

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

RECEIVED  
Office of Oil and Gas  
FEB 17 2023

WV Department of  
Environmental Protection

API 47 - 095 - 02596 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 1H  
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 4362851m Easting 503687m  
Landing Point of Curve Northing 4362936m Easting 503717m  
Bottom Hole Northing 4367407m Easting 502107m

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

Date permit issued 3/27/2019 Date drilling commenced 1/22/2020 Date drilling ceased 6/13/2020  
Date completion activities began 8/17/2020 Date completion activities ceased 10/21/2020  
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:

05/19/2023

*Signature*  
3/16/23

API 47-095 - 02596 Farm name James Sine ET AL Well number Alpine East Unit 1H

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"	388'	New	54.5#, J-55	N/A	Y
Coal							
Intermediate 1	12-1/4"	9-5/8"	2608'	New	36#, J-55	N/A	Y
Intermediate 2							
Intermediate 3							
Production	8-3/4"/8-1/2"	5-1/2"	22146'	New	23#, P-110	N/A	Y
Tubing		2-3/8"	6176'		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 <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Class A	204 sx	15.6	1.20	245	0'	8 Hrs.
Surface	Class A	450 sx	15.8	1.17	527	0'	8 Hrs.
Coal							
Intermediate 1	Class A	890 sx	15.8	1.17	1041	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) 22146' MD, 6023' TVD (BHL), 6067' (Deepest Point Drilled) Loggers TD (ft) 22146' MD  
 Deepest formation penetrated Marcellus Plug back to (ft) N/A  
 Plug back procedure N/A

Kick off depth (ft) 5263'

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

WAS WELL COMPLETED AS SHOT HOLE  Yes  No DETAILS \_\_\_\_\_

WAS WELL COMPLETED OPEN HOLE?  Yes  No DETAILS \_\_\_\_\_

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

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API 47- 095 - 02596 Farm name James Sine ET AL Well number Alpine East Unit 1H

PERFORATION RECORD

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

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)
<b>*PLEASE SEE ATTACHED EXHIBIT 2</b>								

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Please insert additional pages as applicable.

05/19/2023  
SM  
3/16/23

API 47-095-02596 Farm name James Sine ET AL Well number Alpine East Unit 1H

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
<u>Marcellus</u>	<u>6001' (TOP)</u>	<u>TVD</u>	<u>6254' (TOP)</u> <u>MD</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 2057 psi Bottom Hole --- psi DURATION OF TEST --- hrs

OPEN FLOW Gas 3514 mcfpd Oil 122 bpd NGL --- bpd Water 245 bpd GAS MEASURED BY  Estimated  Orifice  Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>		<u>BOTTOM</u>		<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H<sub>2</sub>S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	

**\*PLEASE SEE ATTACHED EXHIBIT 3**


Please insert additional pages as applicable.

Drilling Contractor H & P Drilling  
Address 912 N Eagle Valley Rd City Howard State PA Zip 16841

Logging Company KLX Energy Services  
Address 1415 Louisiana Street City Houston State TX Zip 77002

Cementing Company Halliburton Energy Services  
Address 3000 W. Sam Houston Pkwy City Houston State TX Zip 76114

Stimulating Company Halliburton  
Address 3000 W. Sam Houston Pkwy City Houston State TX Zip 76114

Please insert additional pages as applicable.

Completed by Carly Marvel Telephone 303-357-7373  
Signature Carly Marvel Title Permitting Agent Date 2/6/2023

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

05/19/2023  
*JM*  
*5/16/23*

LATITUDE 39°25'00"

11,491'

LATITUDE 39°27'30"

LONGITUDE 80°57'30"

796' TO BOTTOM HOLE

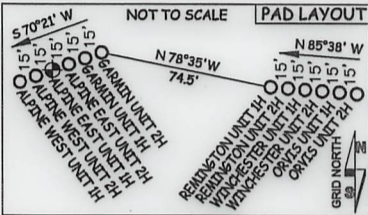
NO OCCUPIED DWELLINGS OR BUILDINGS TWO THOUSAND FIVE HUNDRED (2,500) SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY ARE LOCATED WITHIN SIX HUNDRED TWENTY-FIVE (625) FEET OF THE CENTER OF THE WELL PAD.

1H TOP HOLE

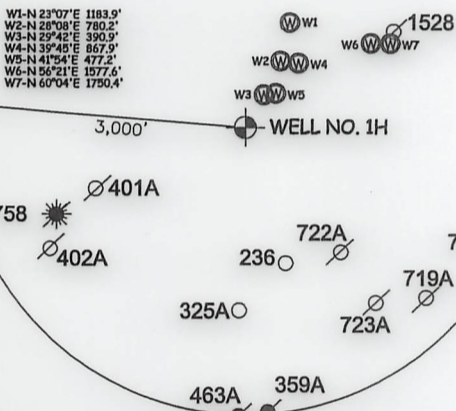
WV NORTH ZONE GRID NORTH

AS DRILLED DATA: WELL 1H TOP HOLE INFORMATION: N: 336,634ft E: 1,588,274ft LAT: 39°24'54.32" LON: 80°57'26.43" BOTTOM HOLE INFORMATION: N: 351,672ft E: 1,583,340ft LAT: 39°27'22.14" LON: 80°58'32.44" WEST VIRGINIA COORDINATE SYSTEM OF 1927 NORTH ZONE. SYSTEM 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 1H TOP HOLE INFORMATION: N: 4,362,851m E: 503,687m BOTTOM HOLE INFORMATION: N: 4,367,407m E: 502,107m



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

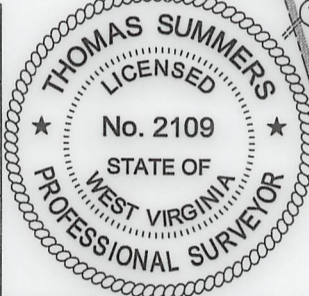


I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PERSCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.



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 # ALPINEEAST1H830AD 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 #1H

WELL 1H POINT OF ENTRY INFORMATION: N: 336,613ft E: 1,588,378ft LAT: 39°24'57.10" LON: 80°57'25.15" (NAD) 83 (UTM) ZONE 17 COORDS: N: 4,362,936m E: 503,717m

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL 47 095 02596 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW X STATE COUNTY PERMIT 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; JANIE DENOON TRUST; DONALD E. ROBINSON ET UX; JAMES M. UTT; DONALD L. BAKER ET UX; STAR FURNITURE CO.; LEASE ACREAGE 54.74 ACRES +/- 41 ACRES +/- 98.06 ACRES +/- 204.88 ACRES +/- 173.65 ACRES +/- 73.23 ACRES +/- STEPHEN C. ANDERSON; GEORGE E. POST ET UX; ALFRED EDWARD TUTTLE ET AL; GEORGE E. POST ET UX; EARL E. BLAIR ET UX 175.66 ACRES +/- 84.67 ACRES +/- 49.75 ACRES +/- 138.56 ACRES +/- 43.25 ACRES +/- 110 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 6,023' TVD 22,146' 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

05/19/2023

COUNTY NAME PERMIT

LATITUDE 39°25'00"

11,491'

LATITUDE 39°27'30"

LONGITUDE 80°57'30"

796' TO BOTTOM HOLE

575' LONGITUDE 80°55'00"

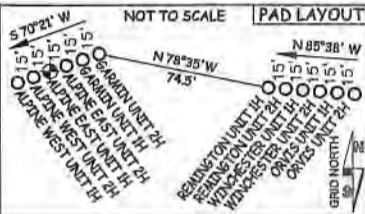
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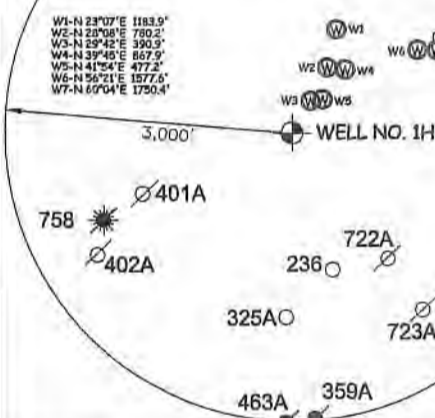
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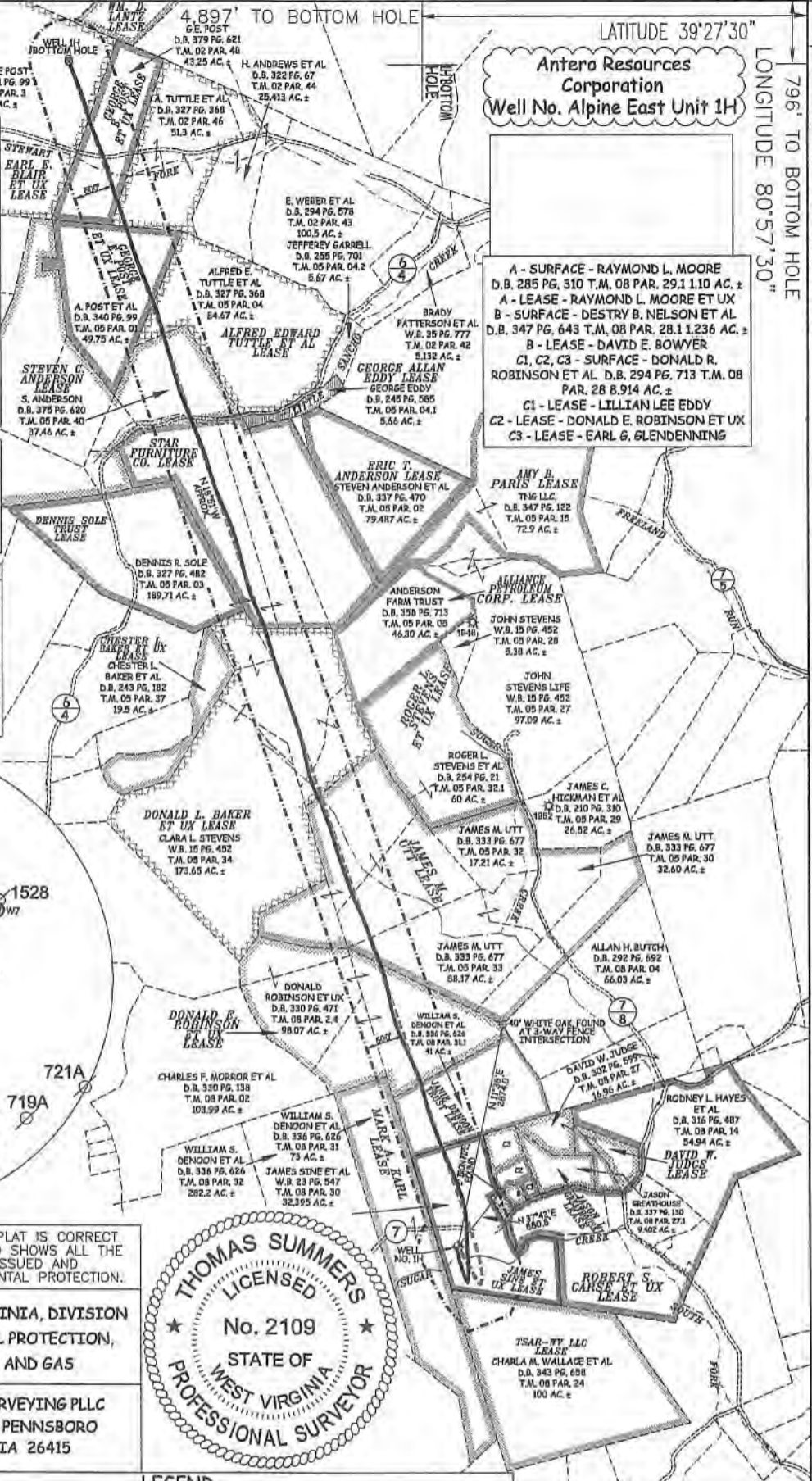


