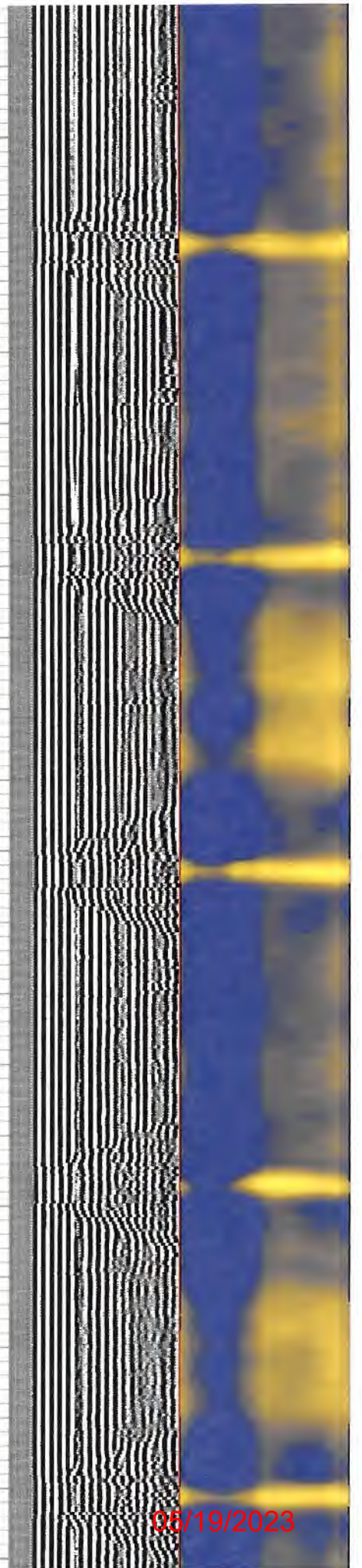
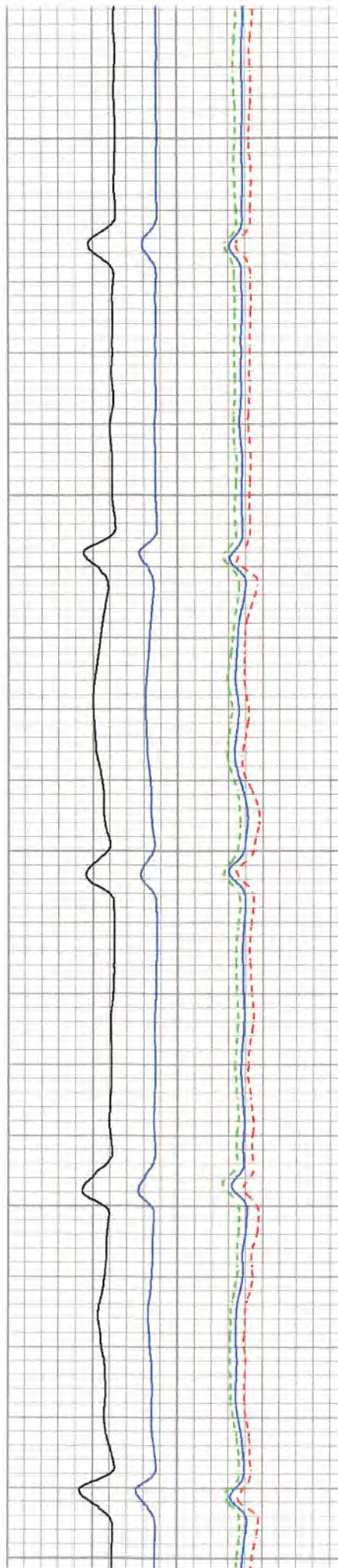
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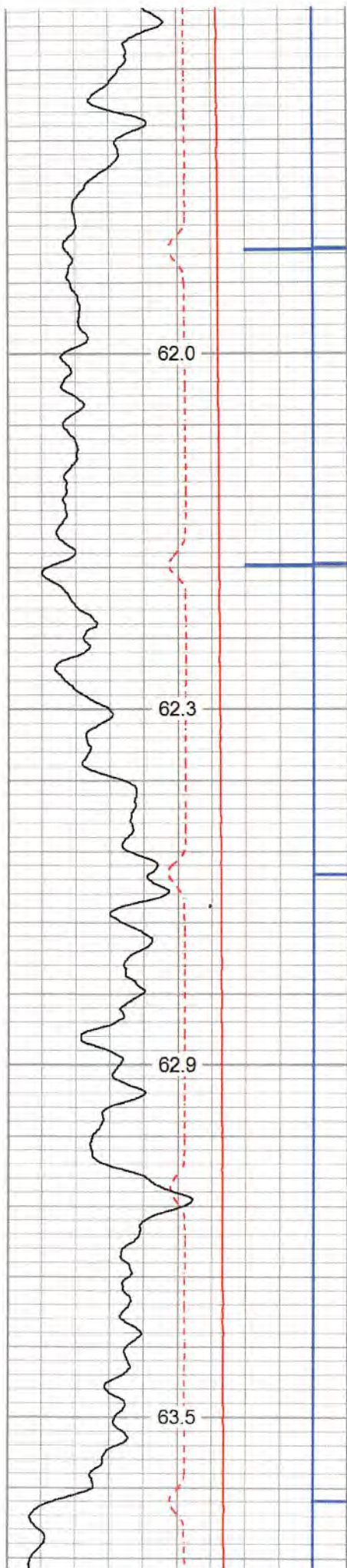
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850
900
950
1000
1050



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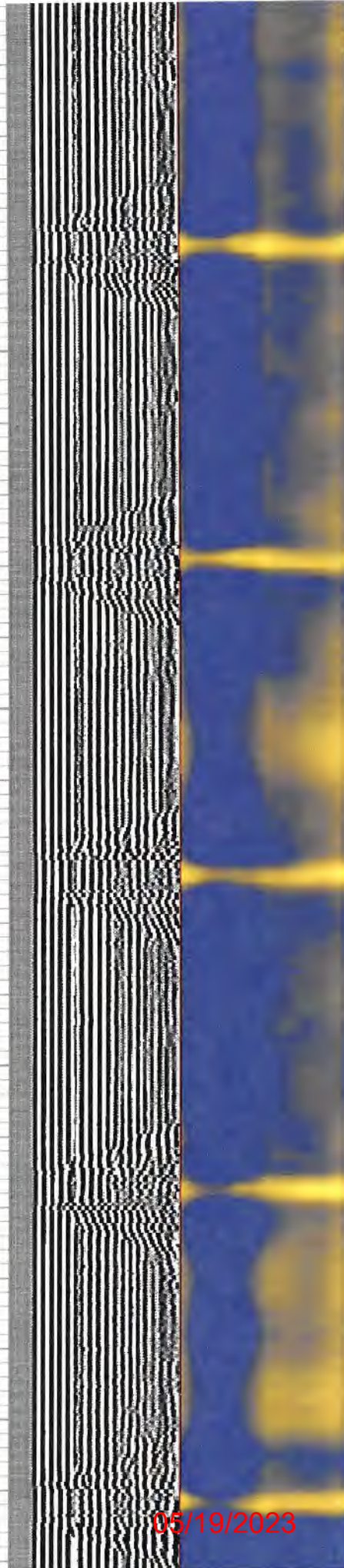
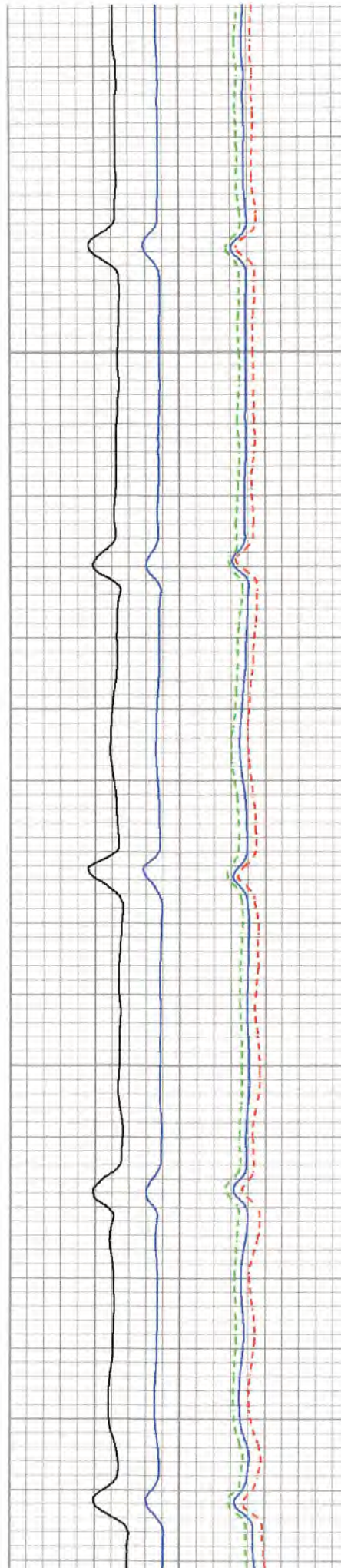


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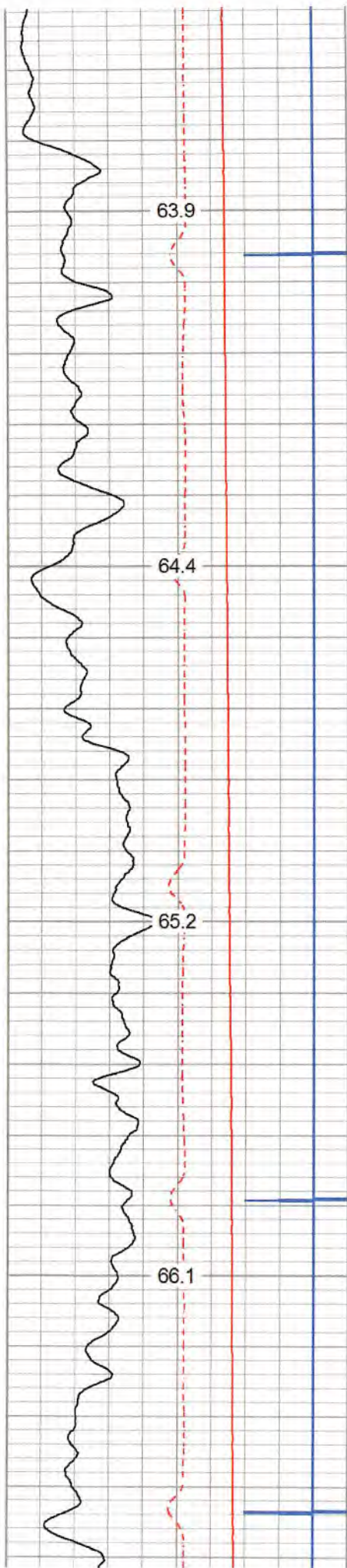
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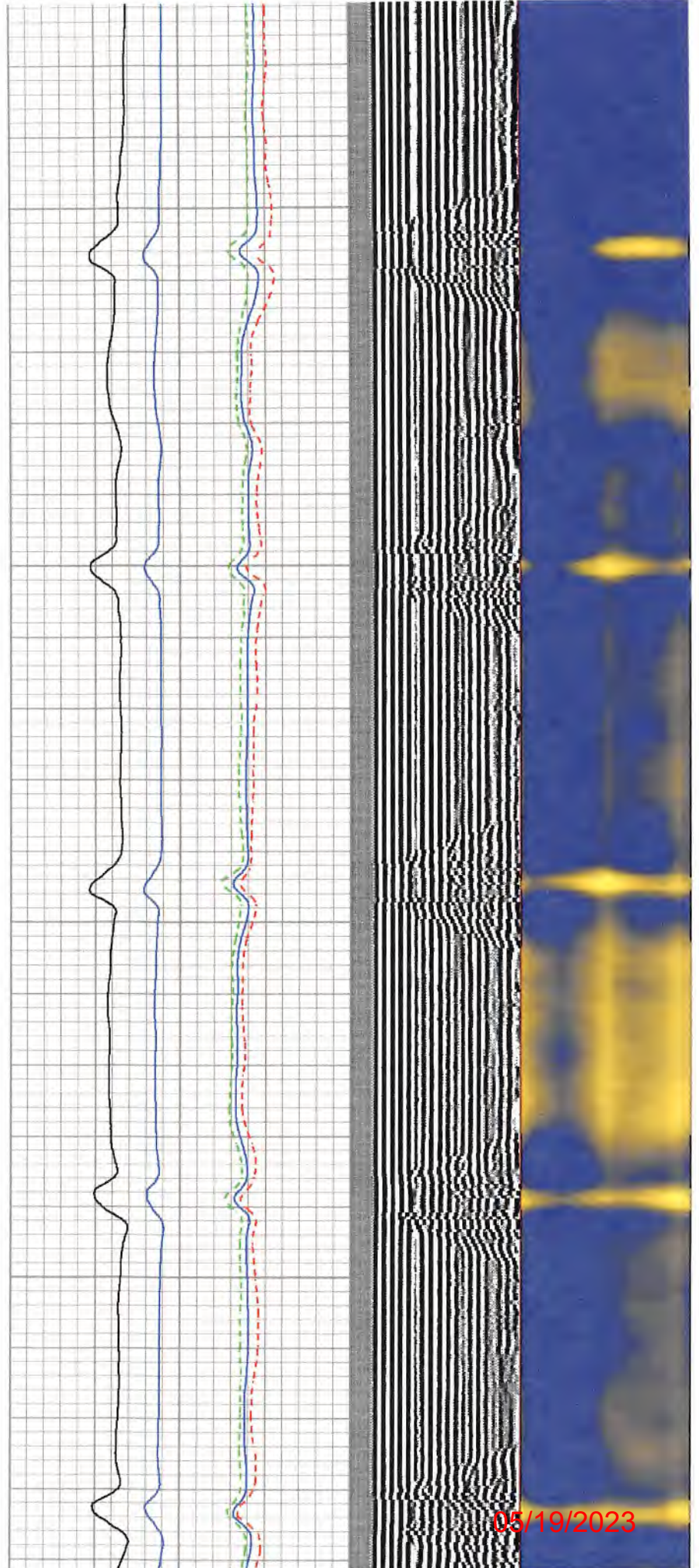


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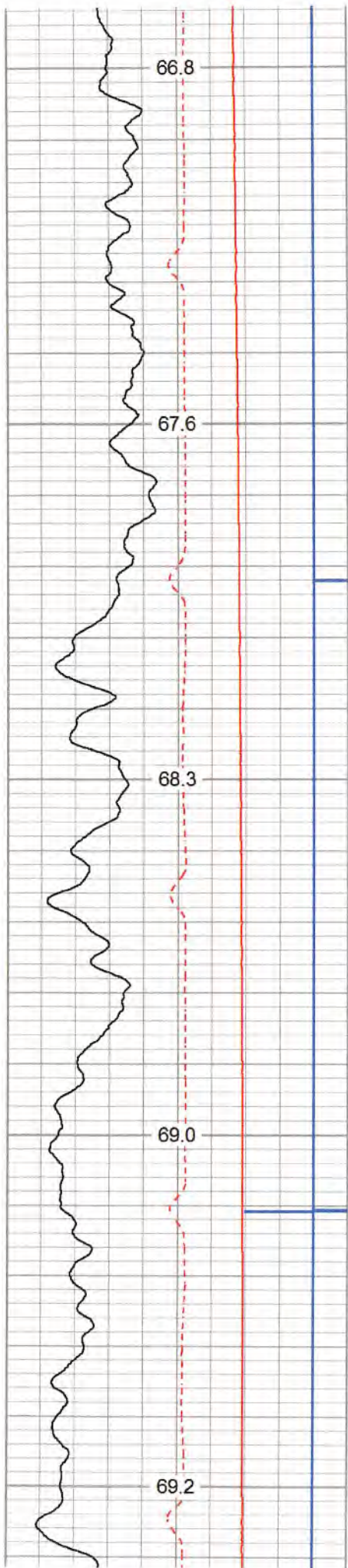
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1450



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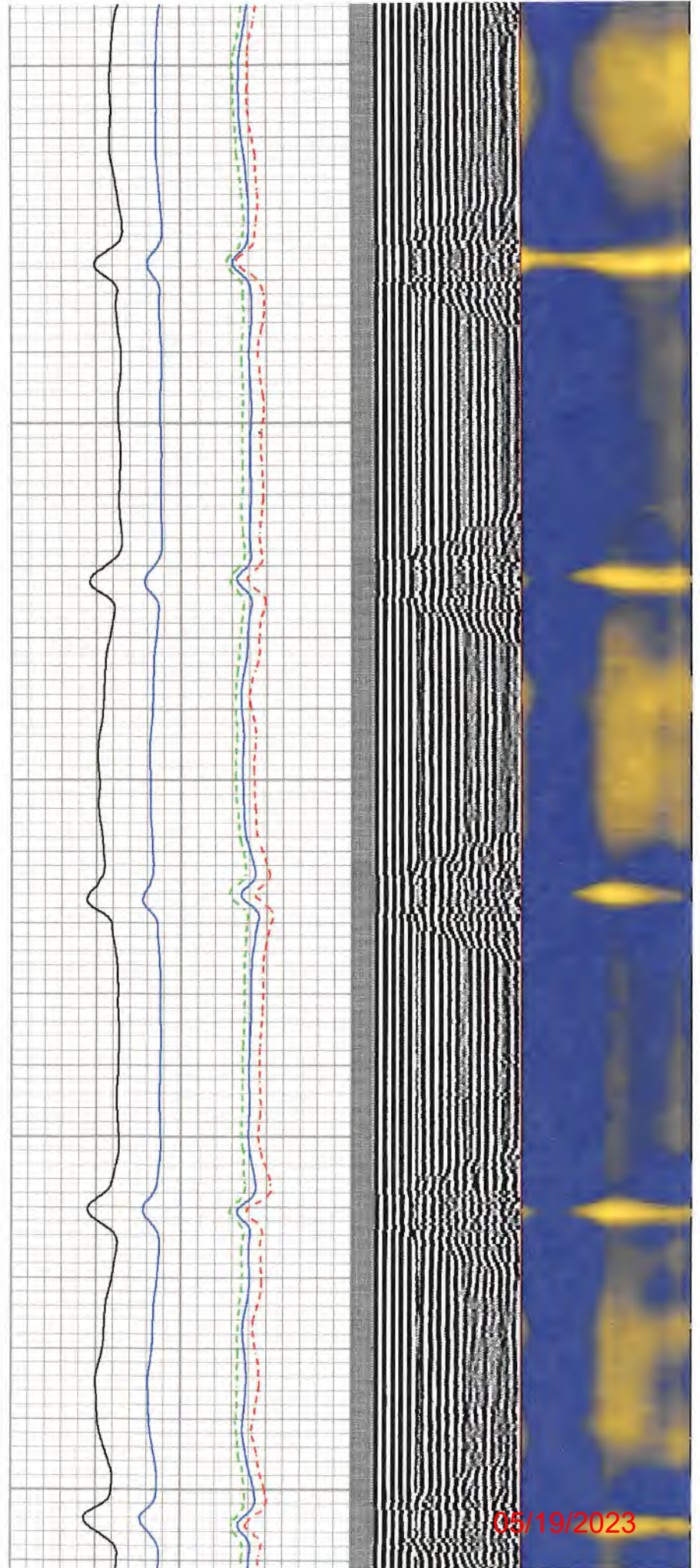
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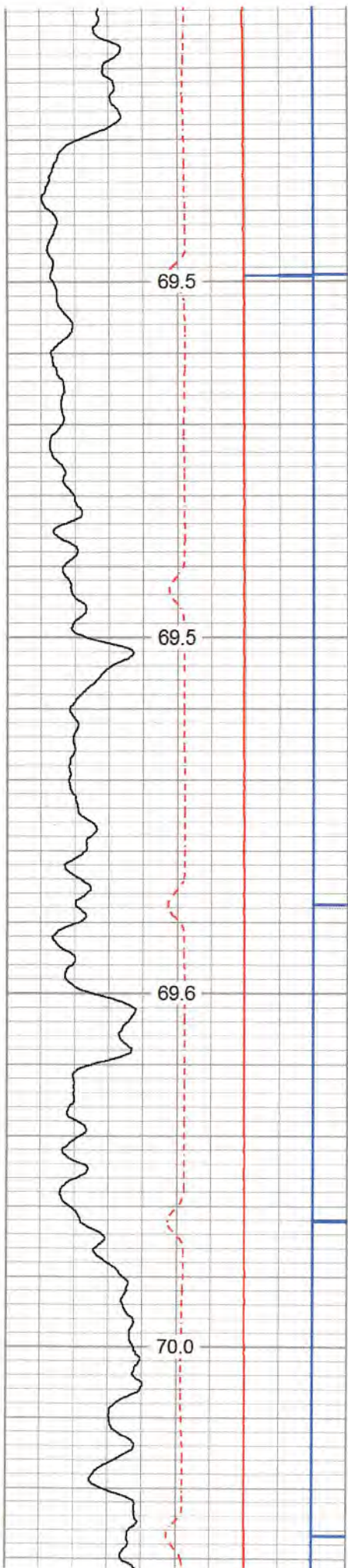
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1650

1700



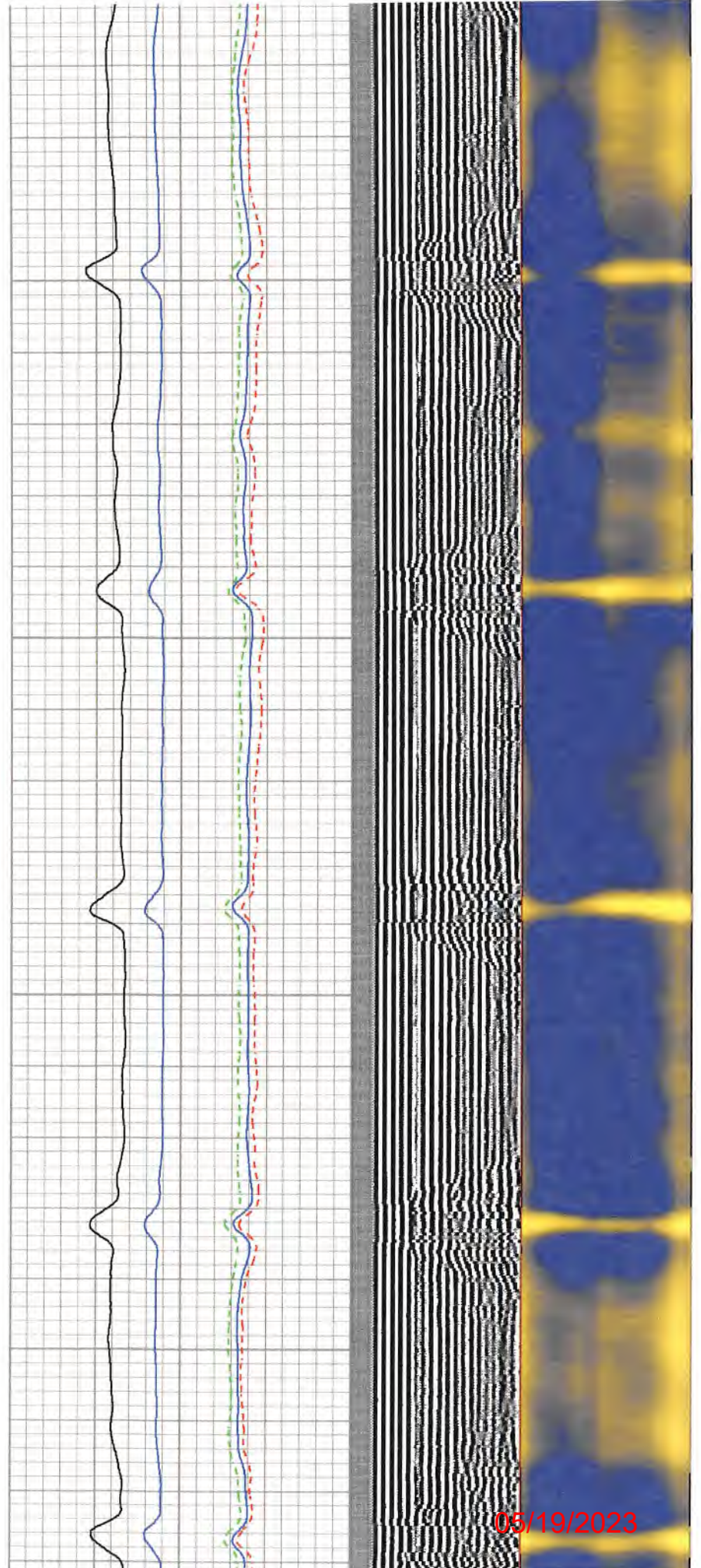


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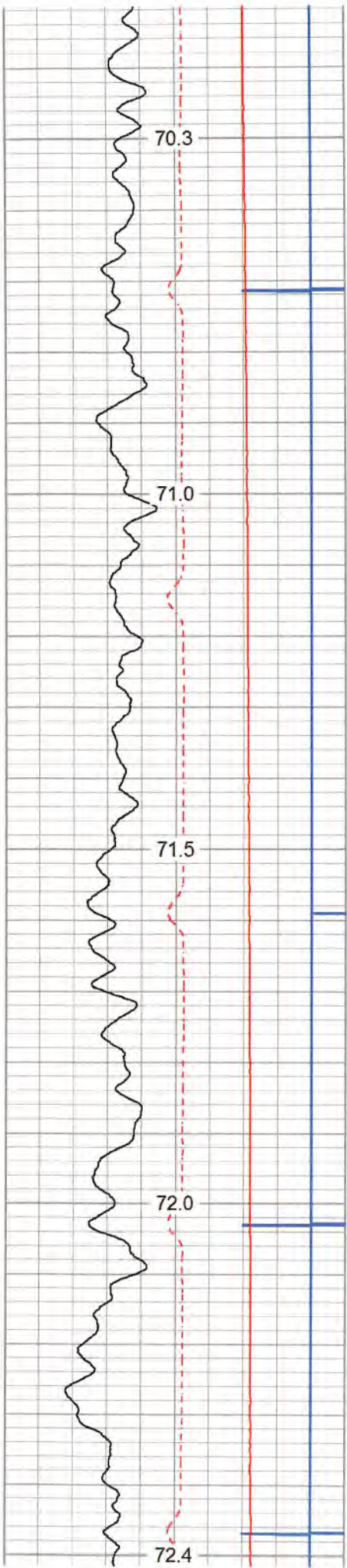
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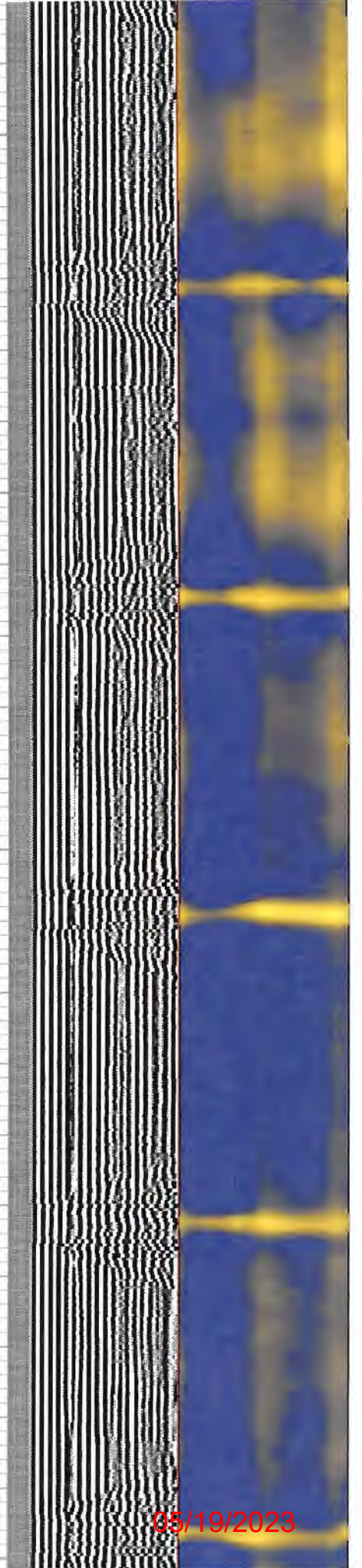
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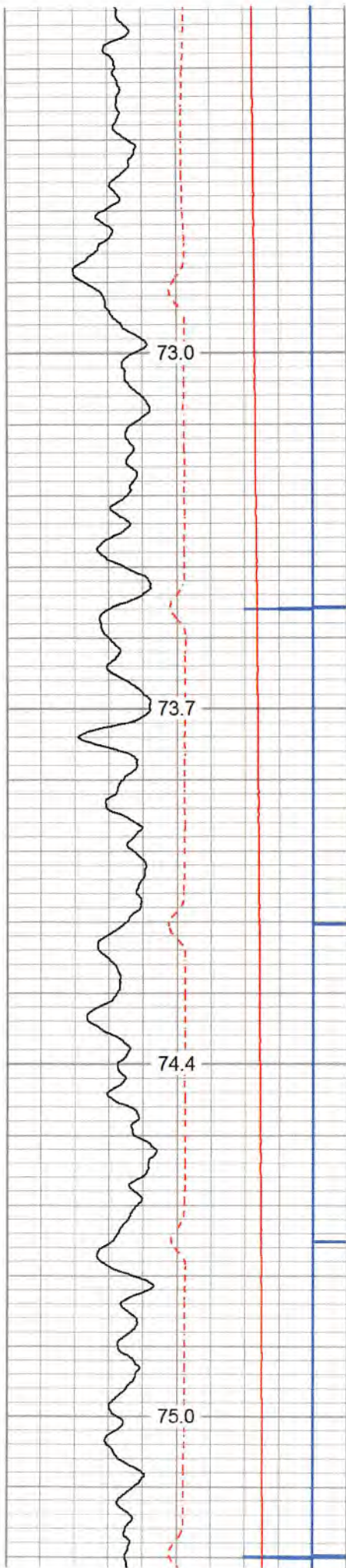
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2000
2050
2100
2150