NOTE: 7 WATER WELLS WERE LOCATED WITHIN 2000' OF CENTER OF PAD



Antero Resources Corporation Well No. Alpine East Unit 1H

A - SURFACE - RAYMOND L. MOORE D.B. 285 PG. 310 T.M. 08 PAR. 29.1 1.10 AC. ±  
A - LEASE - RAYMOND L. MOORE ET UX  
B - SURFACE - DESTRY B. NELSON ET UX D.B. 347 PG. 643 T.M. 08 PAR. 28.1 1.236 AC. ±  
B - LEASE - DAVID E. BOWYER  
C1, C2, C3 - SURFACE - DONALD R. ROBINSON ET AL. D.B. 294 PG. 713 T.M. 08 PAR. 28 B.914 AC. ±  
C1 - LEASE - LILLIAN LEE EDDY  
C2 - LEASE - DONALD E. ROBINSON ET UX  
C3 - LEASE - EARL G. GLENDENNING

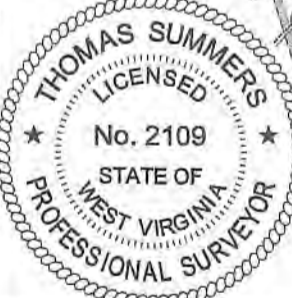


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WILLOW LAND SURVEYING PLLC 220 MASONIC AVE. PENNSBORO WEST VIRGINIA 26415



JOB # 17-005WA  
DRAWING # ALPINEEAST1H830AD  
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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(IF "GAS") PRODUCTION X STORAGE \_\_\_ DEEP \_\_\_ SHALLOW X STATE COUNTY PERMIT  
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 +/-  
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WELL OPERATOR ANTERO RESOURCES CORP. DESIGNATED AGENT DIANNA STAMPER - CT CORPORATION SYSTEM  
ADDRESS 1615 WYNKOOP STREET ADDRESS 5400 D BIG TYLER ROAD CHARLESTON, WV 25313  
FORM WW-6 DENVER, CO 80202

COUNTY NAME PERMIT

Handwritten initials 'JM'

**Exhibit 1**

Stage No.	Perforation Date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formations
1	8/17/2020	22032	21987	60	Marcellus
2	8/18/2020	21948.5	21783	60	Marcellus
3	8/18/2020	21747.5	21582	60	Marcellus
4	8/18/2020	21546.5	21381	60	Marcellus
5	8/19/2020	21345.5	21180	60	Marcellus
6	8/19/2020	21144.5	20979	60	Marcellus
7	8/19/2020	20943.5	20778	60	Marcellus
8	8/19/2020	20742.5	20577	60	Marcellus
9	8/20/2020	20541.5	20376	60	Marcellus
10	8/20/2020	20340.5	20175	60	Marcellus
11	8/20/2020	20139.5	19974	60	Marcellus
12	8/21/2020	19938.5	19773	60	Marcellus
13	8/21/2020	19737.5	19572	60	Marcellus
14	8/21/2020	19536.5	19371	60	Marcellus
15	8/22/2020	19335.5	19170	60	Marcellus
16	8/22/2020	19134.5	18969	60	Marcellus
17	8/22/2020	18933.5	18768	60	Marcellus
18	8/22/2020	18732.5	18567	60	Marcellus
19	8/22/2020	18531.5	18366	60	Marcellus
20	8/23/2020	18330.5	18165	60	Marcellus
21	8/23/2020	18129.5	17964	60	Marcellus
22	8/23/2020	17928.5	17763	60	Marcellus
23	8/23/2020	17727.5	17562	60	Marcellus
24	8/23/2020	17526.5	17361	60	Marcellus
25	8/24/2020	17325.5	17160	60	Marcellus
26	8/24/2020	17124.5	16959	60	Marcellus
27	8/24/2020	16923.5	16758	60	Marcellus
28	8/24/2020	16722.5	16557	60	Marcellus
29	8/25/2020	16521.5	16356	60	Marcellus
30	8/25/2020	16320.5	16155	60	Marcellus
31	8/26/2020	16119.5	15954	60	Marcellus
32	8/26/2020	15918.5	15753	60	Marcellus
33	8/26/2020	15717.5	15552	60	Marcellus
34	8/26/2020	15516.5	15351	60	Marcellus
35	8/26/2020	15315.5	15150	60	Marcellus
36	8/27/2020	15114.5	14949	60	Marcellus
37	8/27/2020	14913.5	14748	60	Marcellus
38	8/27/2020	14712.5	14547	60	Marcellus
39	8/27/2020	14511.5	14346	60	Marcellus
40	8/28/2020	14310.5	14145	60	Marcellus
41	8/28/2020	14109.5	13944	60	Marcellus
42	8/28/2020	13908.5	13743	60	Marcellus
43	8/28/2020	13707.5	13542	60	Marcellus
44	8/29/2020	13506.5	13341	60	Marcellus
45	8/29/2020	13305.5	13140	60	Marcellus
46	8/29/2020	13104.5	12939	60	Marcellus
47	8/29/2020	12903.5	12738	60	Marcellus
48	8/29/2020	12702.5	12537	60	Marcellus
49	8/30/2020	12501.5	12336	60	Marcellus
50	8/30/2020	12300.5	12135	60	Marcellus
51	8/30/2020	12099.5	11934	60	Marcellus
52	8/30/2020	11898.5	11733	60	Marcellus
53	8/31/2020	11697.5	11532	60	Marcellus
54	8/31/2020	11496.5	11331	60	Marcellus
55	8/31/2020	11295.5	11130	60	Marcellus
56	8/31/2020	11094.5	10929	60	Marcellus
57	9/1/2020	10893.5	10728	60	Marcellus
58	9/1/2020	10692.5	10527	60	Marcellus
59	9/1/2020	10491.5	10326	60	Marcellus
60	9/1/2020	10290.5	10125	60	Marcellus
61	9/2/2020	10089.5	9924	60	Marcellus
62	9/2/2020	9888.5	9723	60	Marcellus
63	9/2/2020	9687.5	9522	60	Marcellus
64	9/2/2020	9486.5	9321	60	Marcellus
65	9/3/2020	9285.5	9120	60	Marcellus
66	9/3/2020	9084.5	8919	60	Marcellus
67	9/3/2020	8883.5	8718	60	Marcellus
68	9/3/2020	8682.5	8517	60	Marcellus
69	9/4/2020	8481.5	8316	60	Marcellus
70	9/4/2020	8280.5	8115	60	Marcellus
71	9/4/2020	8079.5	7914	60	Marcellus
72	9/4/2020	7878.5	7713	60	Marcellus
73	9/4/2020	7677.5	7512	60	Marcellus
74	9/4/2020	7476.5	7311	60	Marcellus
75	9/5/2020	7275.5	7110	60	Marcellus
76	9/5/2020	7074.5	6909	60	Marcellus
77	9/5/2020	6873.5	6708	60	Marcellus
78	9/5/2020	6672.5	6507	60	Marcellus
79	9/5/2020	6471.5	6306	60	Marcellus