05/19/2023

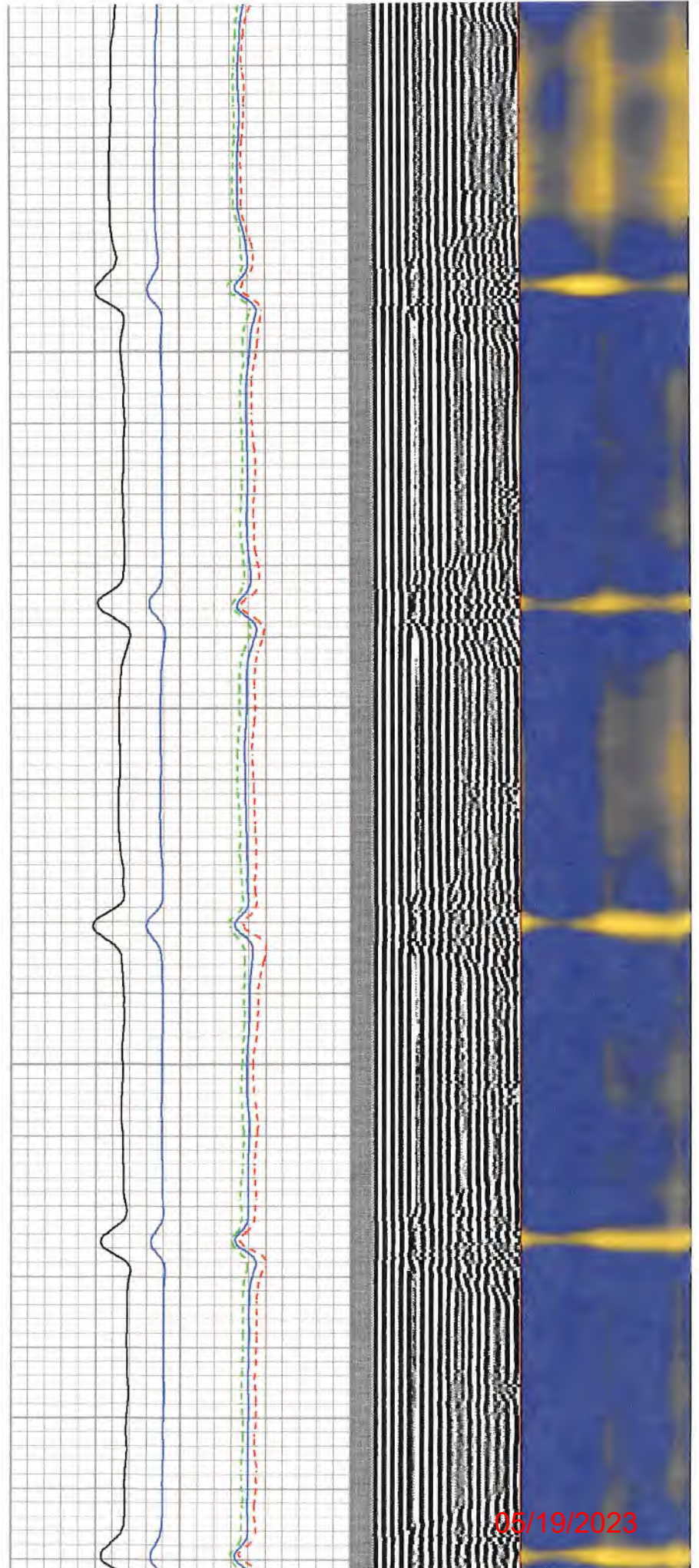


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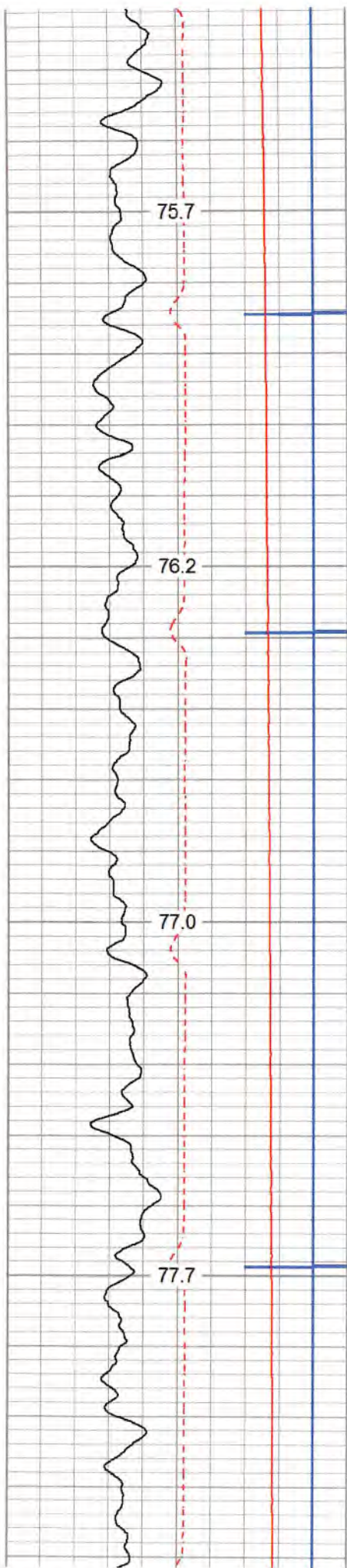
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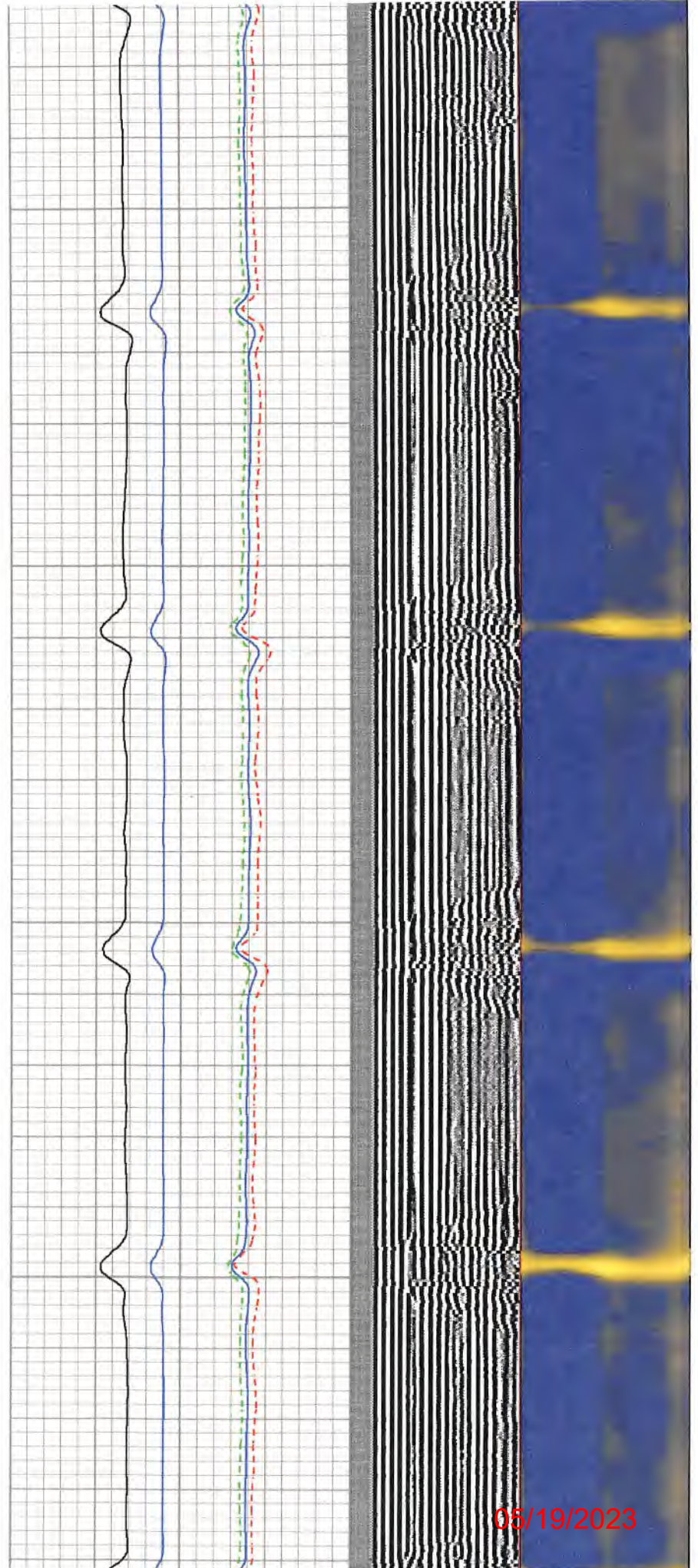


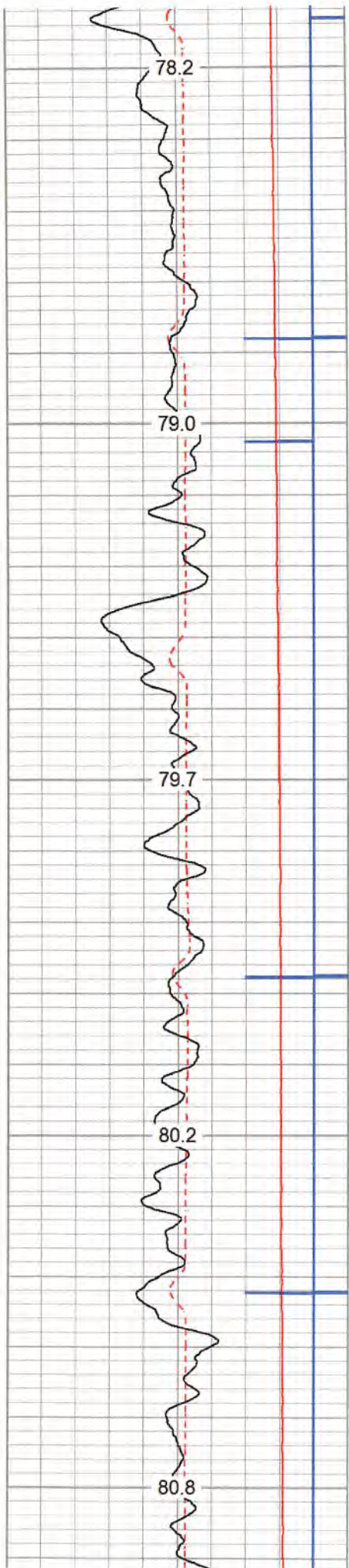
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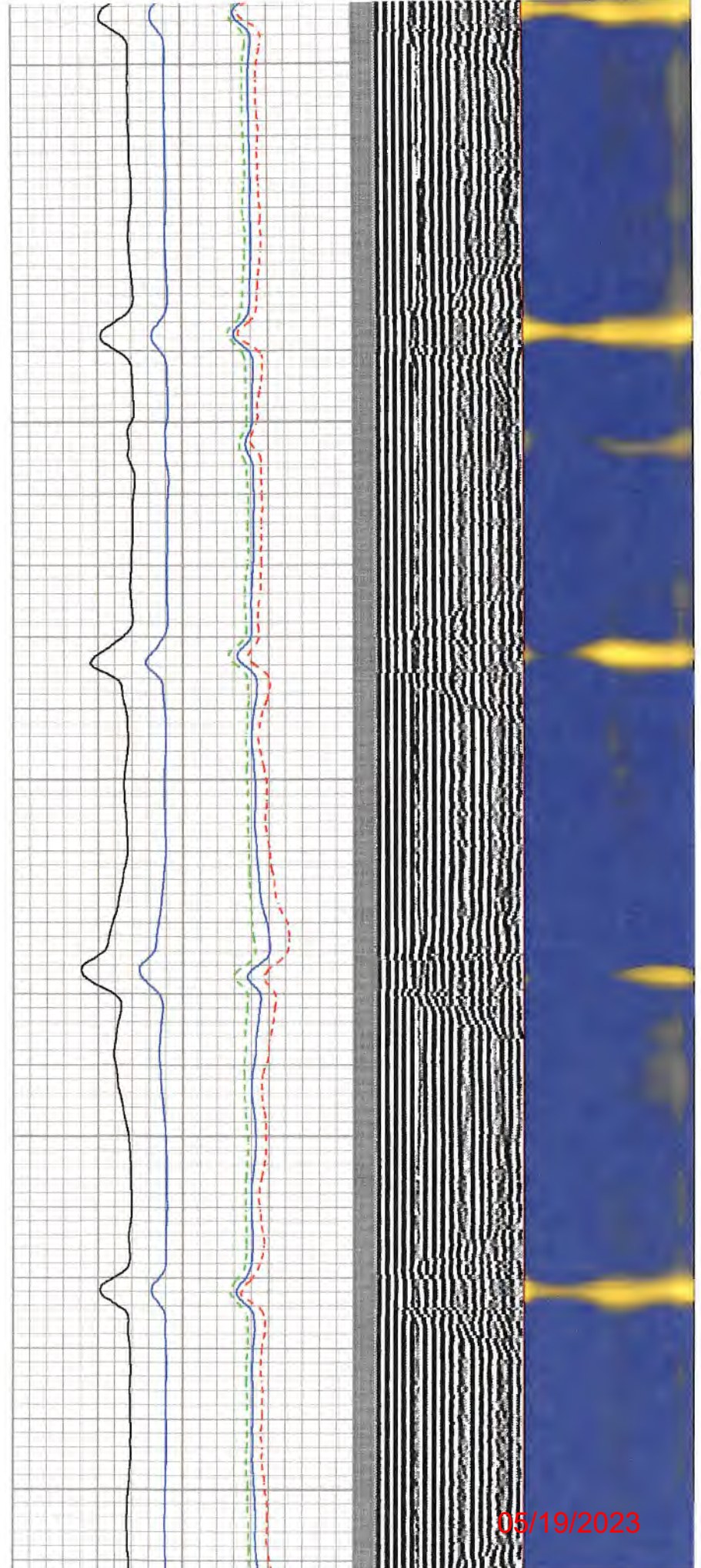
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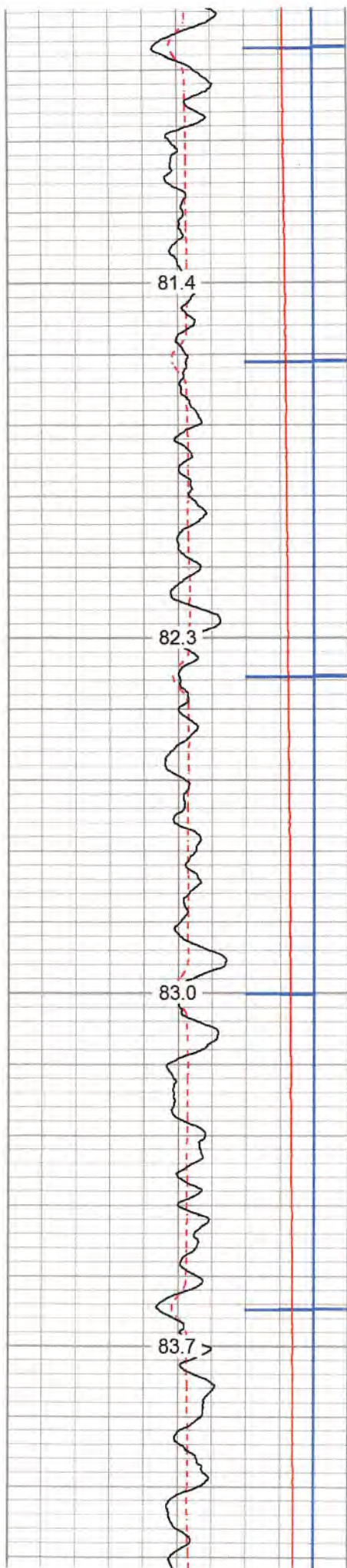
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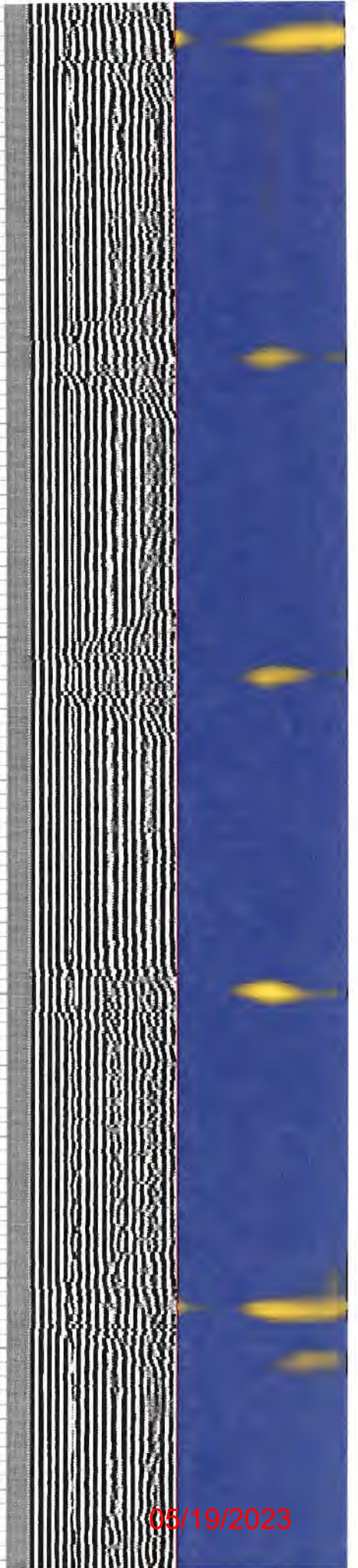
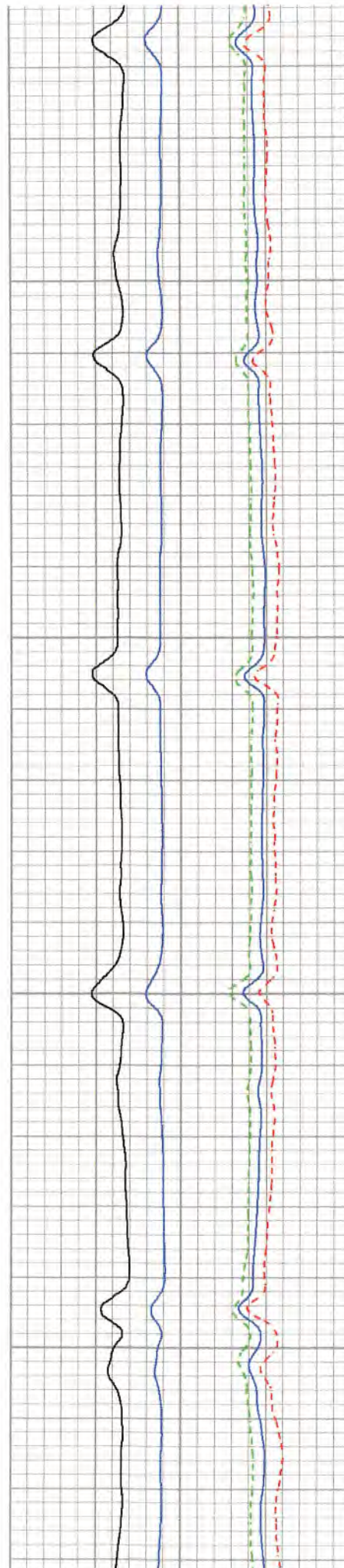