EXHIBIT 2

Stage No.	Stimulations Date	Avg Pump Rate	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	(SIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/ other (units)
1	8/17/2020	76	9616	7730	3767	165920	6028.952	N/A
2	8/18/2020	87.55	9491	4905	3567	415820	9126.452	N/A
3	8/18/2020	88.48	8983.81	5104	3847.44	418480	10615.17	N/A
4	8/18/2020	84.65	9496	5109	3340	418610	7611.69	N/A
5	8/19/2020	88.19	9941	5311	3882	415980	7491.429	N/A
6	8/19/2020	86.14	9093	5094	3905	418620	8099.69	N/A
7	8/19/2020	86.19	9396	5035	3946.23	417730	7701.69	N/A
8	8/19/2020	85.57	9606	5288	4629	419440	10364.81	N/A
9	8/20/2020	88.36	9696	5296	3823.49	420180	7497.238	N/A
10	8/20/2020	89.83	9877	5278	3839	416950	7447.857	N/A
11	8/20/2020	88.89	9922	5327	3698	418440	7377.905	N/A
12	8/21/2020	88.35	9726	4999	4365.85	419180	7086.762	N/A
13	8/21/2020	85.39	9607	5732	3758.39	417120	7054.357	N/A
14	8/21/2020	87.74	9725	5364	3658	418460	7216.952	N/A
15	8/22/2020	90.08	9790	5938	3644.82	424820	7313.762	N/A
16	8/22/2020	97.22	9806	5677	3745.95	419800	7349.619	N/A
17	8/22/2020	88.5	9170	5463	3624.17	419260	7214.405	N/A
18	8/22/2020	87.38	9250	5482	3539.68	417990	7526.714	N/A
19	8/22/2020	95.15	10021	5419	3401.96	419100	7478.071	N/A
20	8/23/2020	95.2	9932	5347	3644.83	415662	7280	N/A
21	8/23/2020	94.19	9623	4632	3475.17	414520	7071.357	N/A
22	8/23/2020	93.84	9775	5102	3529.37	417750	7030.714	N/A
23	8/23/2020	94.3	9824	5350	3701.62	421900	7251.19	N/A
24	8/23/2020	94.1	9406	5492	3674.97	420746	7250.976	N/A
25	8/24/2020	96.34	9483	5562	3581.77	418972	7274.857	N/A
26	8/24/2020	94.98	9321	5612	3710.77	419940	7273.357	N/A
27	8/24/2020	91.04	9083	5418	3235.48	419320	7180.381	N/A
28	8/24/2020	99	9613	6004	3116.13	418800	7273.667	N/A
29	8/25/2020	91.35	8685	6120	3418	419220	6675.333	N/A
30	8/25/2020	87.32	8320	6235	3380.65	420810	7100.929	N/A
31	8/26/2020	96.29	9264	5374	3553.86	419330	7226.857	N/A
32	8/26/2020	98.06	9629	4757	0	421390	6897.143	N/A
33	8/26/2020	95.6	9461	5990	3580.87	421400	7005.714	N/A
34	8/26/2020	86.86	8732	5787	3359.31	420850	7079.833	N/A
35	8/26/2020	94.66	9085	6351	3307.94	421000	6984.929	N/A
36	8/27/2020	93.78	9066	6555	3689	421370	6885.857	N/A
37	8/27/2020	94.48	8832	5714	3584	420080	6787.762	N/A
38	8/27/2020	95.53	8958	5940	3563.92	421510	6873.762	N/A
39	8/27/2020	94.8	8896	5465	3444.09	420560	7029.381	N/A
40	8/28/2020	96.06	9124	5365	3563.66	419800	7060.833	N/A
41	8/28/2020	93.72	8862	5155	3747.77	420970	6689	N/A
42	8/28/2020	95.87	8907	5260	3933	422320	6792.238	N/A
43	8/28/2020	97	9060	5249	4214.49	421000	6821.595	N/A
44	8/29/2020	97.61	9069	5425	3780.53	420740	6759.619	N/A
45	8/29/2020	97.21	9053	5430	3448.54	421200	6882.619	N/A
46	8/29/2020	92.78	8711	5766	3471	399800	6655.024	N/A
47	8/29/2020	96.45	8977	5533	3471.84	400030	6740.643	N/A
48	8/29/2020	95.81	8937	5175	4222.32	400160	6692.429	N/A
49	8/30/2020	96.1	8827	5028	3628.21	443680	6684.143	N/A
50	8/30/2020	97.8	8906	5003	3845.2	295130	6575.048	N/A
51	8/30/2020	97.07	8809	5273	3937.69	399850	6740.952	N/A
52	8/30/2020	92.05	8532	5078	3738.82	399700	7118.571	N/A
53	8/31/2020	95.97	9071	5598	3787	400320	6773.31	N/A
54	8/31/2020	85.85	7807	5529	3711	401250	6738.81	N/A
55	8/31/2020	96.79	8448	5534	3914.32	399940	6602.643	N/A
56	8/31/2020	95.91	8193	5167	3573.16	399340	6590.31	N/A
57	9/1/2020	97.99	8637	5195	3660.31	400440	6658.214	N/A
58	9/1/2020	98.4	8422	4576	3691	402560	6704.976	N/A
59	9/1/2020	99.26	8416	5756	3741.66	400070	6679.119	N/A
60	9/1/2020	96.41	8477	5685	3956.62	401460	6746.738	N/A
61	9/2/2020	95.86	9041	5556	3786.52	399810	6814.548	N/A
62	9/2/2020	97.54	8398.98	6481	3561	399850	6750.167	N/A
63	9/2/2020	94.61	8227	4685	3389	398540	6648.119	N/A
64	9/2/2020	92.53	7908	5318	3693.09	400450	7541.333	N/A
65	9/3/2020	96.78	7949	4925	3980.3	401040	6893.429	N/A
66	9/3/2020	98.11	8483	5290	3793	399820	6622.762	N/A
67	9/3/2020	99.29	8419	5926	4018.92	400050	6594.476	N/A
68	9/3/2020	97.31	8233	5414	3771.55	401050	6581	N/A
69	9/4/2020	97.65	8326	7149	3686.86	401440	6638.81	N/A
70	9/4/2020	97.29	8047	5382	3883	400090	6636.214	N/A
71	9/4/2020	97.8	7935	5209	3886	401310	6682.548	N/A
72	9/4/2020	98.5	7873	5275	3920.51	399420	6560.952	N/A
73	9/4/2020	98.94	7707	3863	3588.51	399740	6380.214	N/A
74	9/4/2020	98.52	7565	4646	3587.59	399910	6508.81	N/A
75	9/5/2020	99.08	7381	6331	3434.05	399970	6470.143	N/A
76	9/5/2020	98.89	7369	5703	3680.14	399500	6548.81	N/A
77	9/5/2020	99.19	7353	5338	3822.47	399440	6614.571	N/A
78	9/5/2020	99.57	7316	4127	3915.2	399800	6618.333	N/A
79	9/5/2020	97.76	7477	5478	3785.97	399750	6502.69	N/A
	AVG=	94	8,879	5,446	3,655	32,167,770	557,352	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	1,623	1,510	1,625
Big Lime	1,653	2,474	1,625	2,477
Fifty Foot Sandstone	2,474	2,559	2,447	2,562
Gordon	2,559	2,920	2,532	2,923
Fifth Sandstone	2,920	3,208	2,893	3,213
Bayard	3,208	3,784	3,183	3,798
Speechley	3,784	4,107	3,768	4,127
Balltown	4,107	4,282	4,097	4,305
Bradford	4,282	4,561	4,275	4,589
Benson	4,561	4,717	4,559	4,747
Alexander	4,717	5,914	4,717	6,037
Sycamore	5,786	5,884	5,867	6,007
Middlesex	5,884	5,970	6,007	6,169
Burkett	5,970	5,994	6,169	6,236
Tully	5,994	6,001	6,236	6,254
Marcellus	6,001	NA	6,254	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.

# Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/17/2020
Job End Date:	9/5/2020
State:	West Virginia
County:	Tyler
API Number:	47-095-02596-00-00
Operator Name:	Antero Resources Corporation
Well Name and Number:	Alpine East 1H
Latitude:	39.41509000
Longitude:	-80.95734000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,050
Total Base Water Volume (gal):	24,449,017
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	86.43260	Density = 8.50
Ingredients	Listed Above	Listed Above					
			Water	7732-18-5	100.00000	0.16423	

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

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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	13.37885
		Hydrochloric acid	7647-01-0	30.00000	0.03820
		Complex Amine Compound	Proprietary	60.00000	0.02829
		Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.01415
		Guar gum	9000-30-0	100.00000	0.00508
		Glutaraldehyde	111-30-8	30.00000	0.00258
		Surfactant	Proprietary	5.00000	0.00236
		Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8	5.00000	0.00236
		Ethoxylated alcohols	Proprietary	5.00000	0.00048
		Organic chloride compound	Proprietary	1.00000	0.00047
		Alkoxylated polyhydric alcohol	Proprietary	1.00000	0.00047
		Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl chlorides	68424-85-1	5.00000	0.00043
		Methanol	67-56-1	100.00000	0.00032
		Ammonium persulfate	7727-54-0	100.00000	0.00015
		Ethanol	64-17-5	1.00000	0.00009
		Mixture of dimer and trimer fatty acids of indefinite composition derived from tall oil	61790-12-3	30.00000	0.00007
		Modified thiourea polymer	Proprietary	30.00000	0.00007
		Oxylated phenolic resin	Proprietary	30.00000	0.00005
		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
		Organic salt #2	Proprietary	0.01000	0.00000
		Nitrated acetate salt	Proprietary	0.01000	0.00000
		Formaldehyde	50-00-0	0.01000	0.00000

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			Sodium glycolate	2836-32-0	0.01000	0.00000	
			Acrylamide	79-06-1	0.01000	0.00000	
			Sodium hydroxide	1310-73-2	0.01000	0.00000	
			Organic salt #1	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 WEST UNIT 1H Field MARCELLUS County TYLER State WW	Country US		Company ANTERO RESOURCES CORPORATION				
	Country US		Well ALPINE WEST UNIT 1H				
	Country US		Field MARCELLUS				
	Country US		County TYLER				
	Country US		State WW Country US				
Location:		API #: 47095026000000		Other Services			
SEC		TWP		RGE			
Permanent Datum		GL		Elevation N/A			
Log Measured From		KB		K.B. N/A			
Drilling Measured From		KB 30 FT		D.F. N/A			
Date		6 AUG 2020		E.L. N/A			
Run Number		1					
Depth Driller		22,089					
Depth Logger		6291					
Bottom Logged Interval		6297					
Top Log Interval		SURFACE					
Open Hole Size		N/A					
Type Fluid		WATER					
Density / Viscosity		N/A					
Max. Recorded Temp.		137					
Estimated Cement Top		4530					
Time Well Ready		ON ARRIVAL					
Time Logger on Bottom		9:50					
Equipment Number		214182					
Location		BRIDGEPORT WW					
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	465		
Prot. String		9.625	N/A	SURFACE	2602		
Production String		5.5	23	SURFACE	22,091		
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 DOWN HOLE 5.5 FT TO MATCH  
MARKER JOINT @ 5052-5061  
CEMENT TOP 4530

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**MAIN PASS**



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 Presentation Format antero  
 Dataset Creation Fri Aug 07 15:05:59 2020  
 Charted by Depth in Feet scaled 1:240

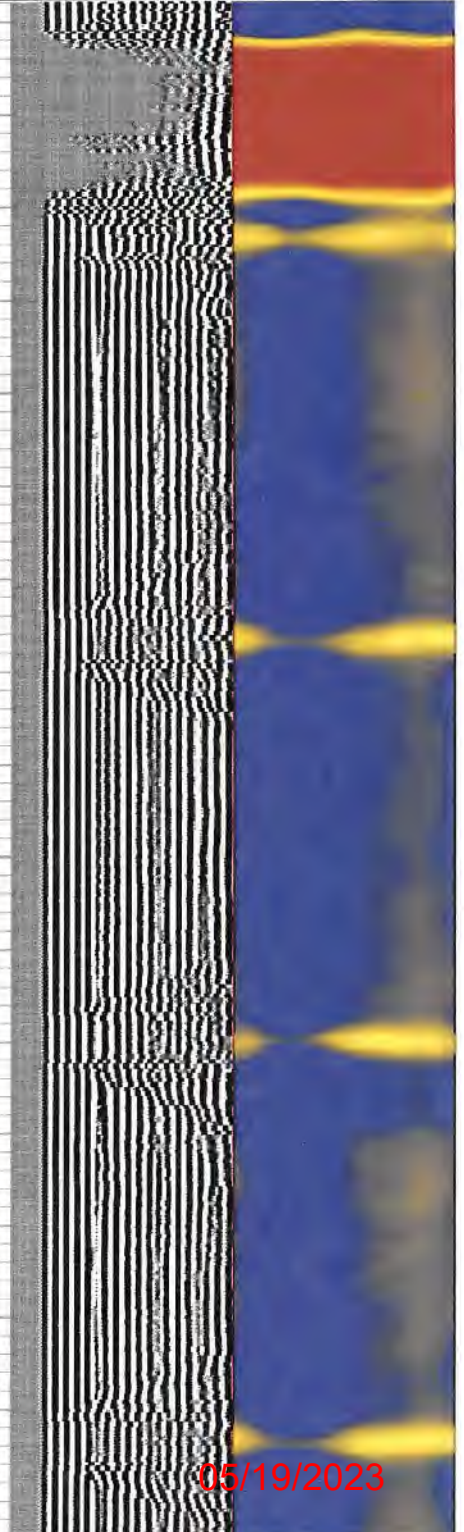
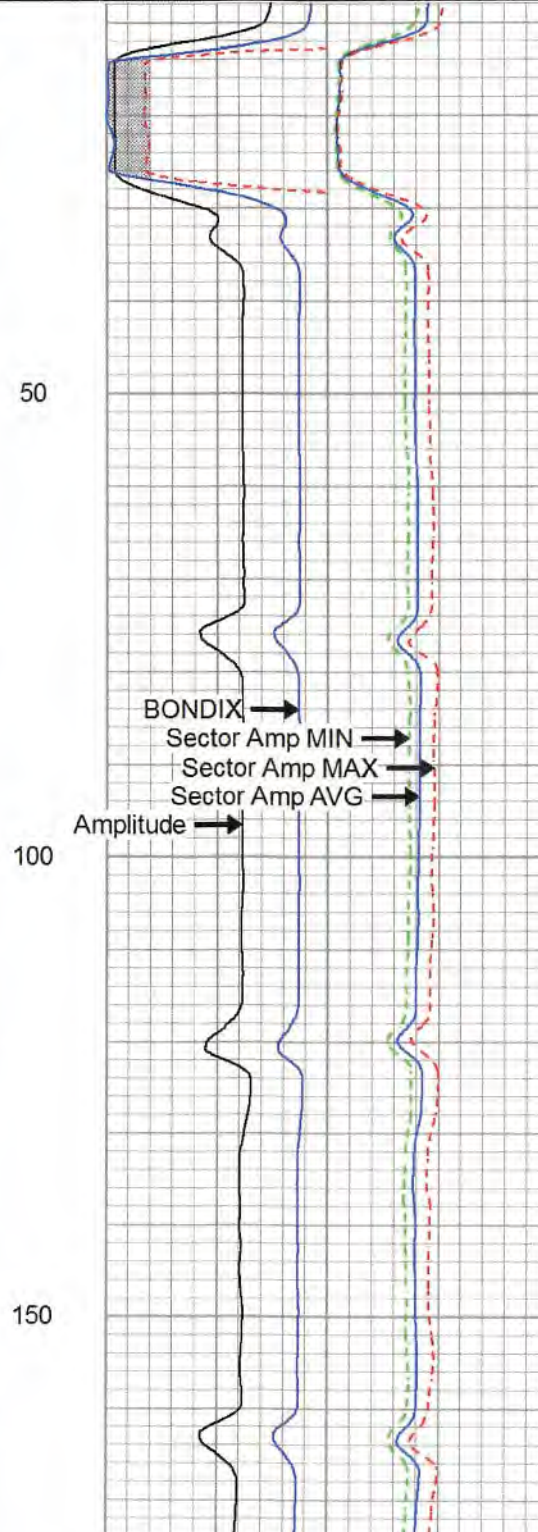
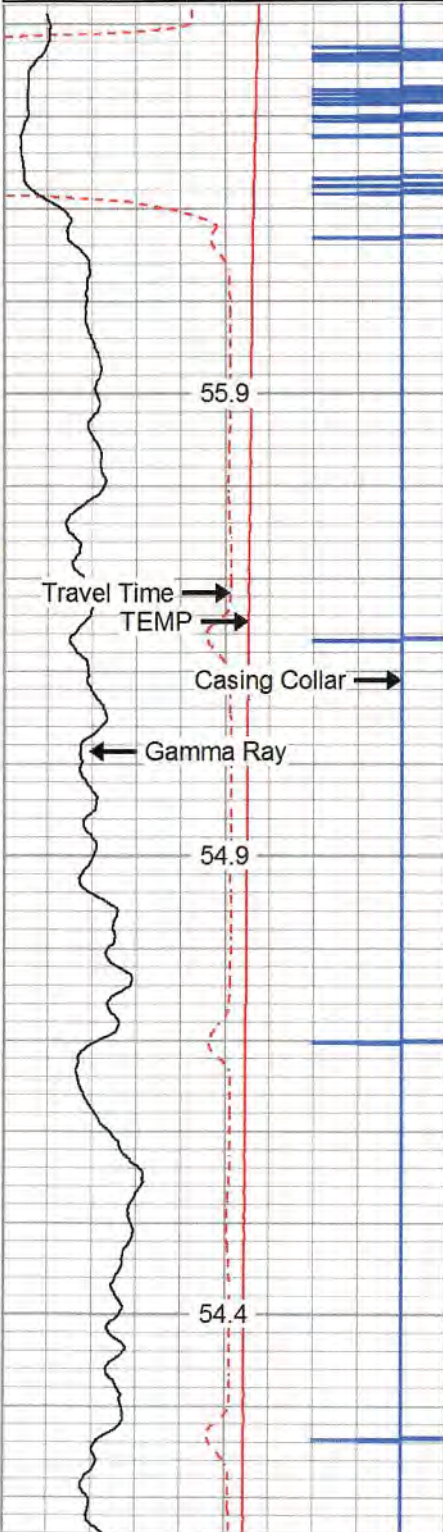
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9	Casing Collar	-1
0	Gamma Ray	180
0	TEMP (degF)	100
180	GR	360

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

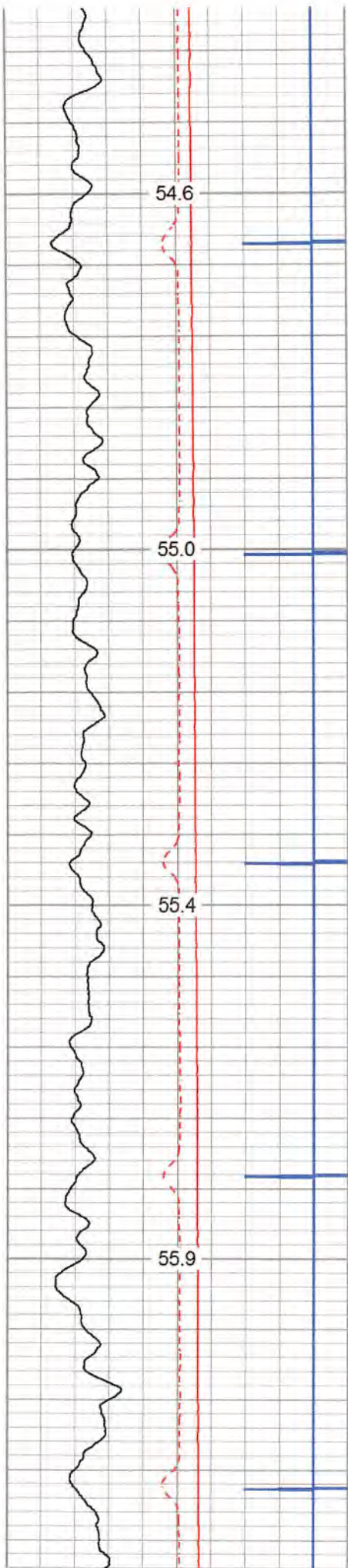
VDL 200 (usec) 1200

1 Sector Map 12

TEMP  
 (degF)



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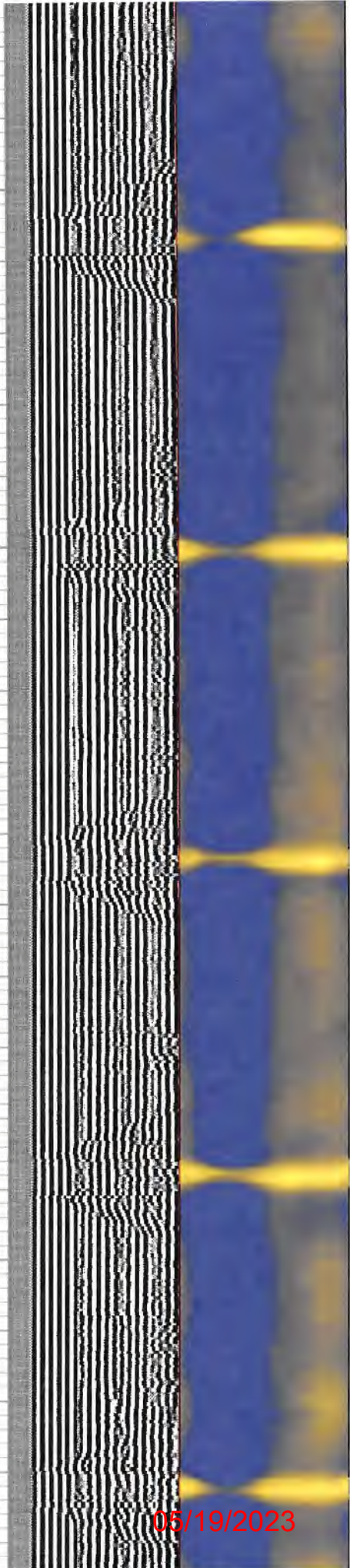
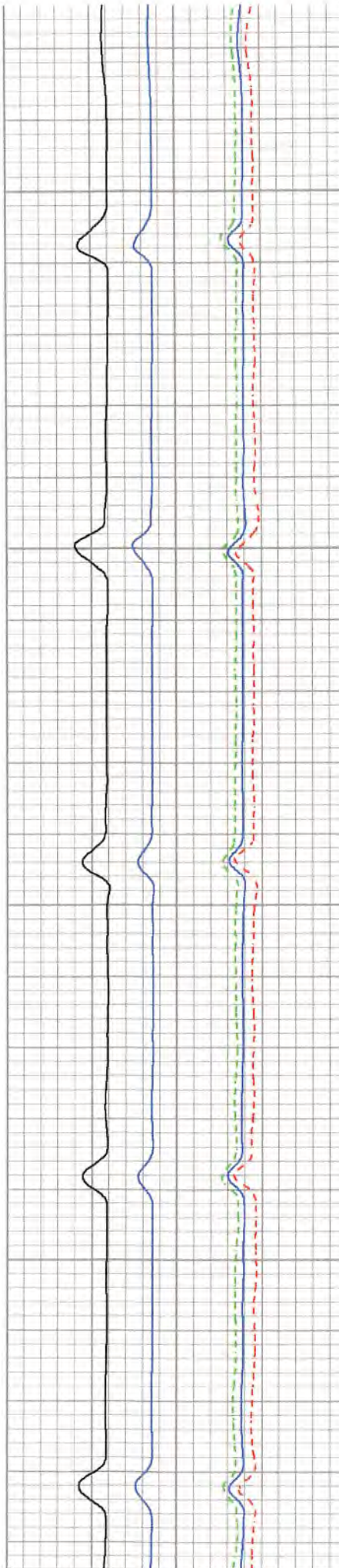