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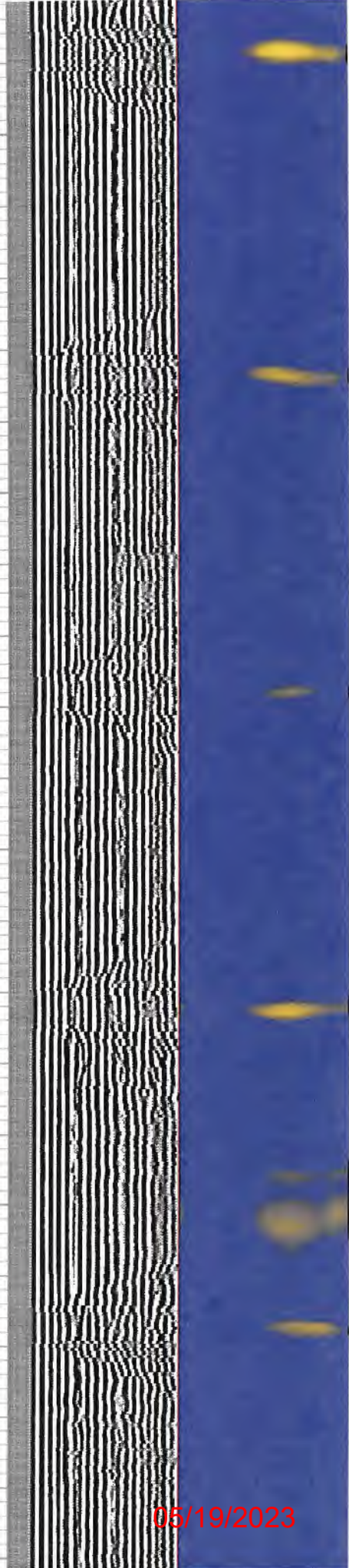
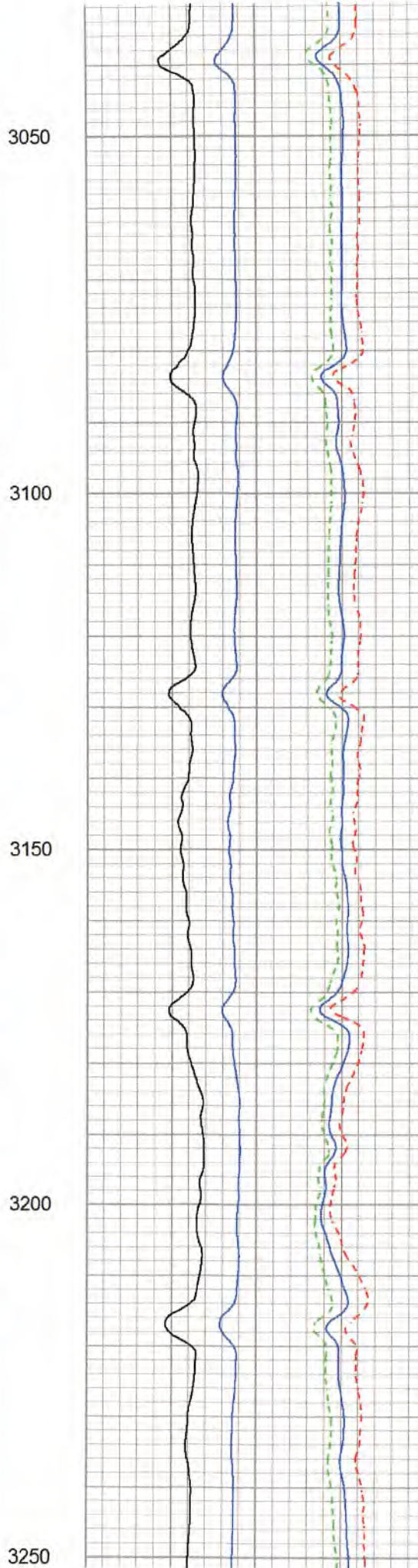
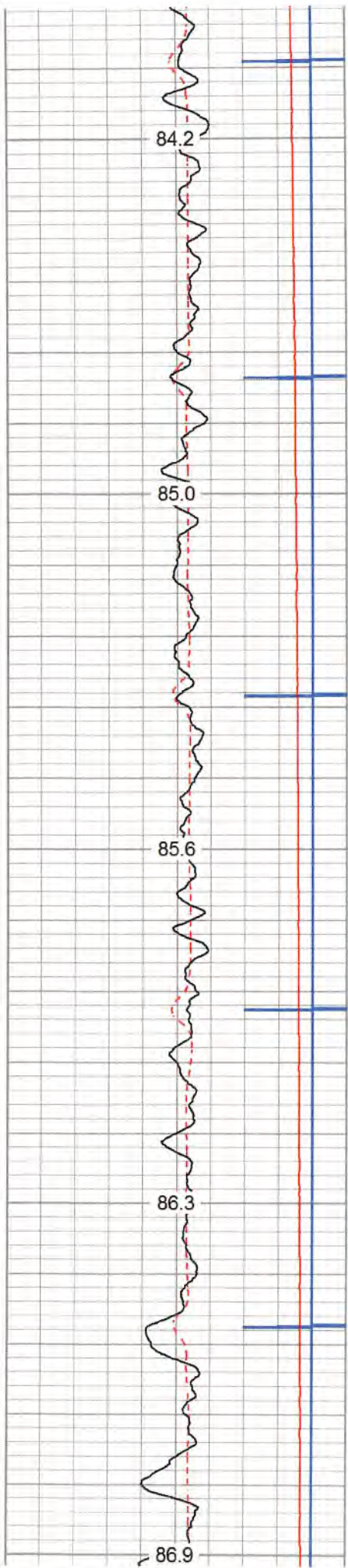
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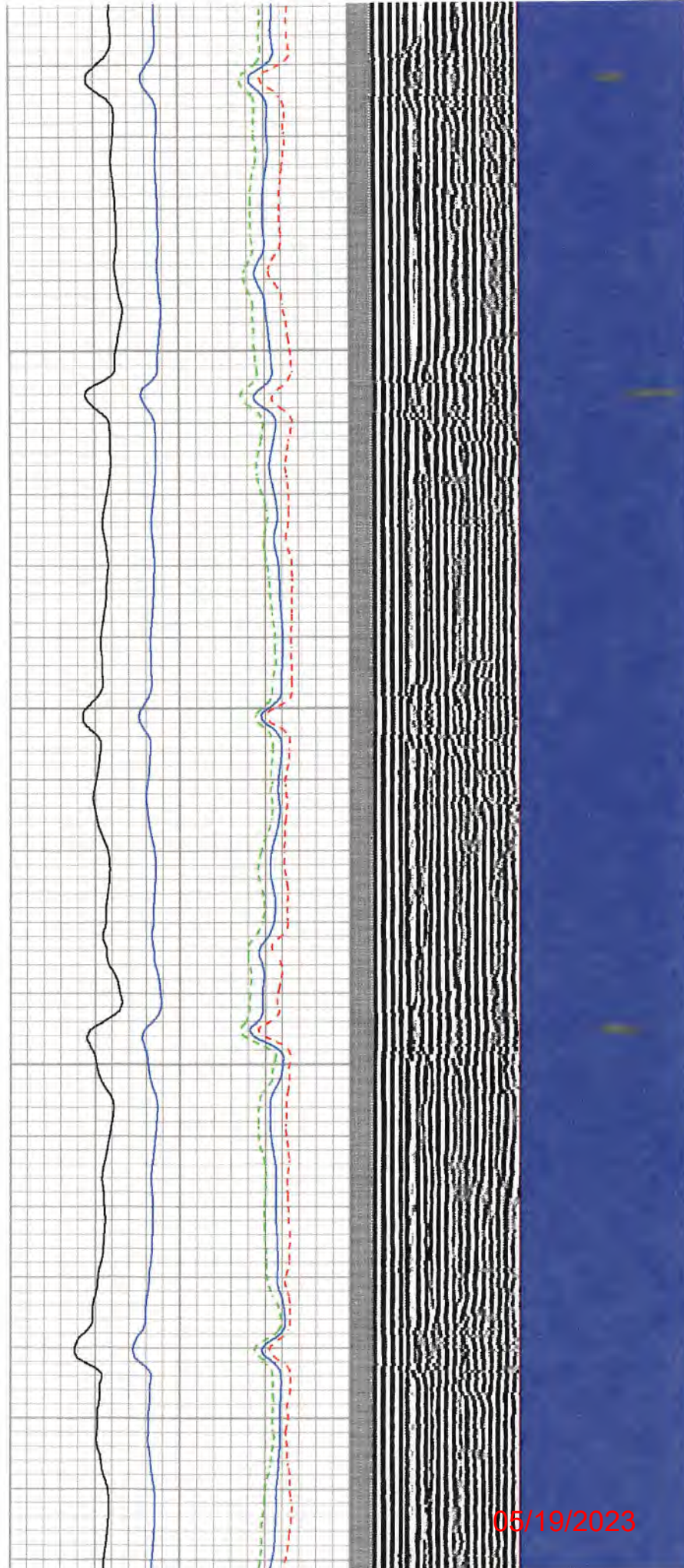
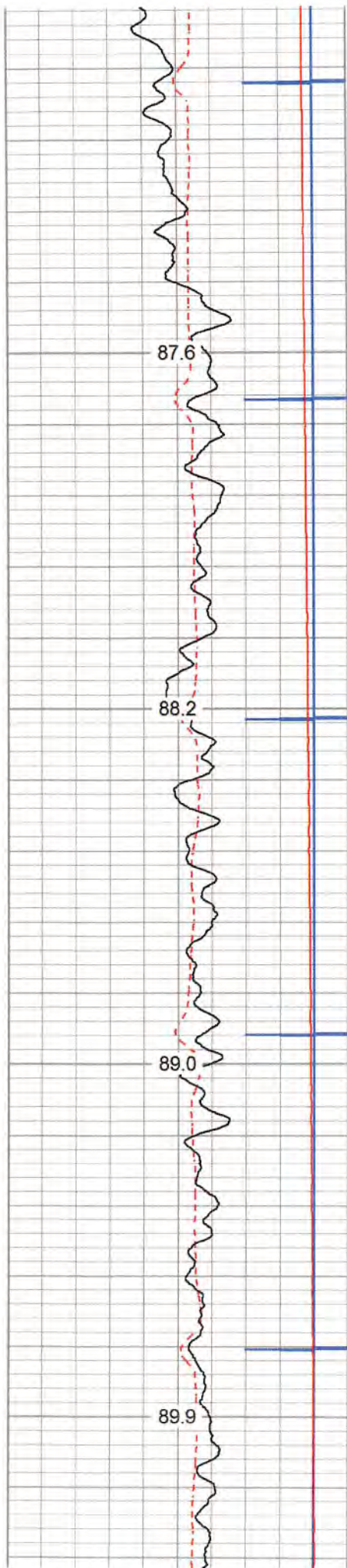
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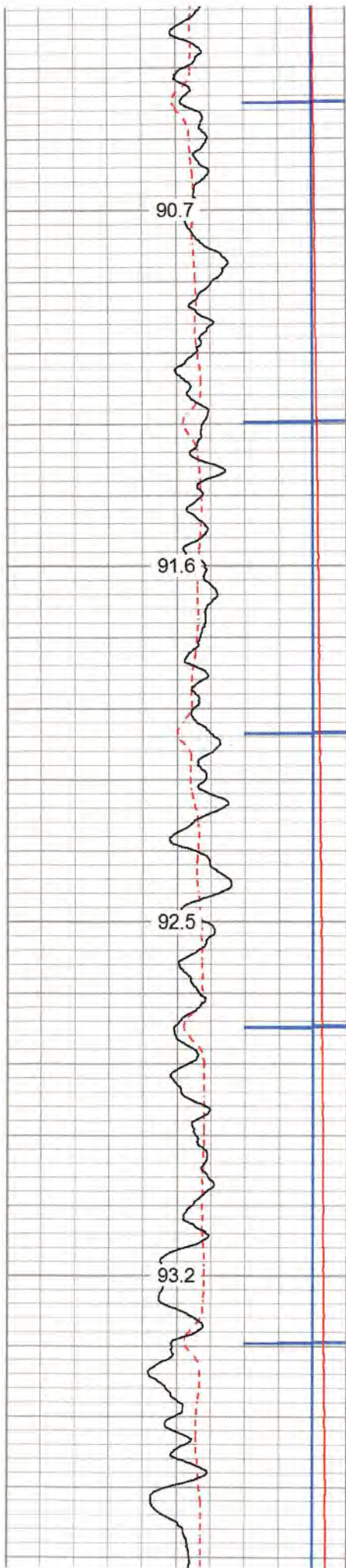


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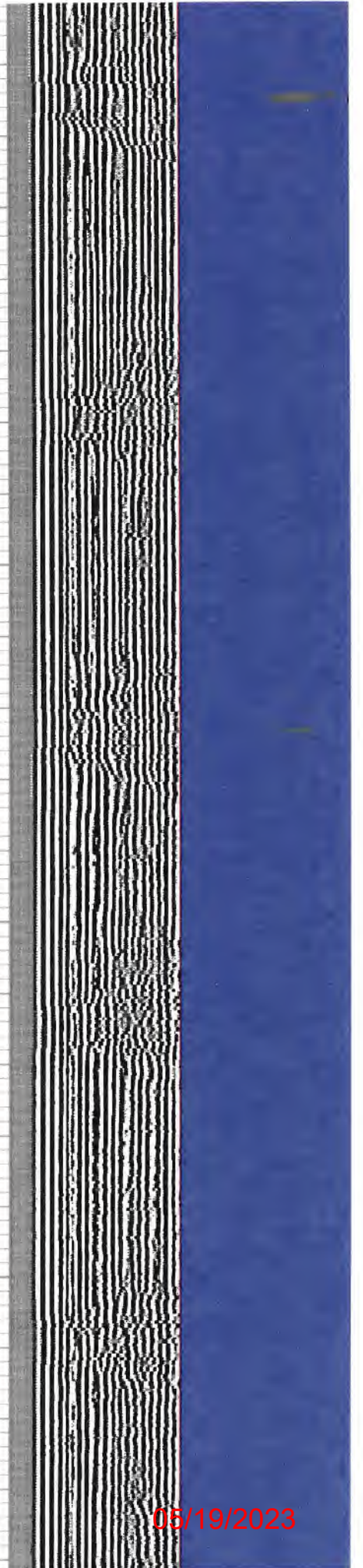
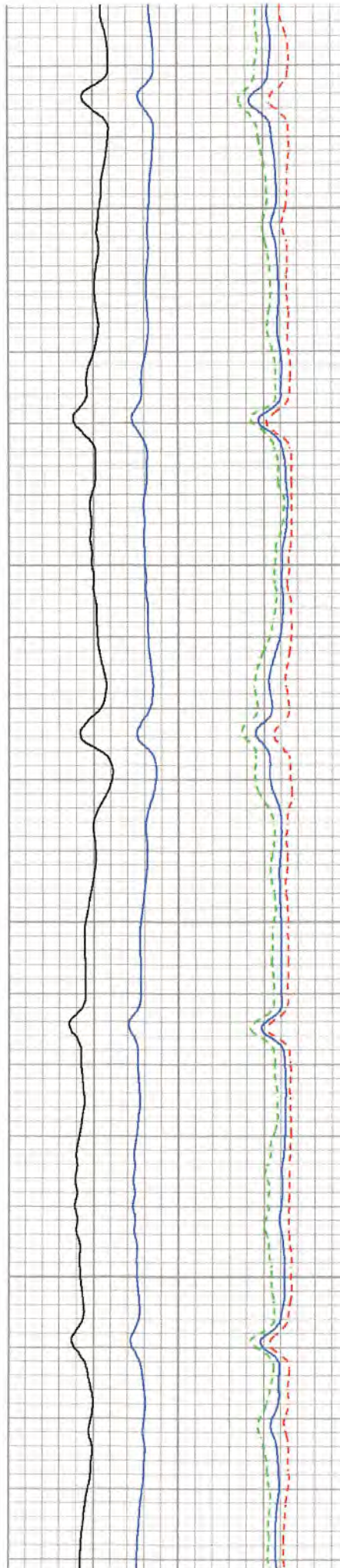


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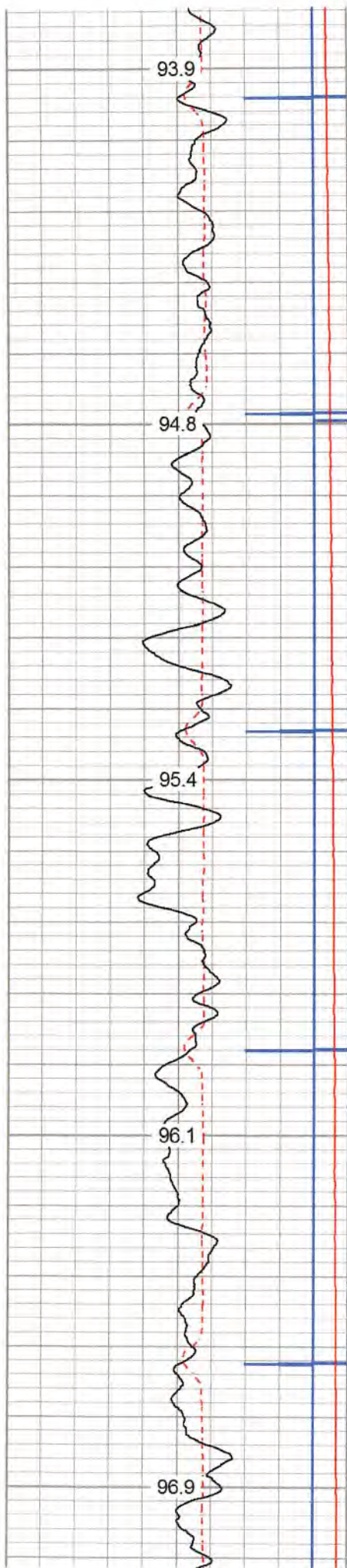
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3600

3650



05/19/2023



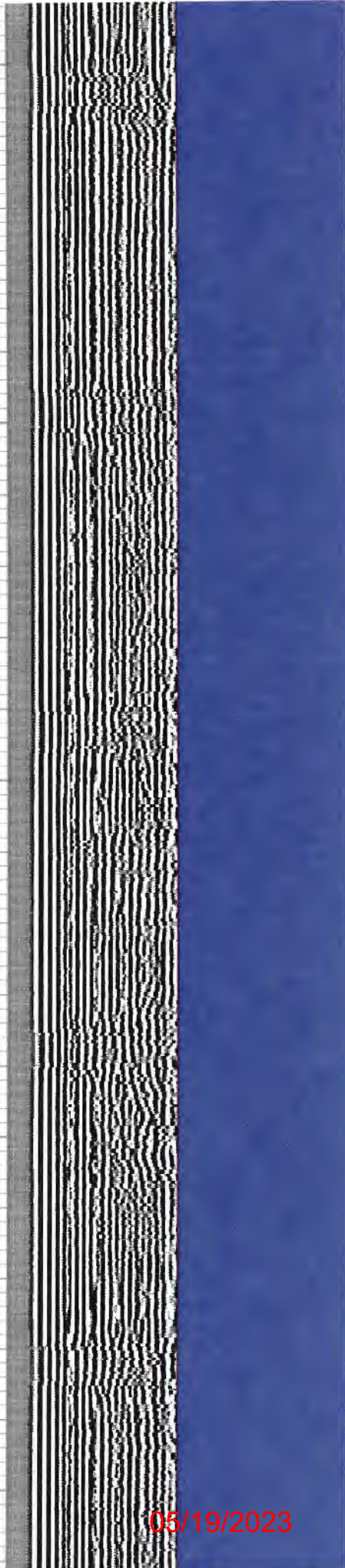
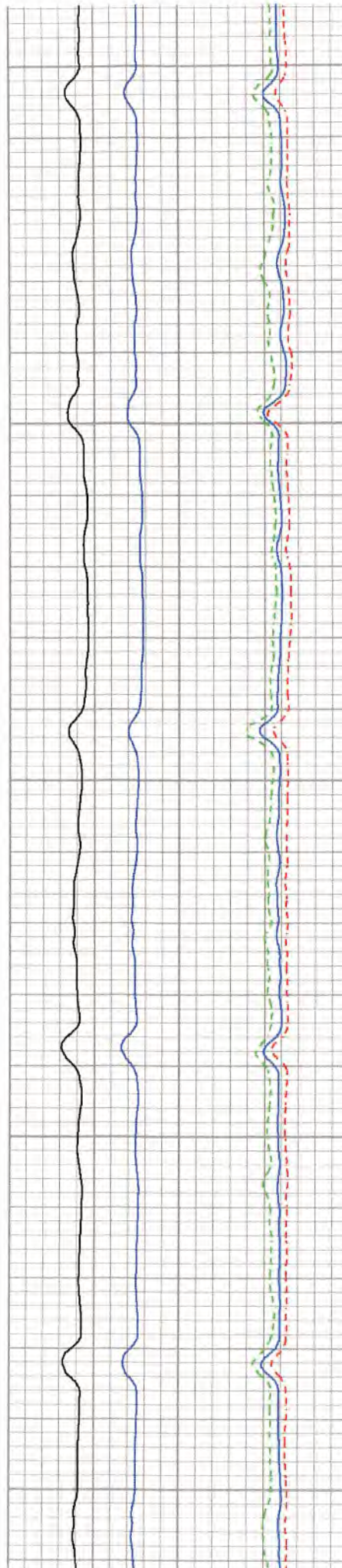
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3750