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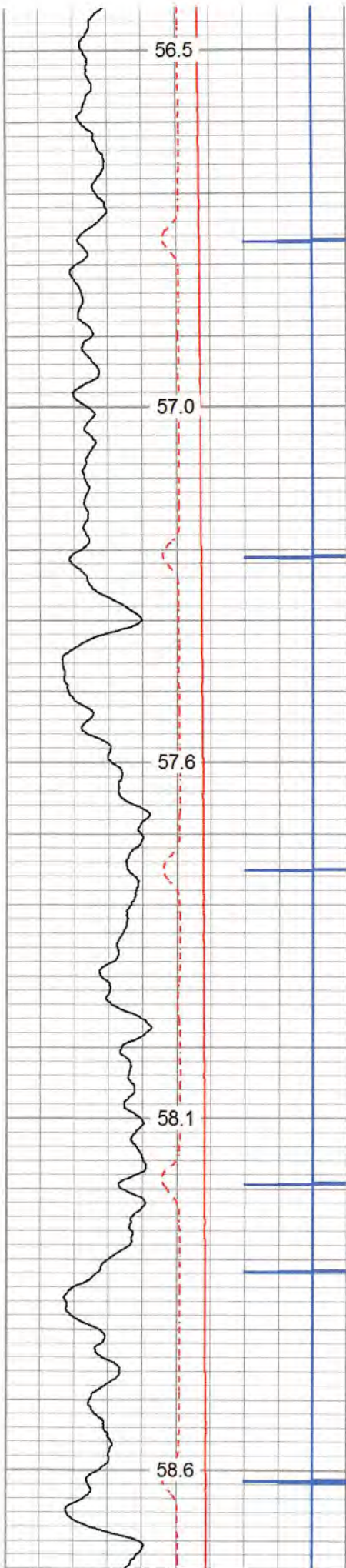
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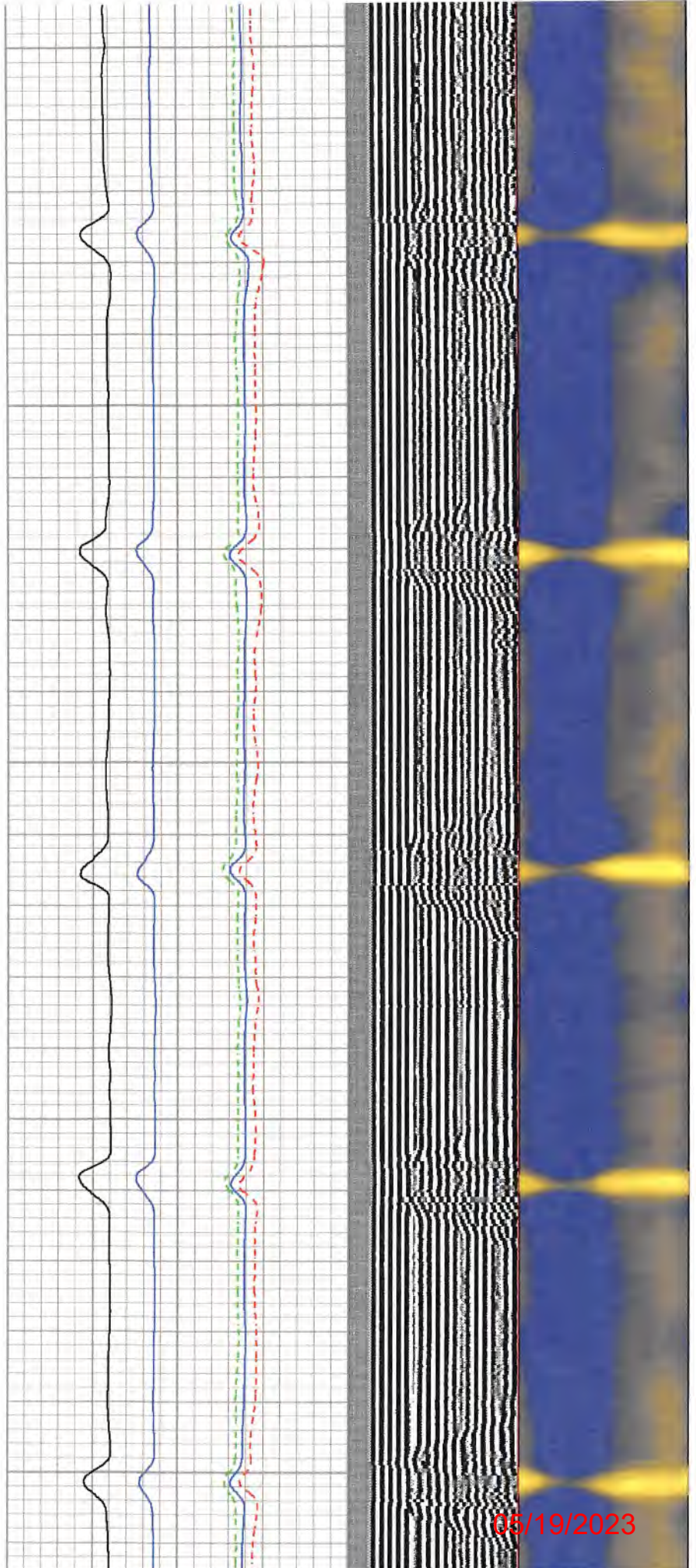


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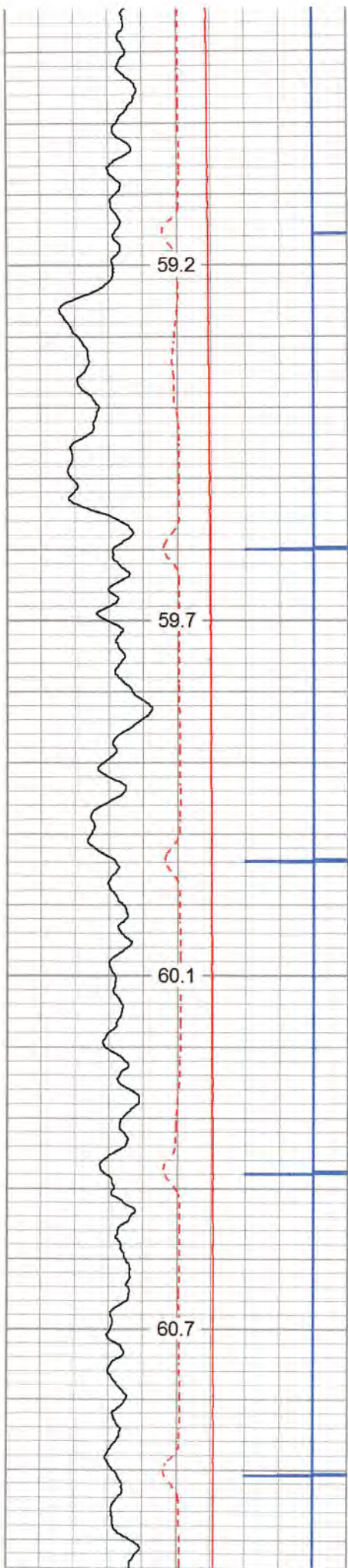




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450  
500  
550  
600



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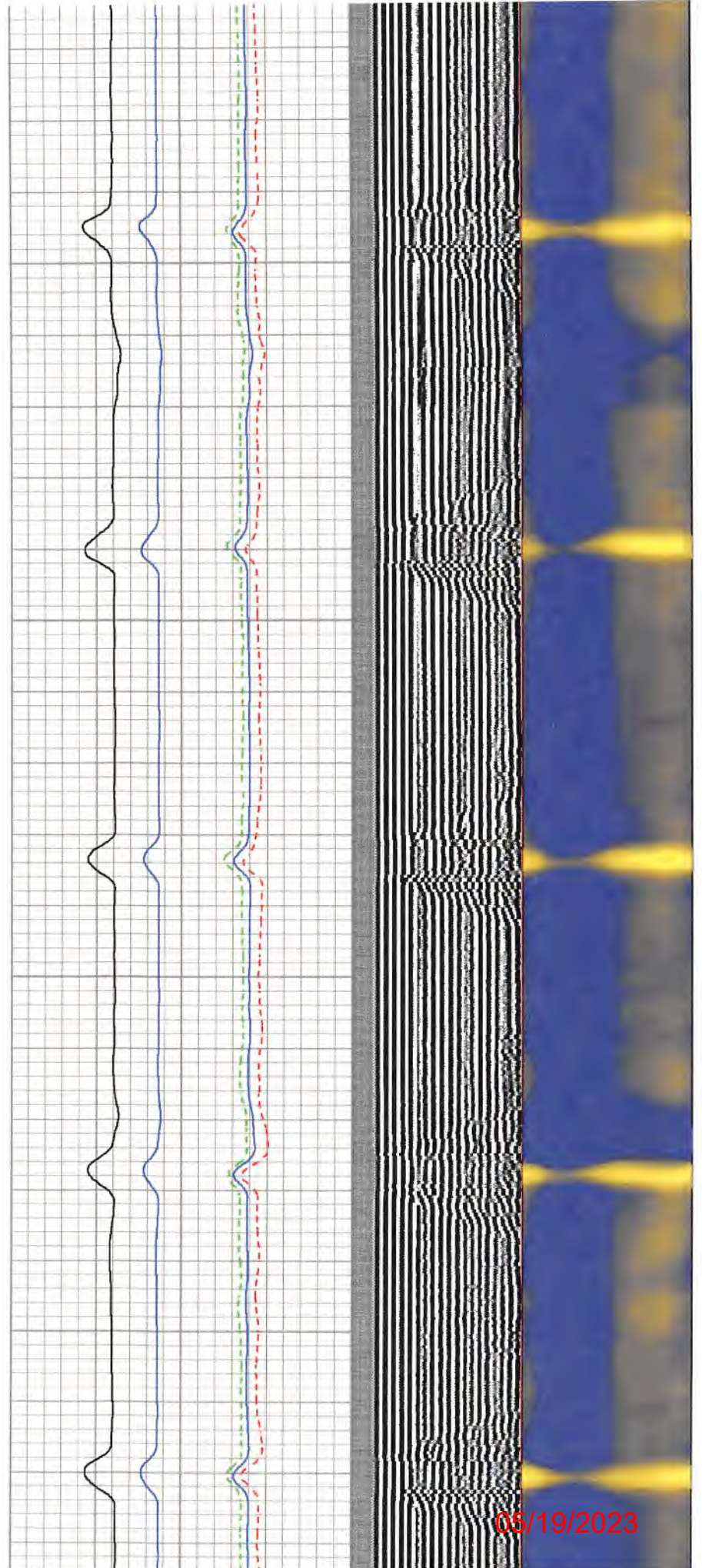


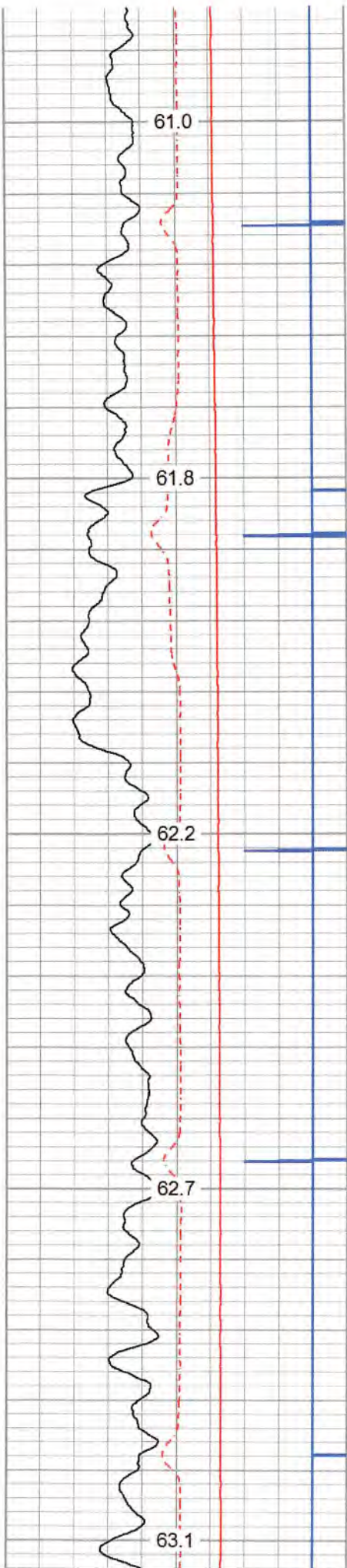
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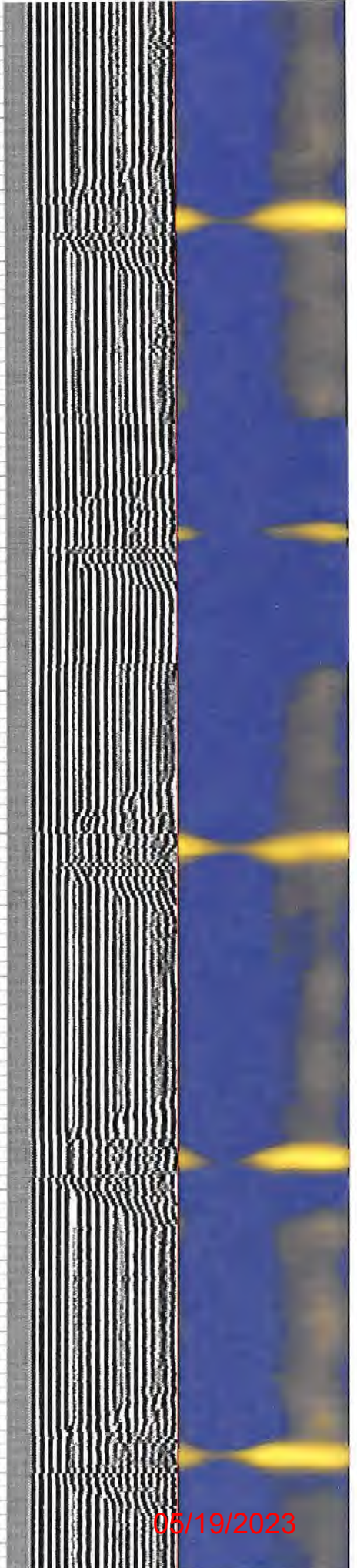
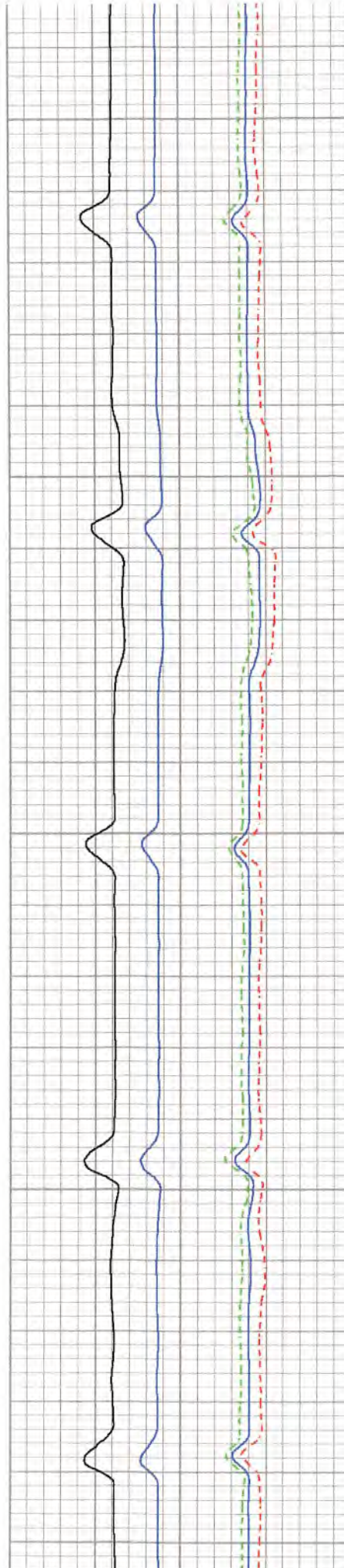
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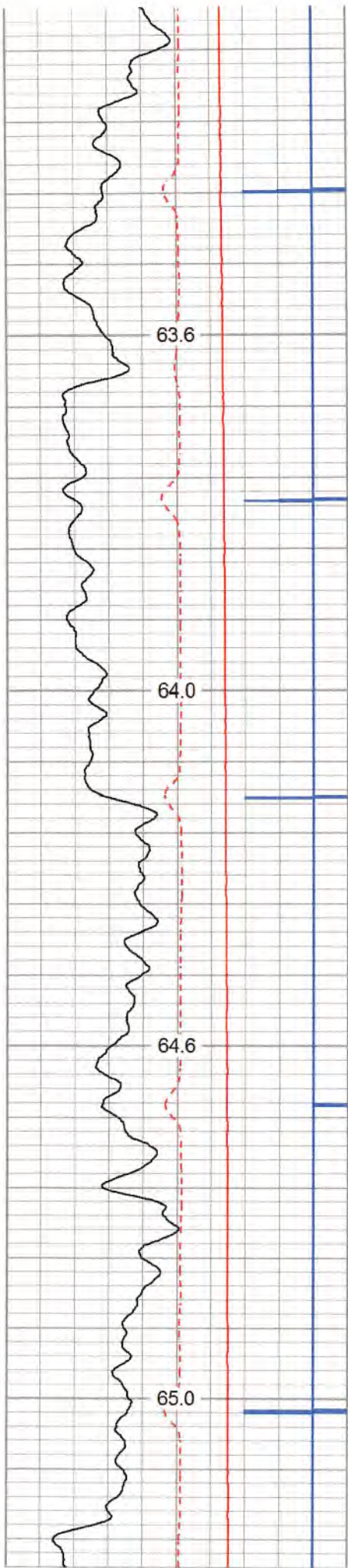
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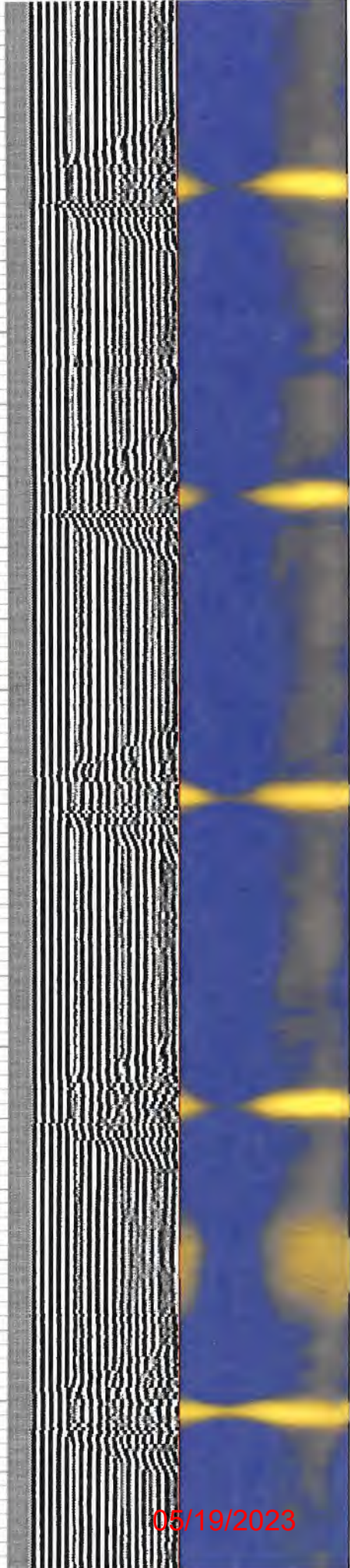
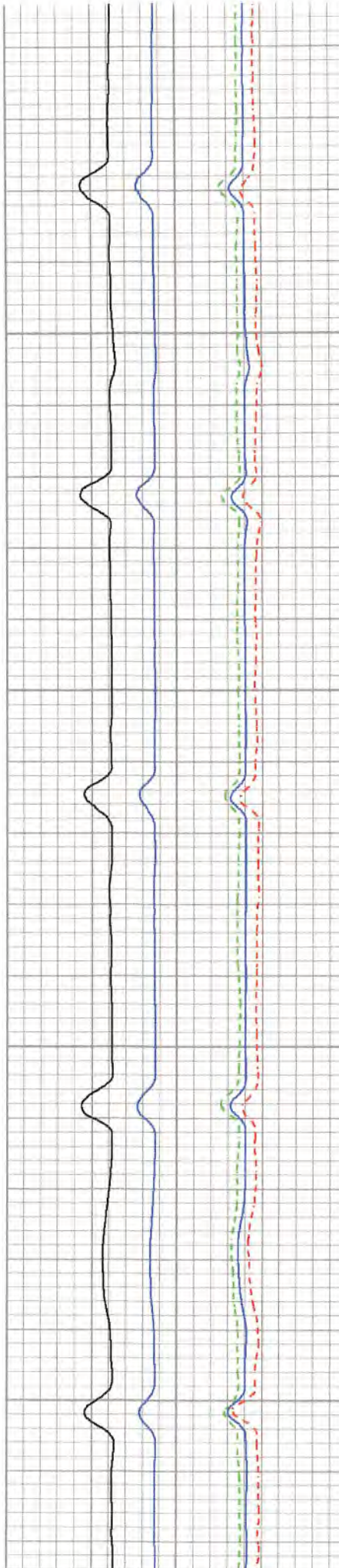
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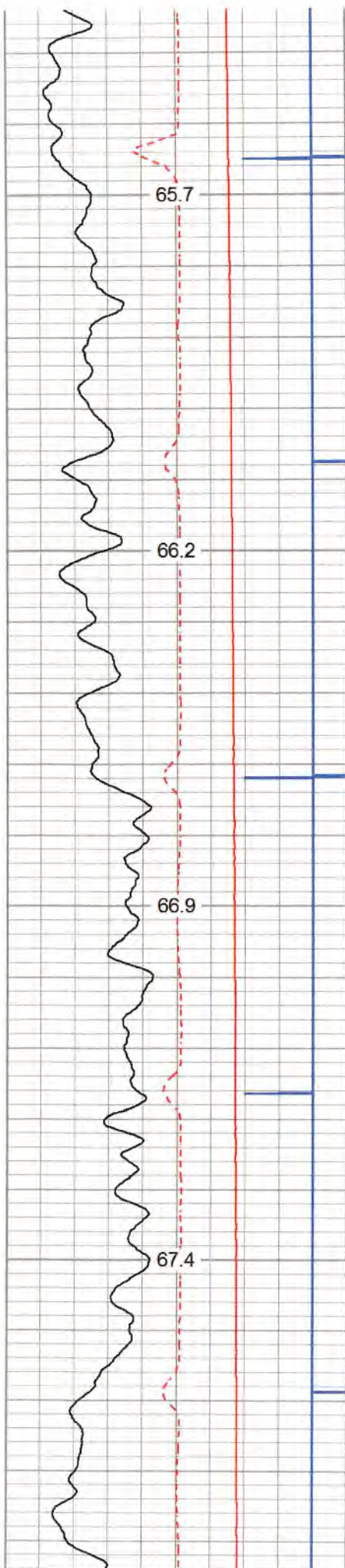
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1200  
1250