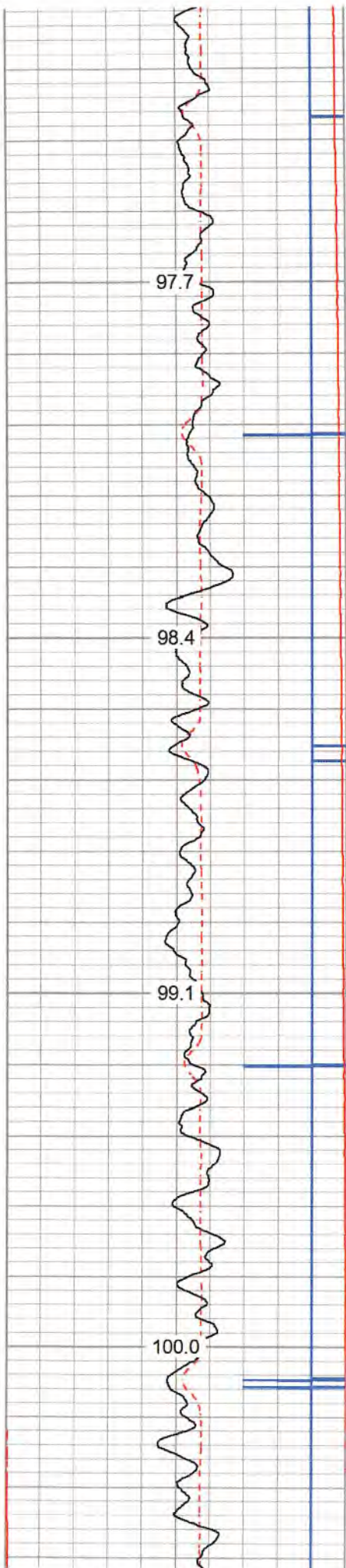
3800

3850

3900



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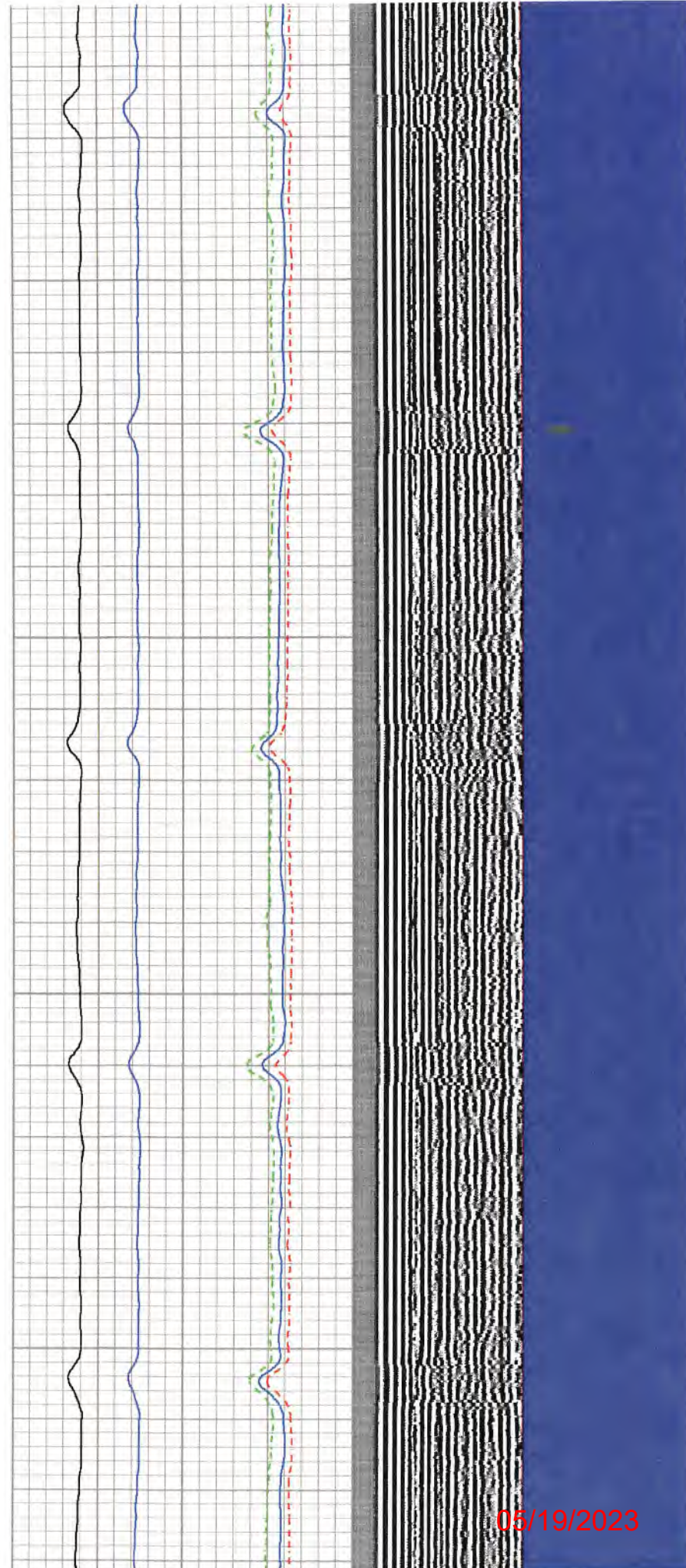


3950

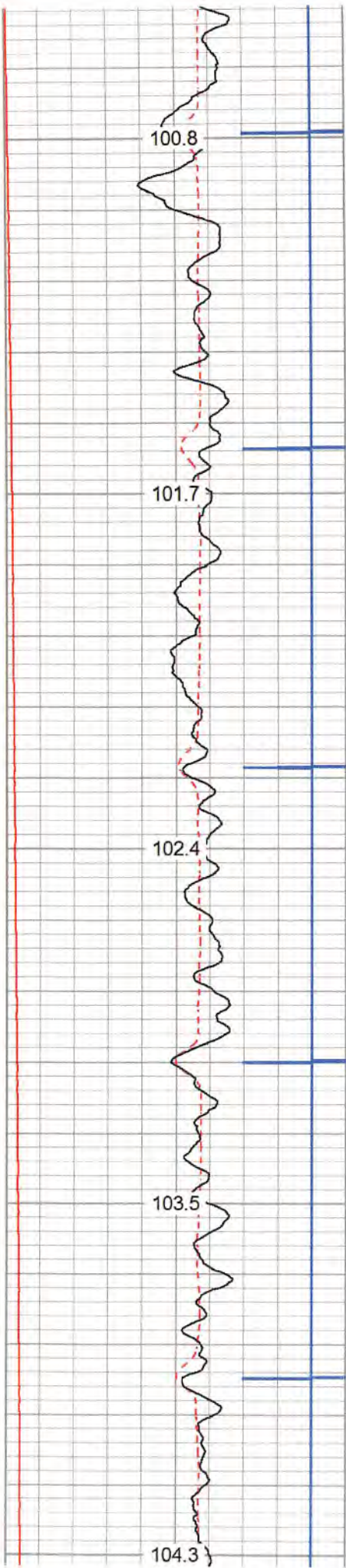
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4050

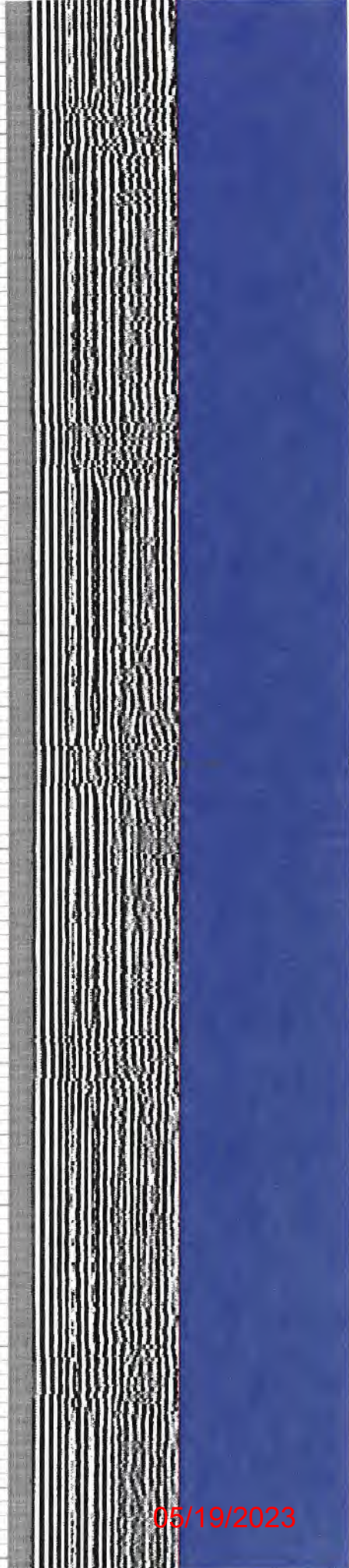
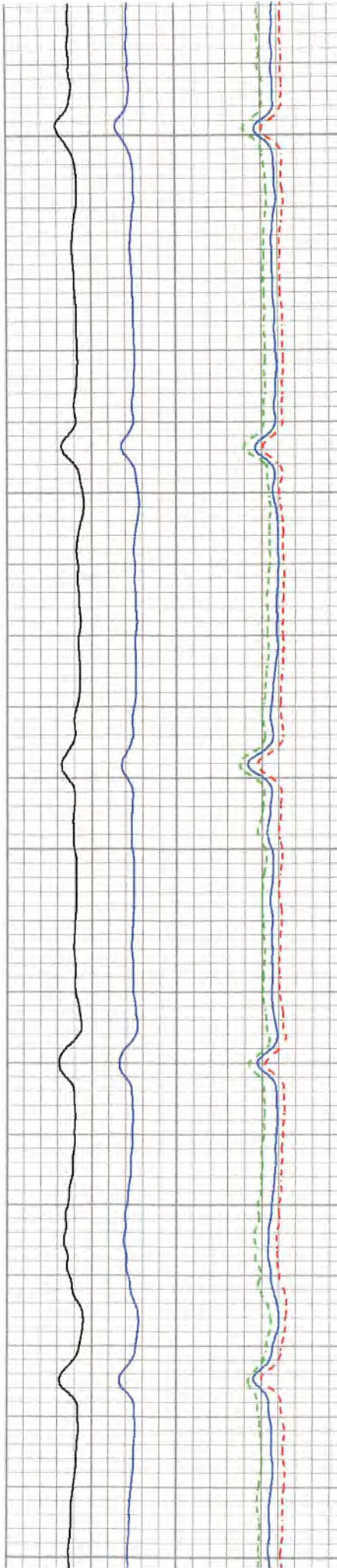
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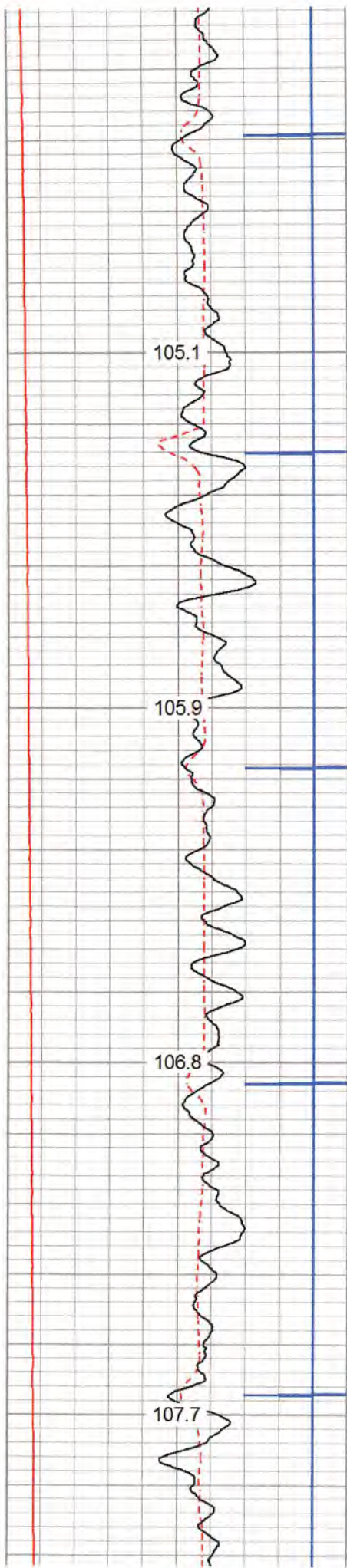
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4150
4200
4250
4300
4350



05/19/2023

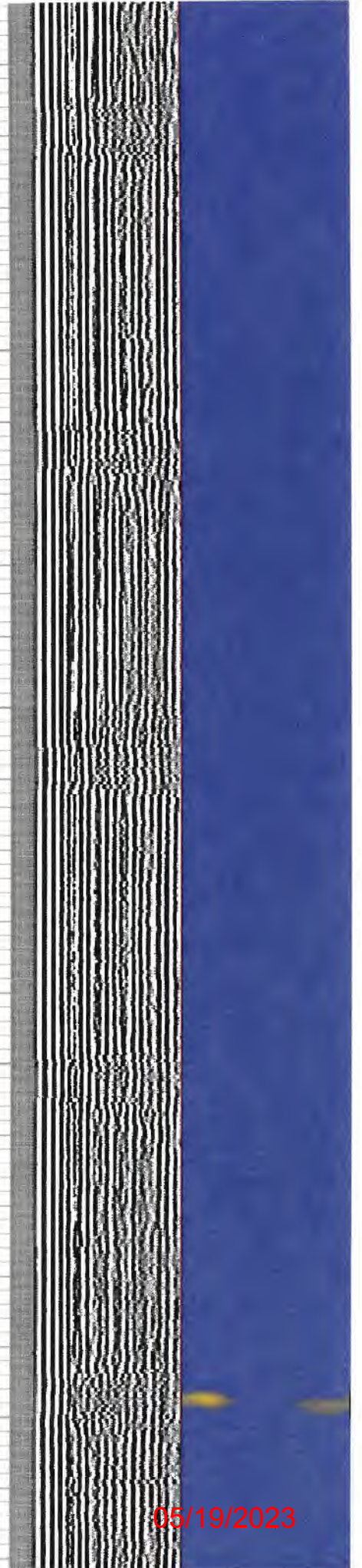
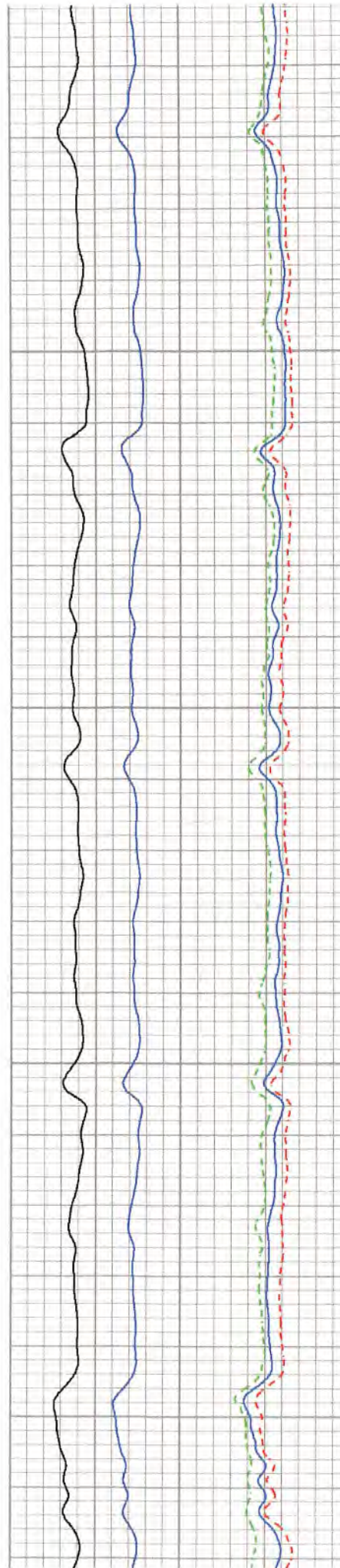