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1300

1350

1400

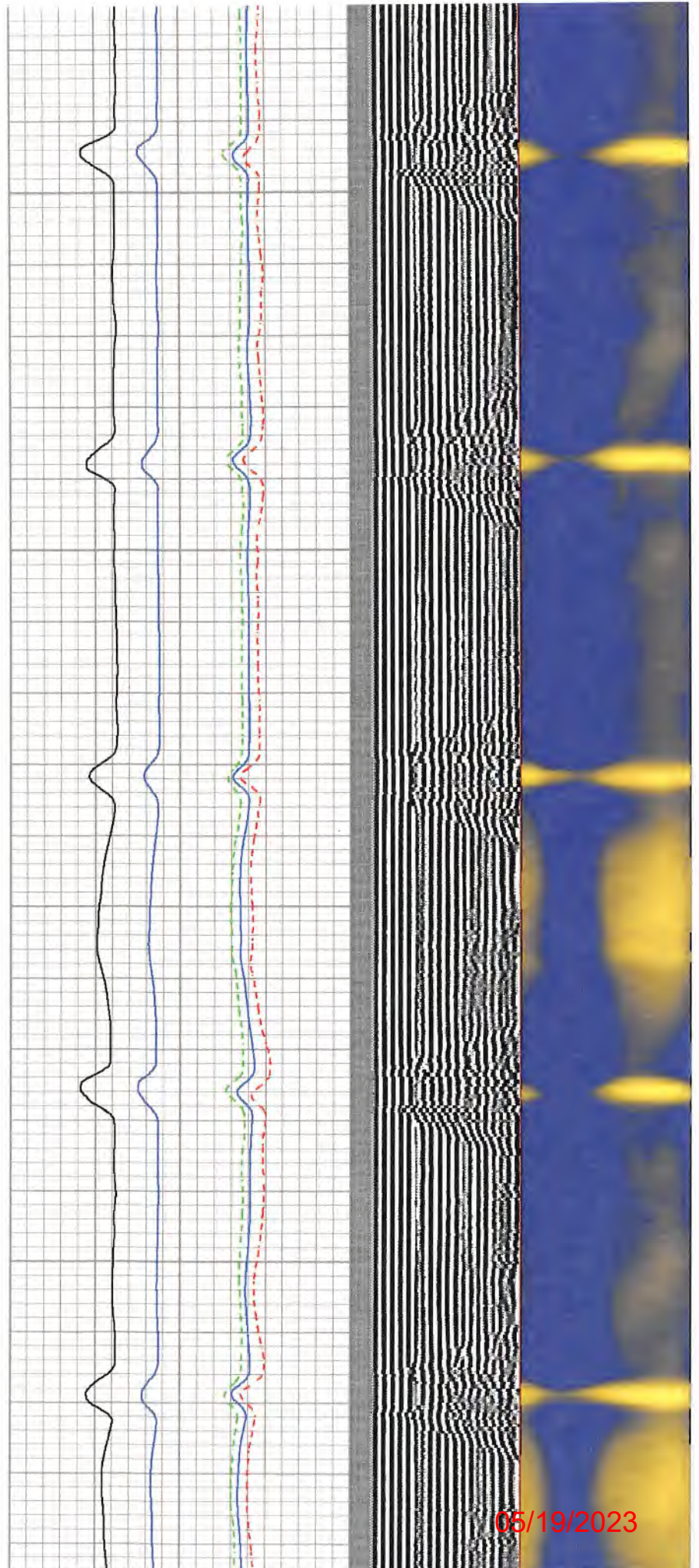
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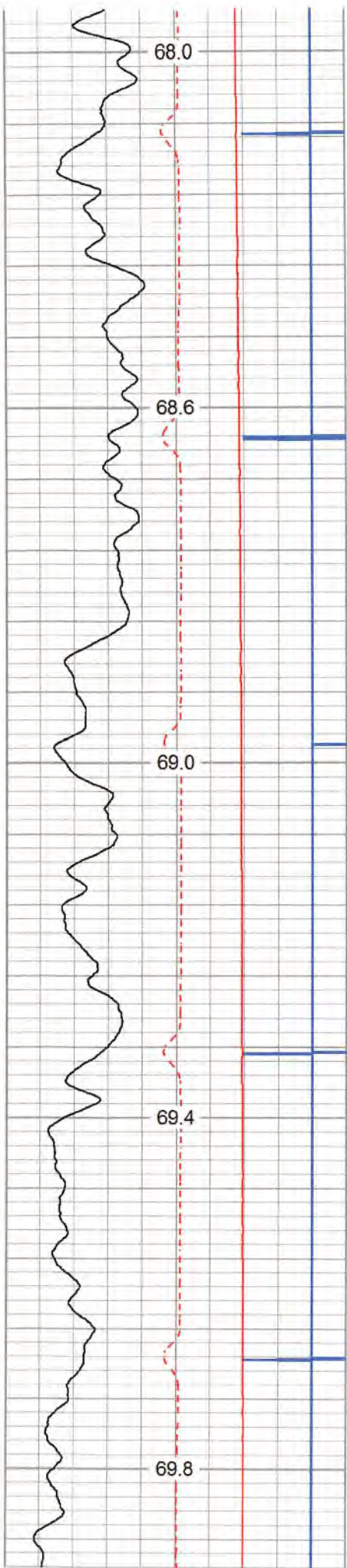
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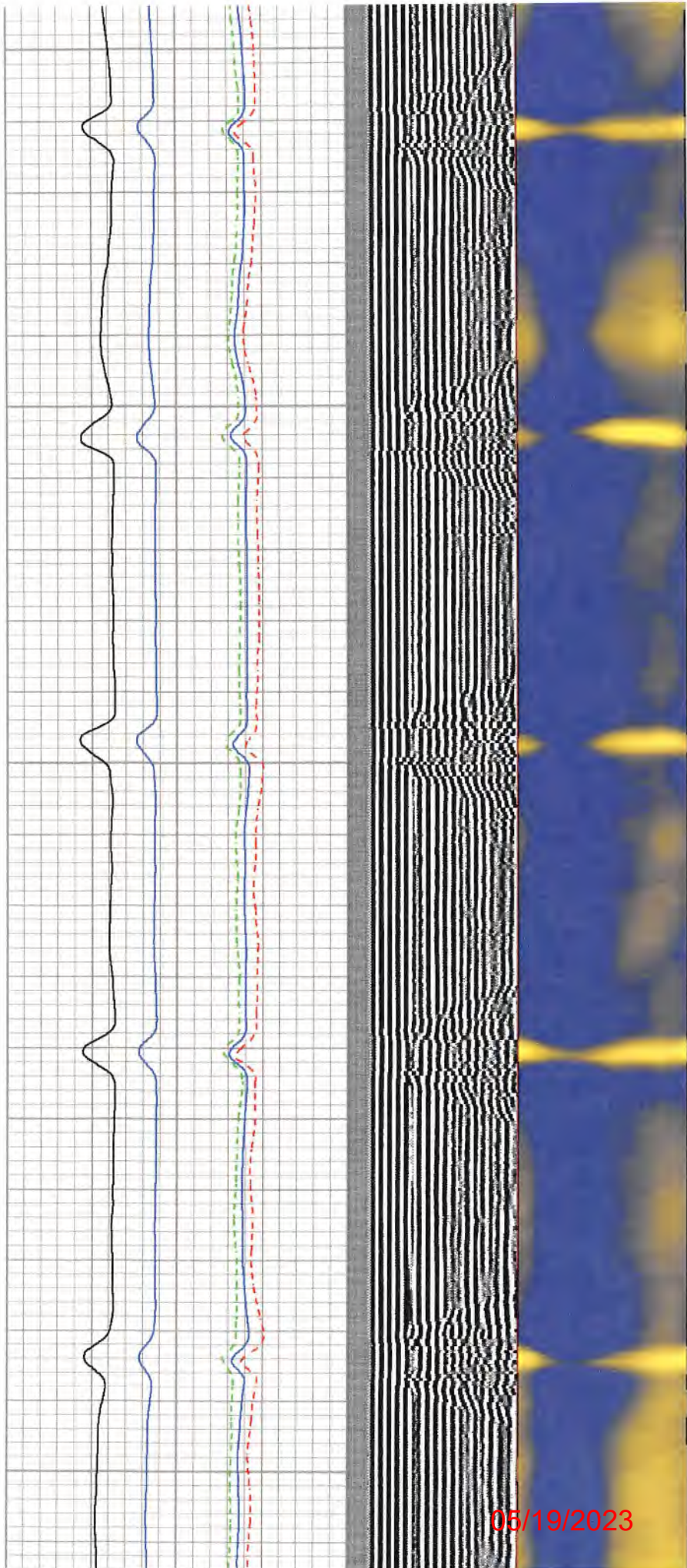
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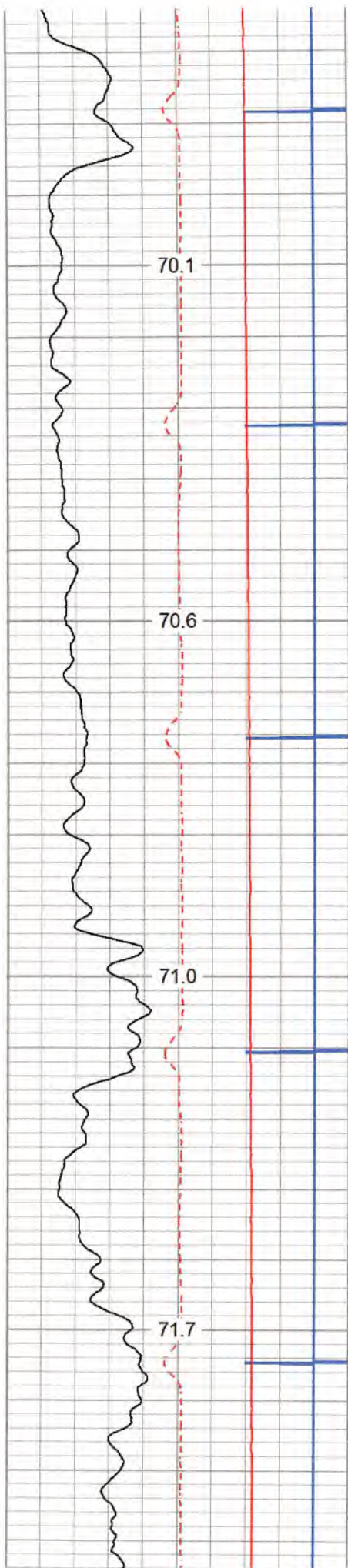
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1600  
1650  
1700