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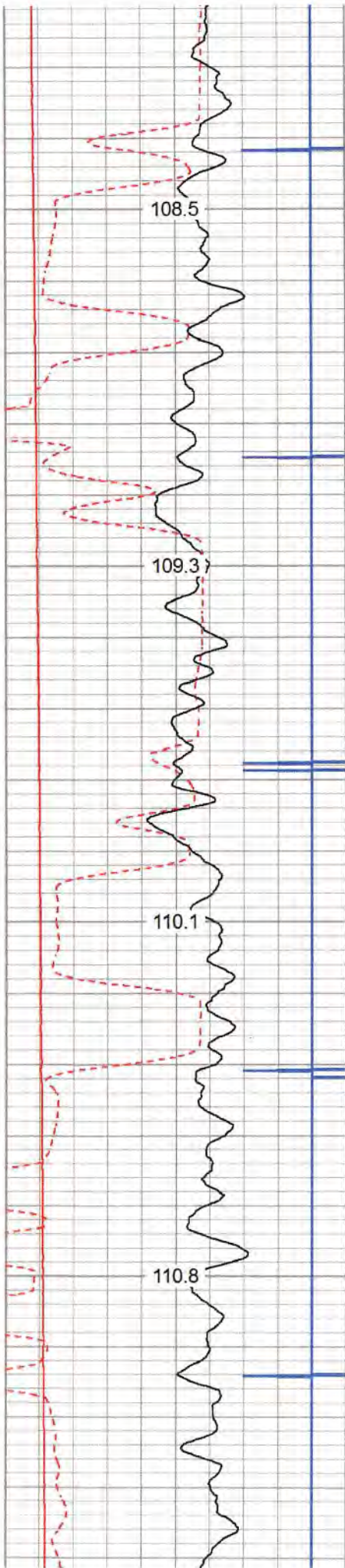
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4500

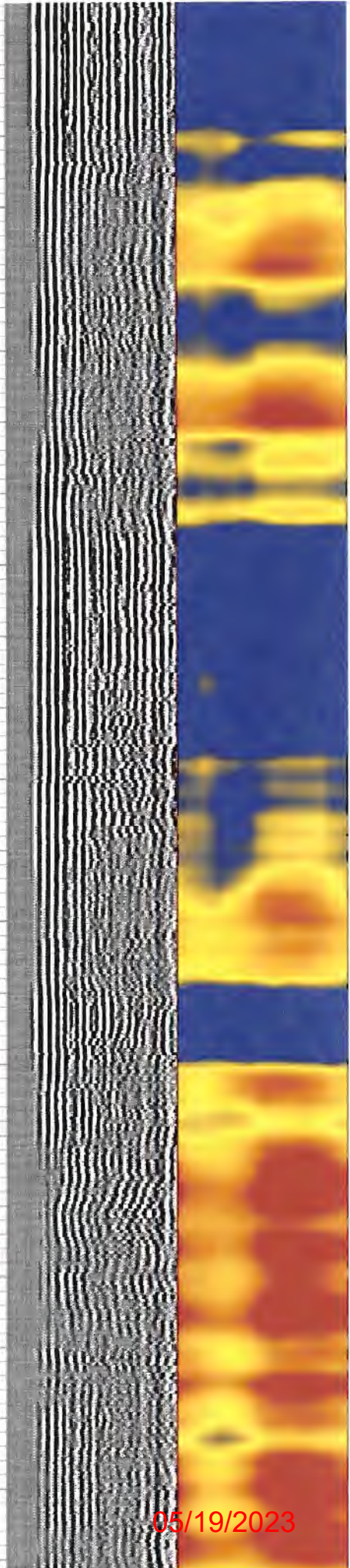
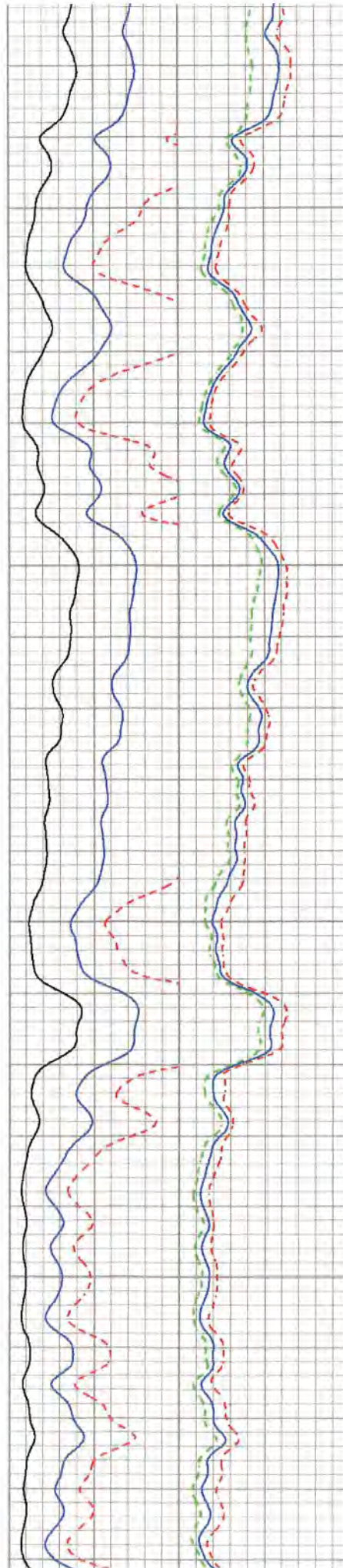
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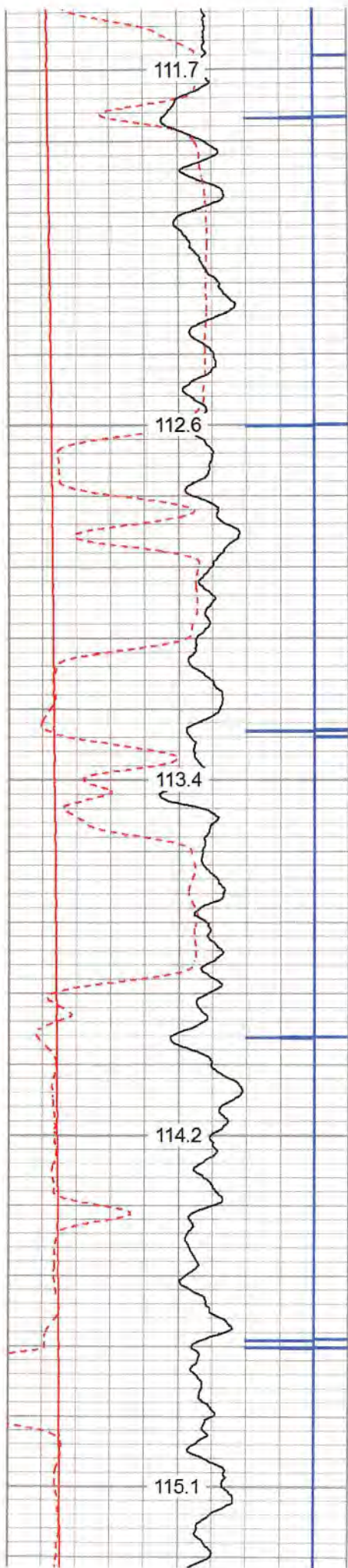
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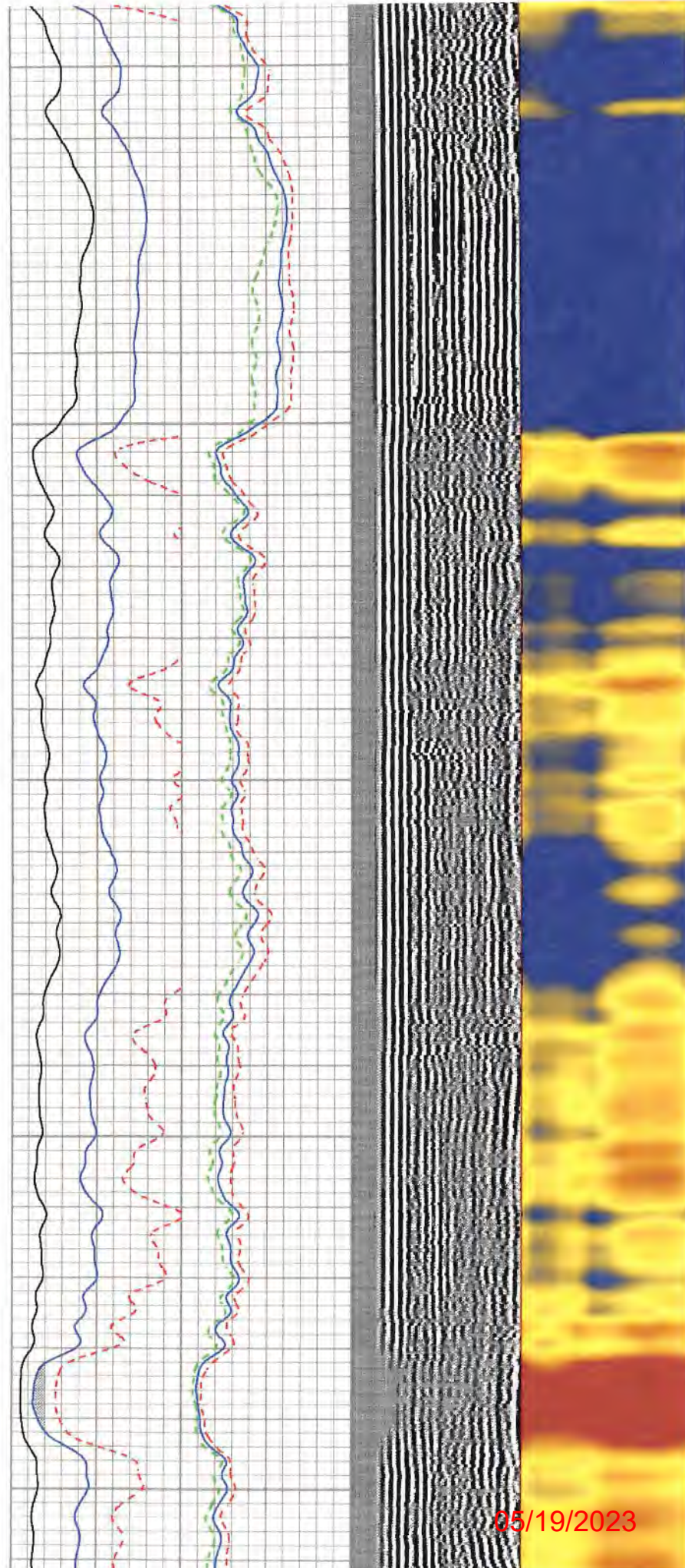
4600
4650
4700
4750



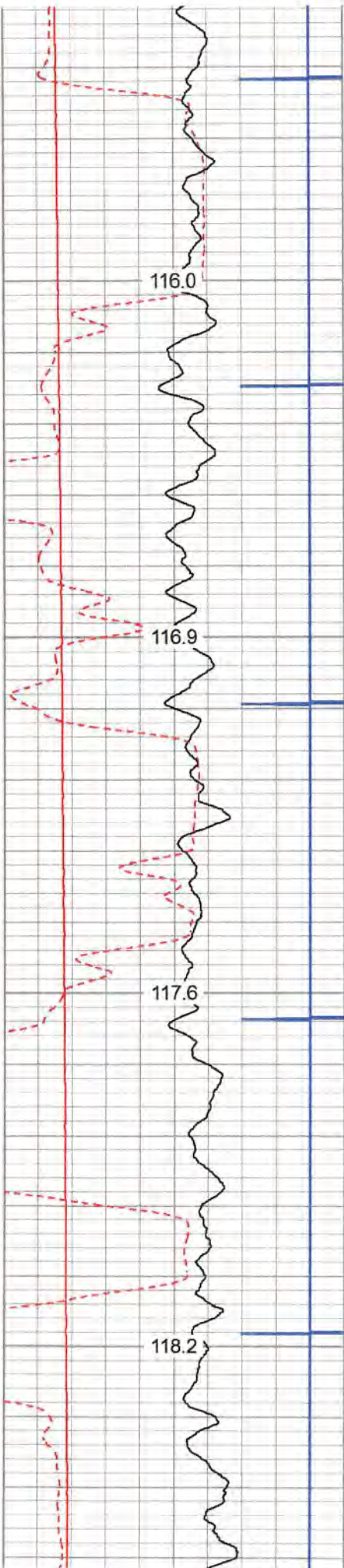
05/19/2023



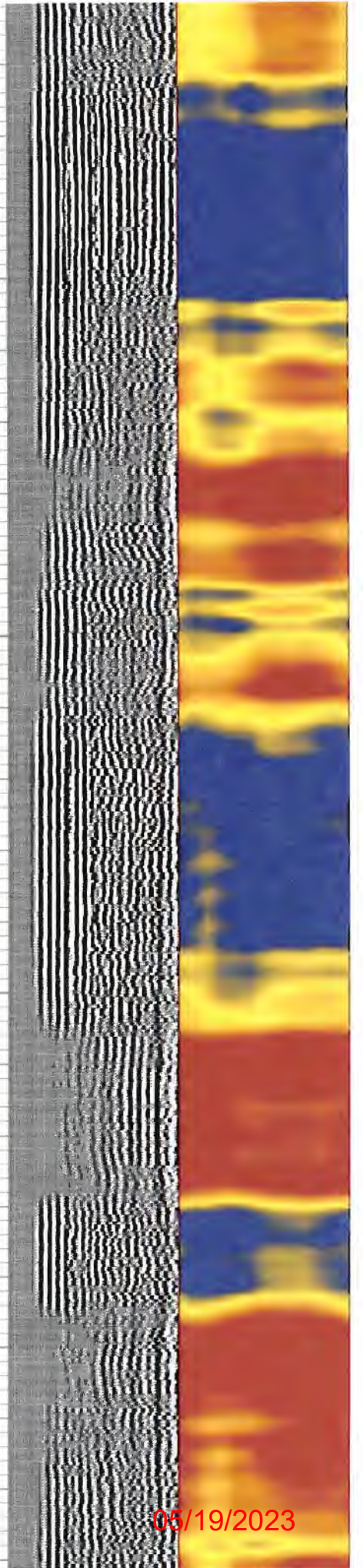
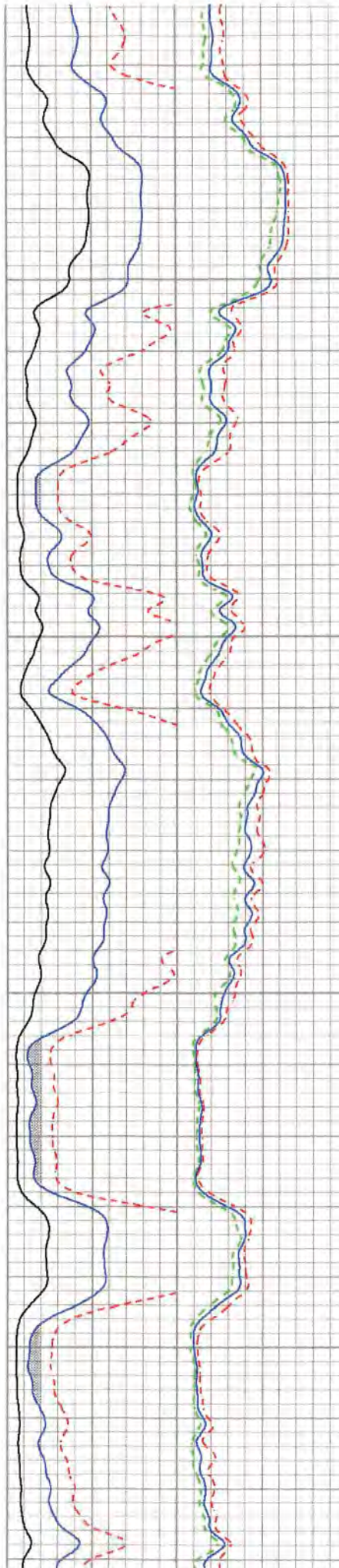
4800
4850
4900
4950
5000



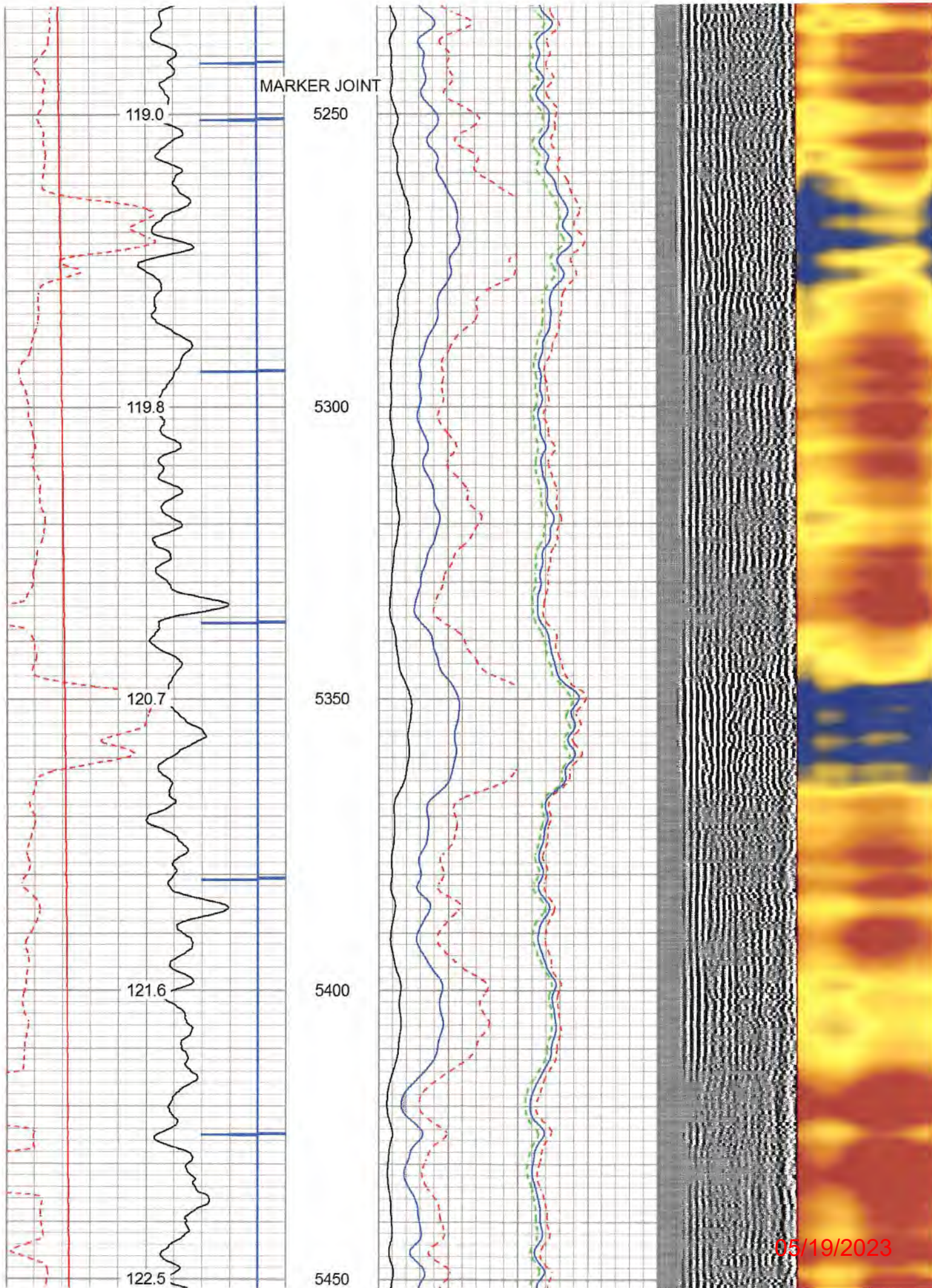
05/19/2023



5050
5100
5150
5200



05/19/2023



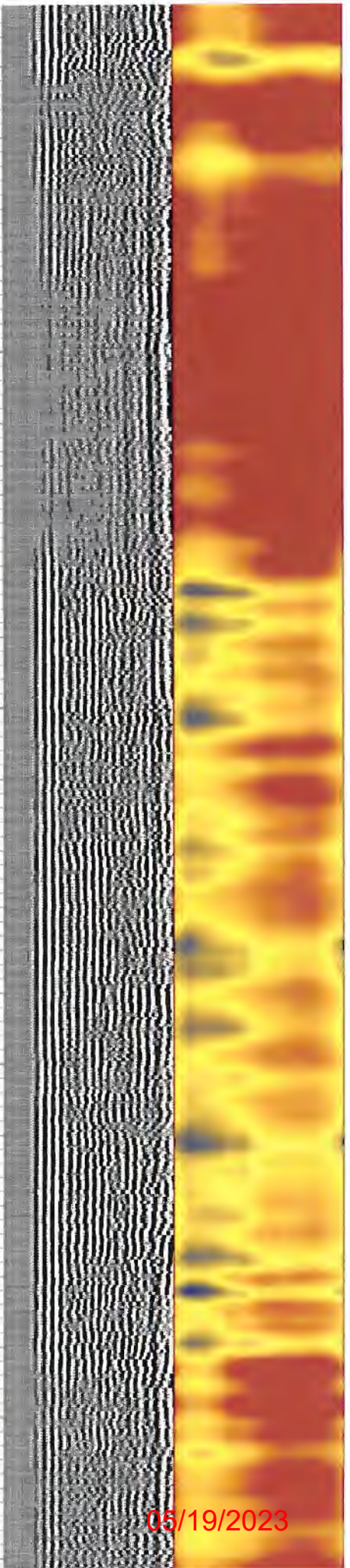
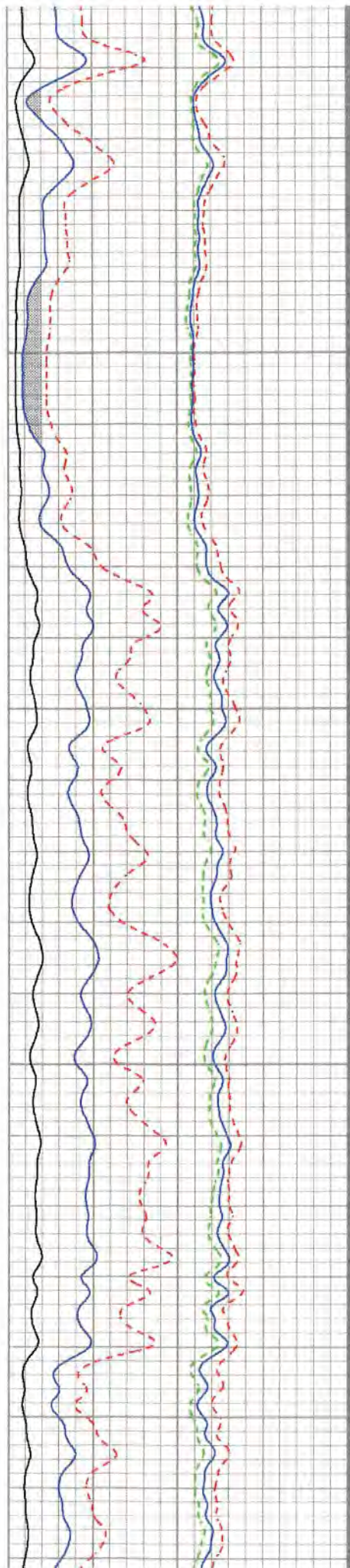


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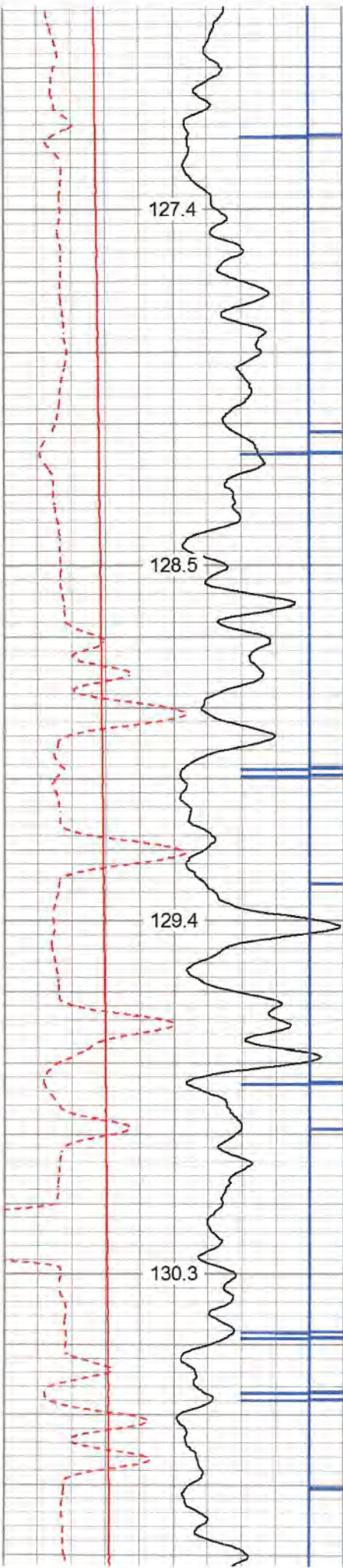
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5600

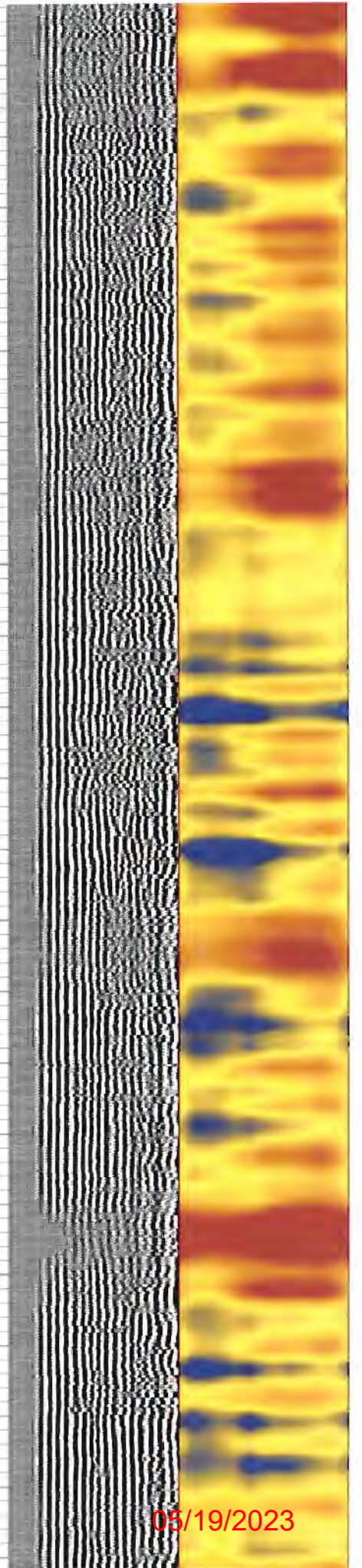
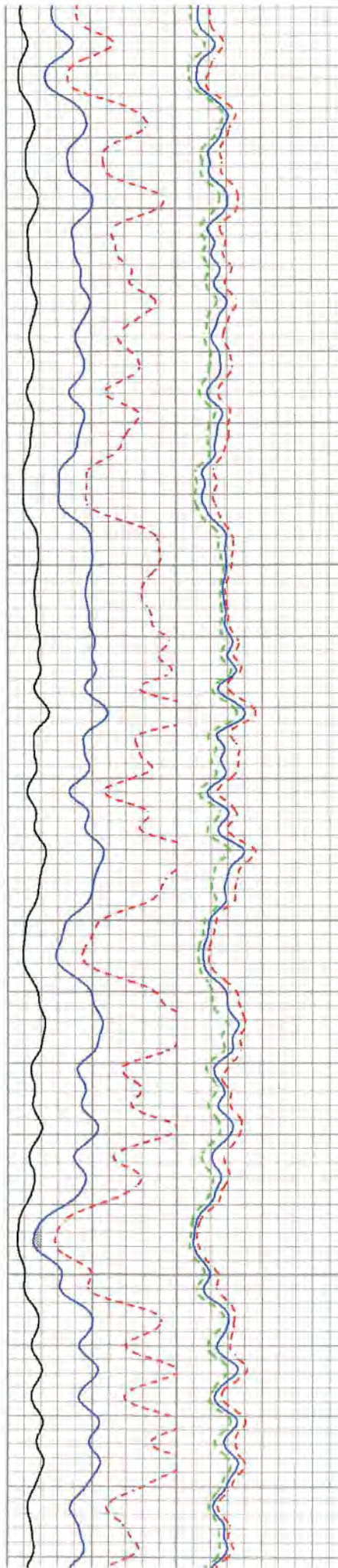
5650



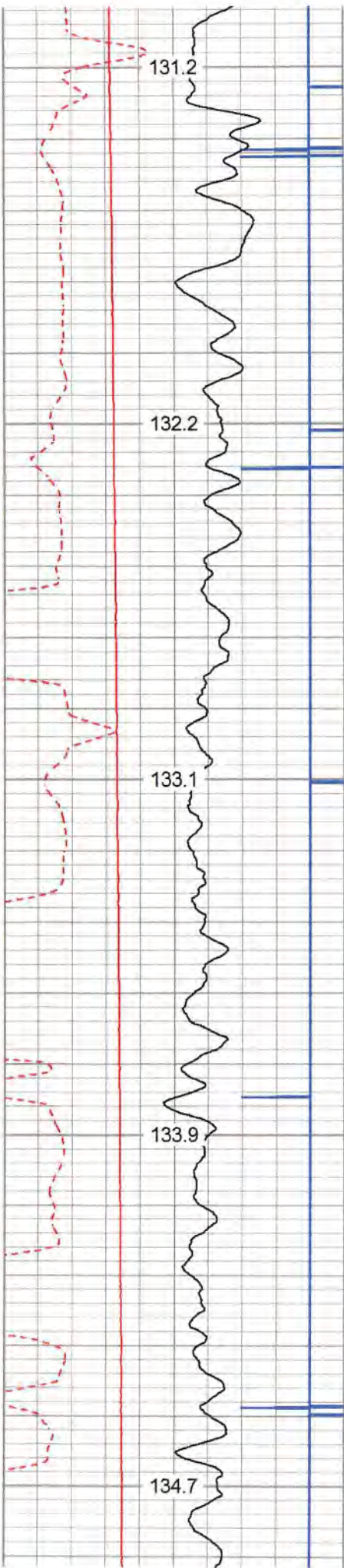
05/19/2023



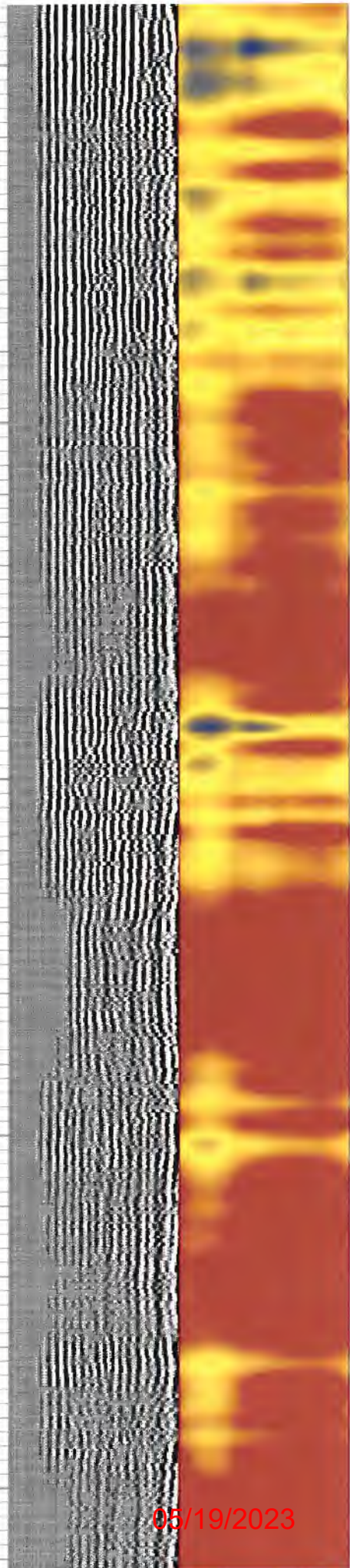
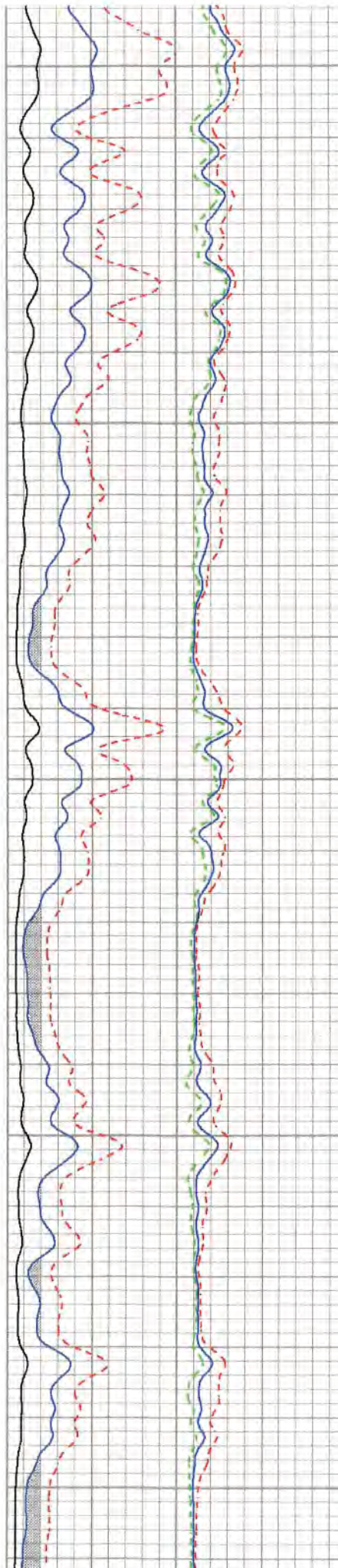
5700
5750
5800
5850

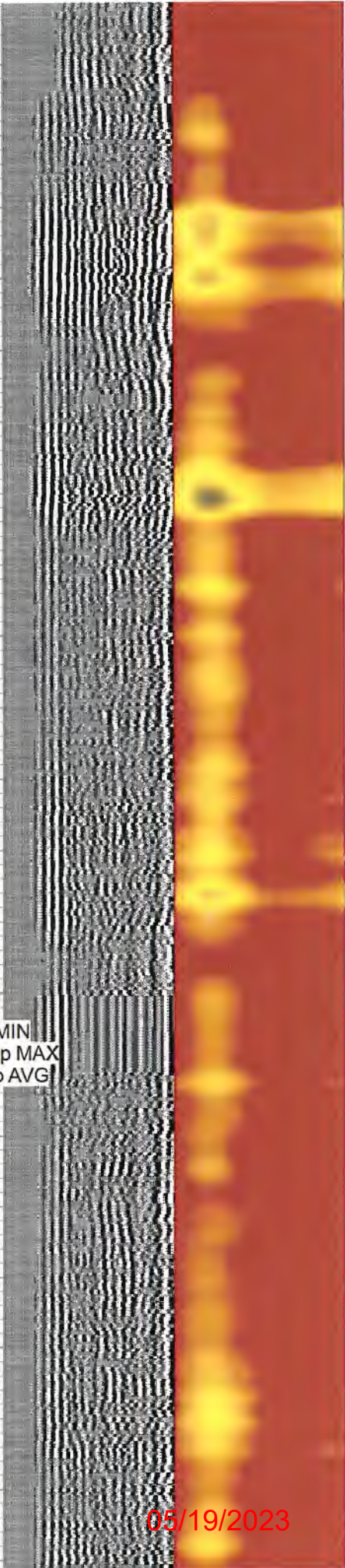
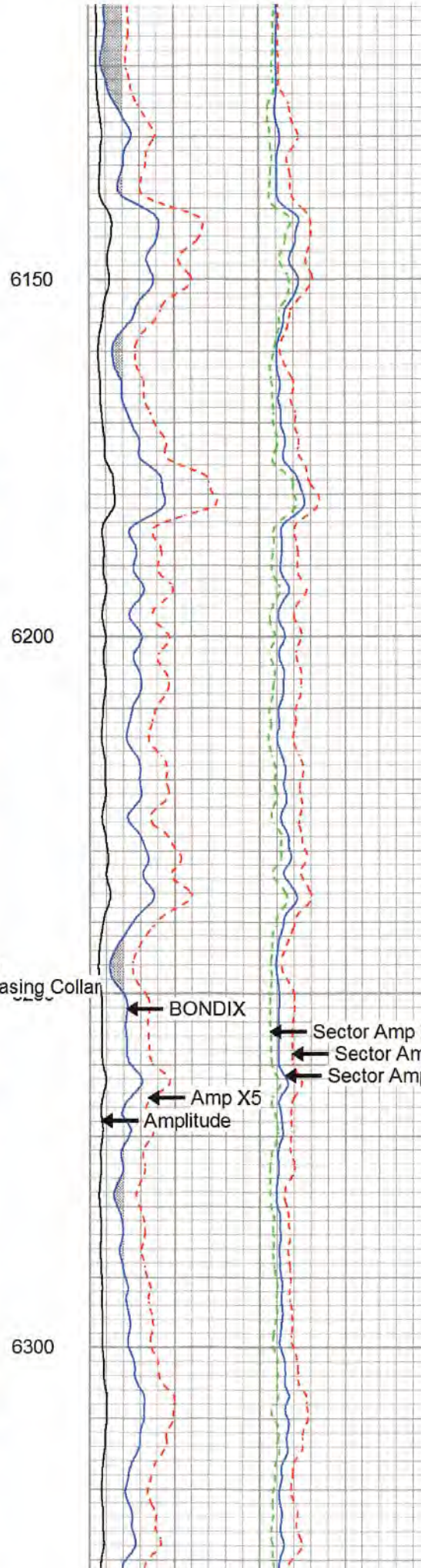
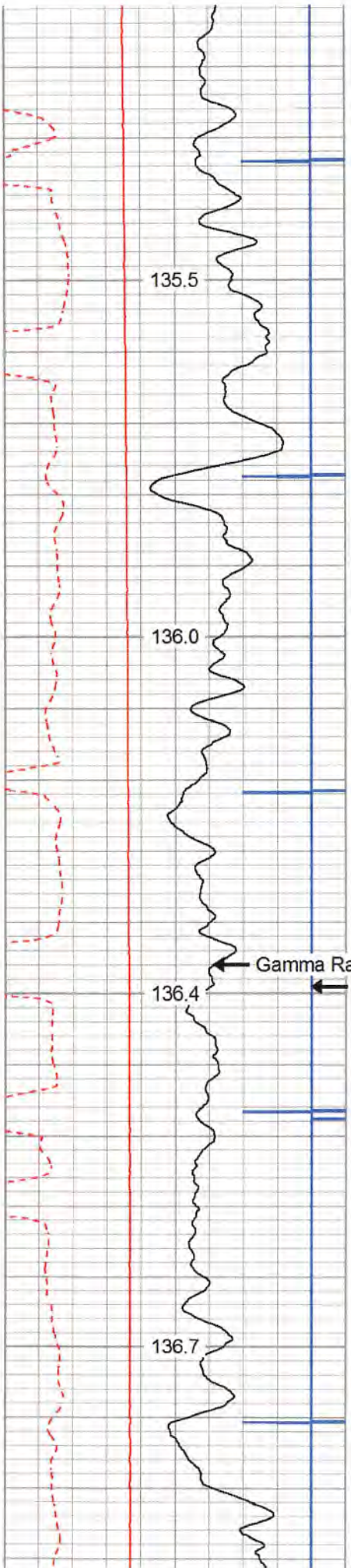


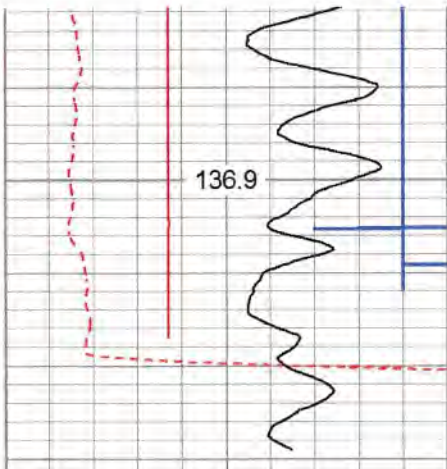
05/19/2023



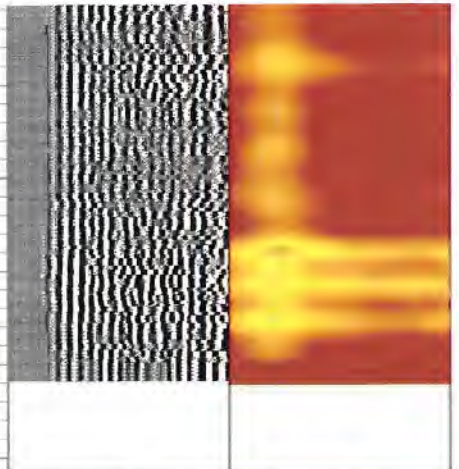
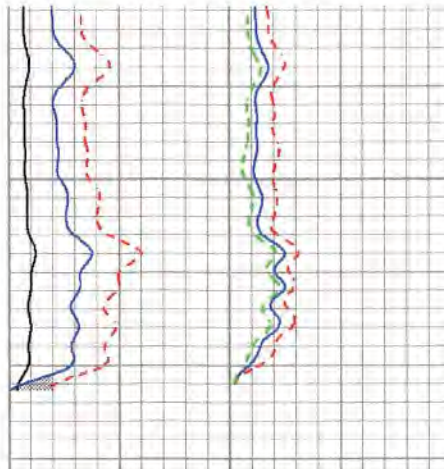
5900
5950
6000
6050
6100







6350



280	Travel Time (usec)	180
9	Casing Collar	-1
0	Gamma Ray	180
0	TEMP (degF)	100
180	GR	360
TEMP (degF)		

Amplitude	Sector Amp AVG
0 (mV) 100	Sector Amp MAX
Amp X5	Sector Amp MIN
0 (mV) 20	
1 BONDIX 0	

VDL	1 Sector Map 12
200 (usec) 1200	



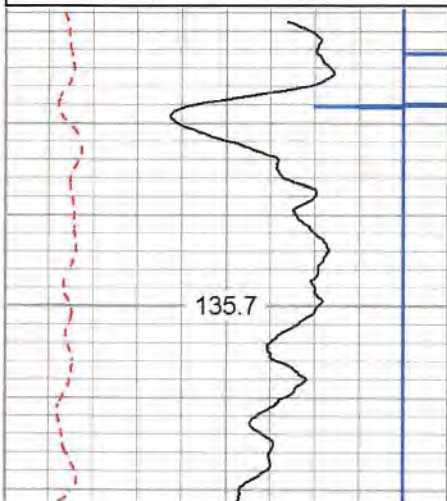
REPEAT PASS 1500 PSI

Database File 8_6_20_antero_alpineeastunit2h.db
 Dataset Pathname pass2
 Presentation Format antero
 Dataset Creation Thu Aug 06 16:05:49 2020
 Charted by Depth in Feet scaled 1:240

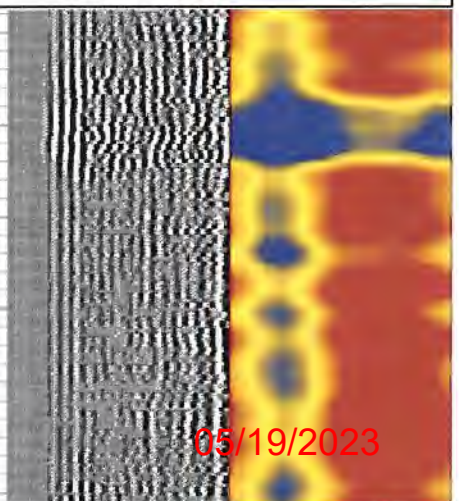
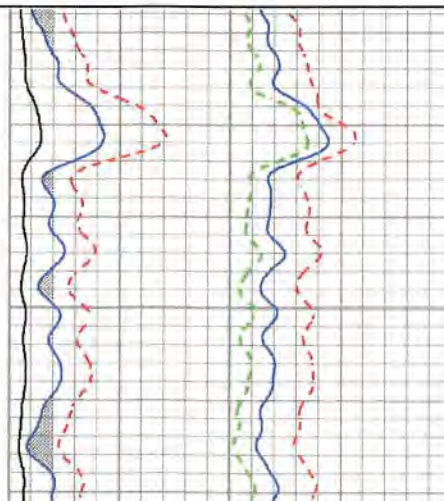
280	Travel Time (usec)	180
9	Casing Collar	-1
0	Gamma Ray	180
0	TEMP (degF)	100
180	GR	360
TEMP (degF)		

Amplitude	Sector Amp AVG
0 (mV) 100	Sector Amp MAX
Amp X5	Sector Amp MIN
0 (mV) 20	
1 BONDIX 0	

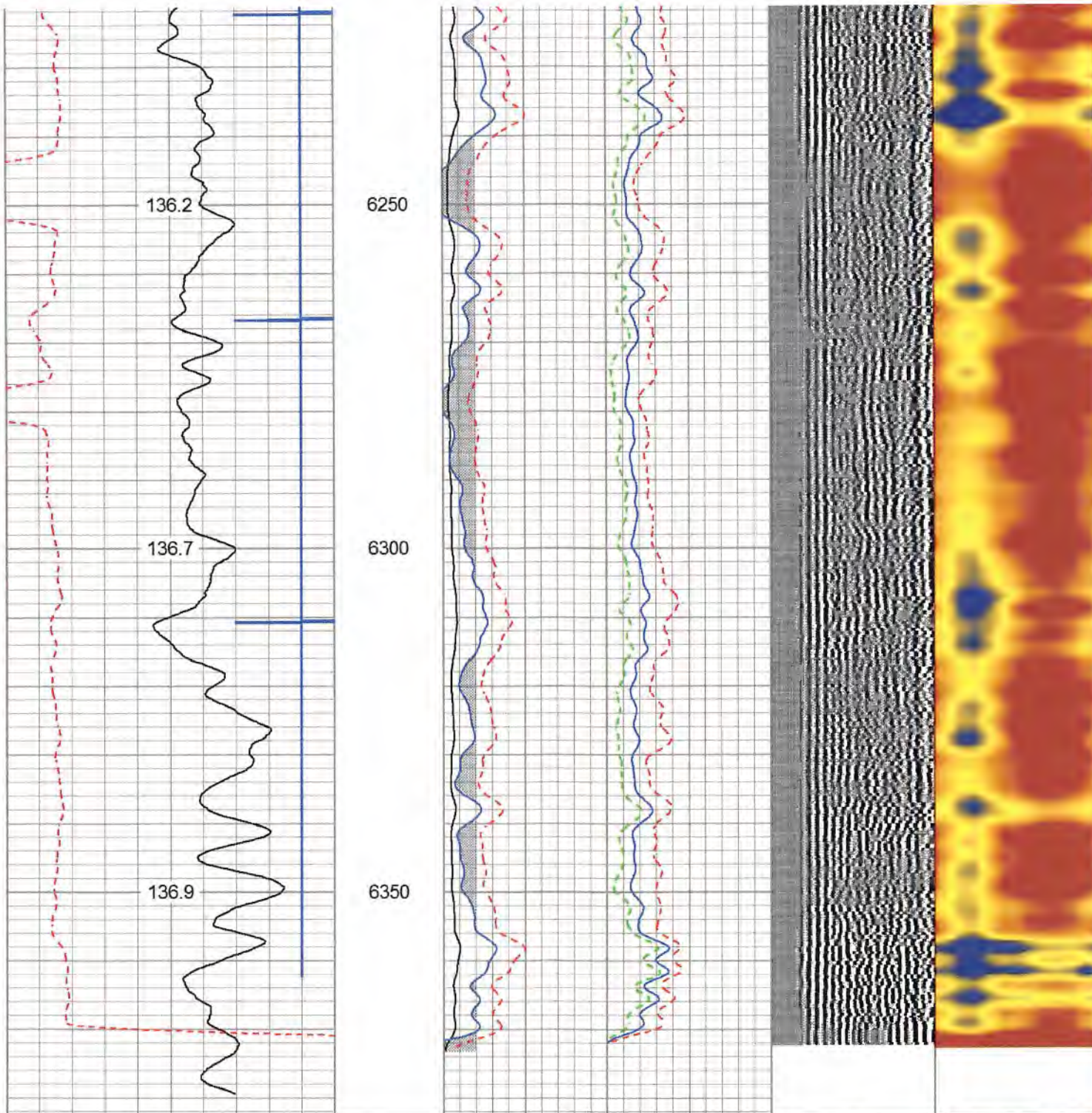
VDL	1 Sector Map 12
200 (usec) 1200	



6200



05/19/2023



280	Travel Time (usec)	180	Amplitude	Sector Amp AVG	VDL	1	Sector Map 12
9	Casing Collar	-1	0 (mV) 100	Sector Amp MAX	200 (usec) 1200		
0	Gamma Ray	180	Amp X5	Sector Amp MIN			
0	TEMP (degF)	100	0 (mV) 20				
180	GR	360	1 BONDIX 0				

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
CCL	20.30		CCL-312tekco (IO8X3-01) Tekco 3 1/8" 450 Deg. "F" SmCo Logging CCL	1.82	3.12	25.00

05/19/2023

			Tek-3.125 3 1/8" Titan Adjustable Centralizer	3.42	3.13	50.00
TEMP	13.46					
WVFS12	12.17					
WVFS11	12.17		SCBL-Tek12 (IOL40-03_5_5) Tekco 400 Deg F 12 Sector RIB with Temp	9.13	3.25	135.00
WVFS10	12.17					
WVFS9	12.17					
WVFS8	12.17					
WVFS7	12.17					
WVFS6	12.17					
WVFS5	12.17					
WVFS4	12.17					
WVFS3	12.17					
WVFS2	12.17					
WVFS1	12.17					
WVFCAL	11.42					
WVF3FT	11.42					
WVF5FT	10.42					
WVFSYNC	7.08		Tek-3.125 3 1/8" Titan Adjustable Centralizer	3.42	3.13	50.00
WVFTEMP	7.08					
			GR-Tek-Co 2 3/4 (IPSNO-03) Tekco 2 3/4" 400 Deg. F Logging Gamma Ray	3.67	2.75	40.00
GR	1.04					

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3.67 2.75 40.00

Dataset: 8_6_20_antero_alpineeastunit2h.db: field/well/run1/pass3
Total length: 21.44 ft
Total weight: 300.00 lb
O.D.: 3.25 in

Calibration Report

Database File 8_6_20_antero_alpineeastunit2h.db
Dataset Pathname pass3.2
Dataset Creation Fri Aug 07 16:34:12 2020

05/19/2023

Gamma Ray Calibration Report

Serial Number: IPSNO-03
 Tool Model: Tek-Co 2 3/4
 Performed: Tue Nov 12 16:11:18 2019

Calibrator Value: 1.0

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.5000 /cps

Segmented Cement Bond Log Calibration Report

Serial Number: IOL40-03_5_5
 Tool Model: Tek12

Calibration Casing Diameter: 5.500 in
 Calibration Depth: 341.267 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.001	0.696	3.400	71.921	98.634	3.311
CAL	0.865	0.404				
5'	-0.005	0.764	3.400	71.921	89.104	3.802
SUM						
S1	0.004	1.913	3.400	100.000	50.597	3.186
S2	0.006	1.741	3.400	100.000	55.660	3.089
S3	0.007	1.842	3.400	100.000	52.642	3.018
S4	0.007	1.879	3.400	100.000	51.609	3.039
S5	0.005	1.956	3.400	100.000	49.517	3.145
S6	0.004	2.079	3.400	100.000	46.561	3.212
S7	0.004	2.075	3.400	100.000	46.655	3.206
S8	0.004	1.994	3.400	100.000	48.537	3.219
S9	0.003	1.990	3.400	100.000	48.625	3.251
S10	0.003	1.960	3.400	100.000	49.357	3.262
S11	0.003	1.885	3.400	100.000	51.314	3.262
S12	0.003	1.964	3.400	100.000	49.275	3.232

Temperature Calibration Report

Serial Number: IOL40-03_5_5
 Tool Model: Tek12
 Performed: Fri Oct 20 09:51:21 2017

	Reference	Reading
Low Reference:	0.00 degF	0.00 usec
High Reference:	1.00 degF	1.00 usec
Gain:	0.33	
Offset:	0.00	
Delta Spacing	2	

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Company ANTERO RESOURCES CORPORATION
 Well ALPINE EAST UNIT 2H
 Field MARCELLUS

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