05/19/2023

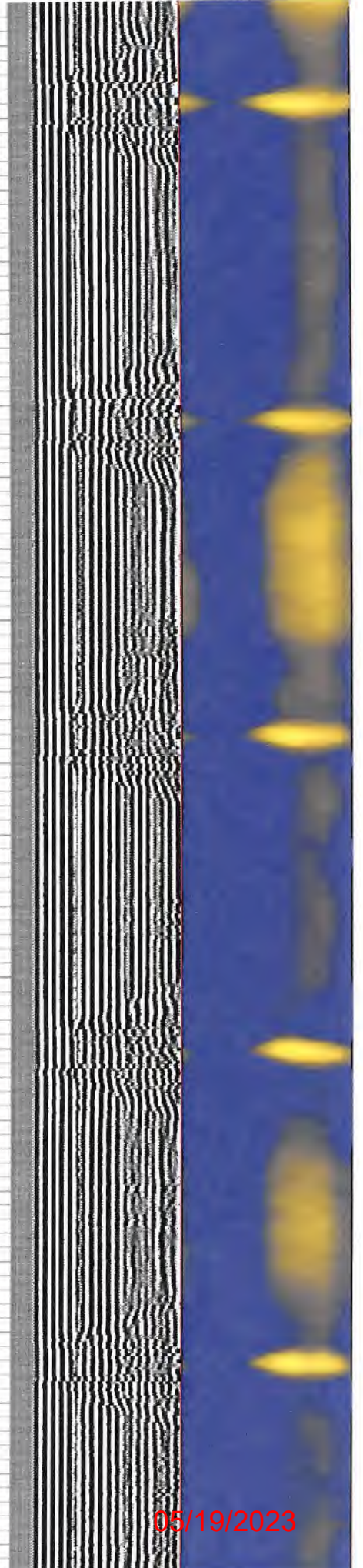
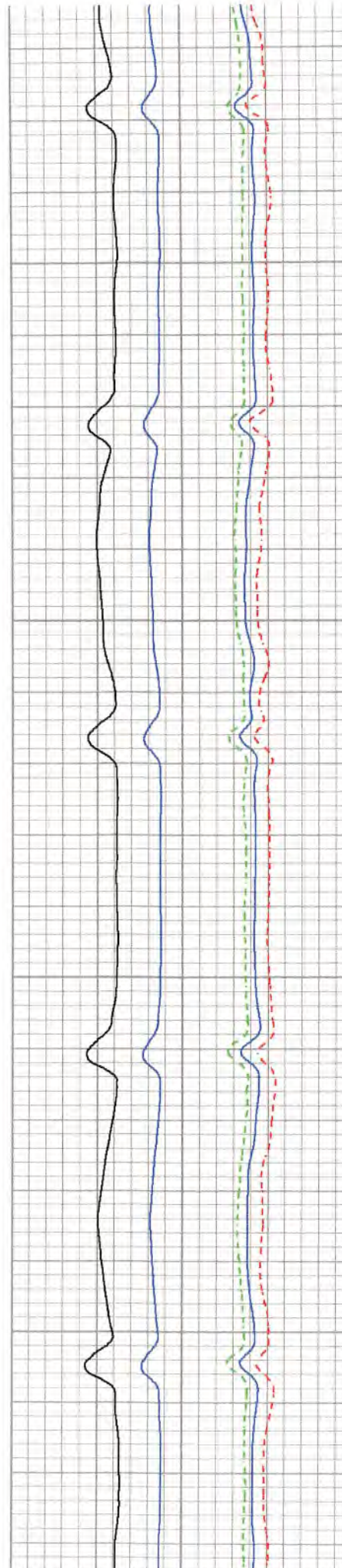


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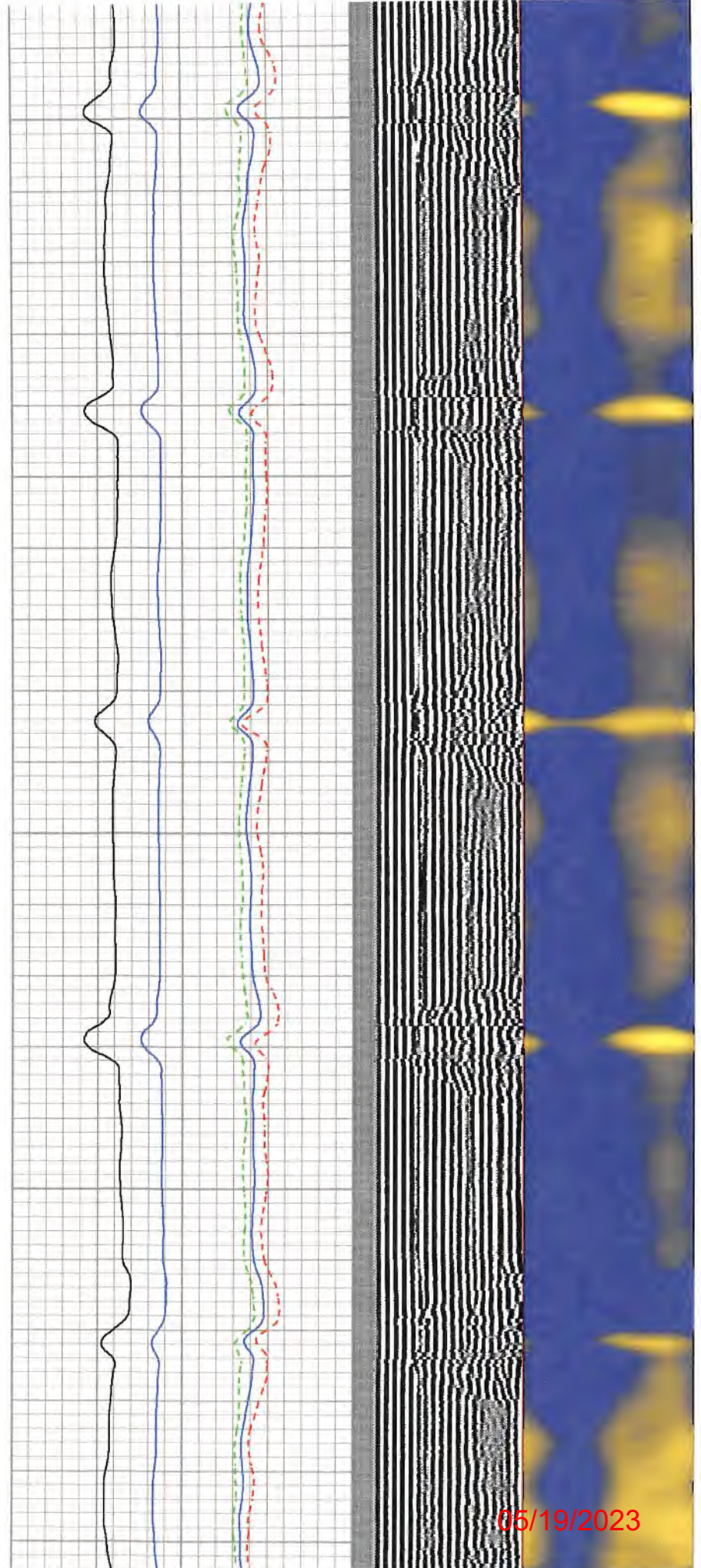
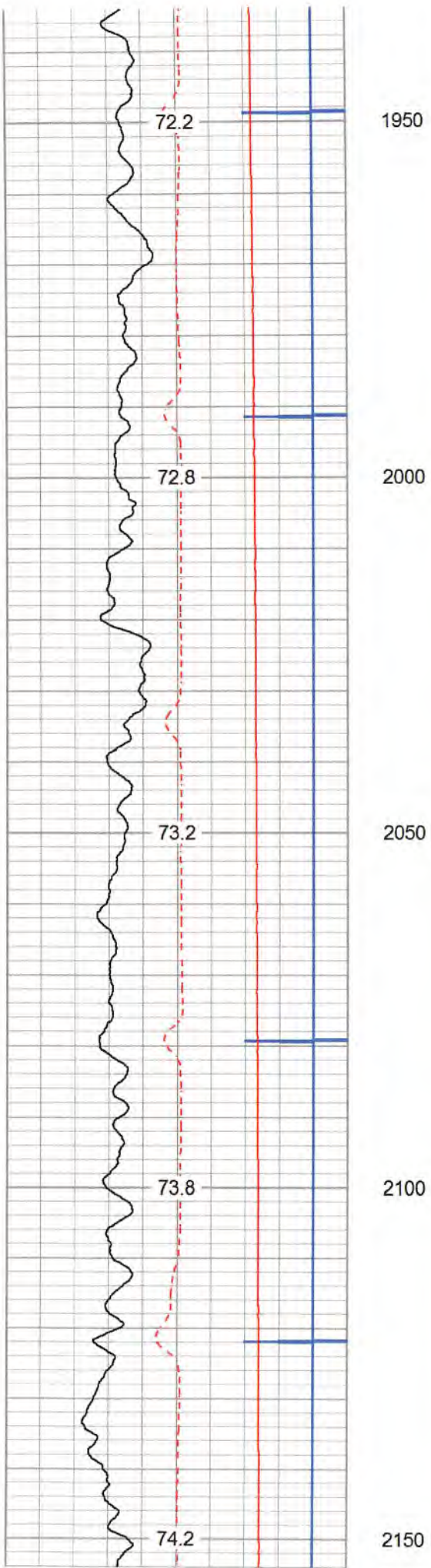
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1850

1900

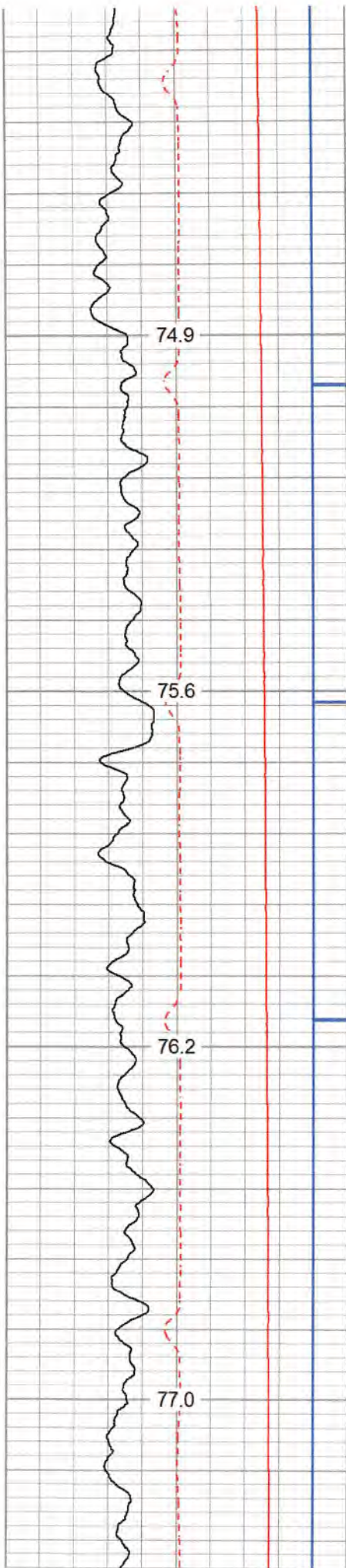


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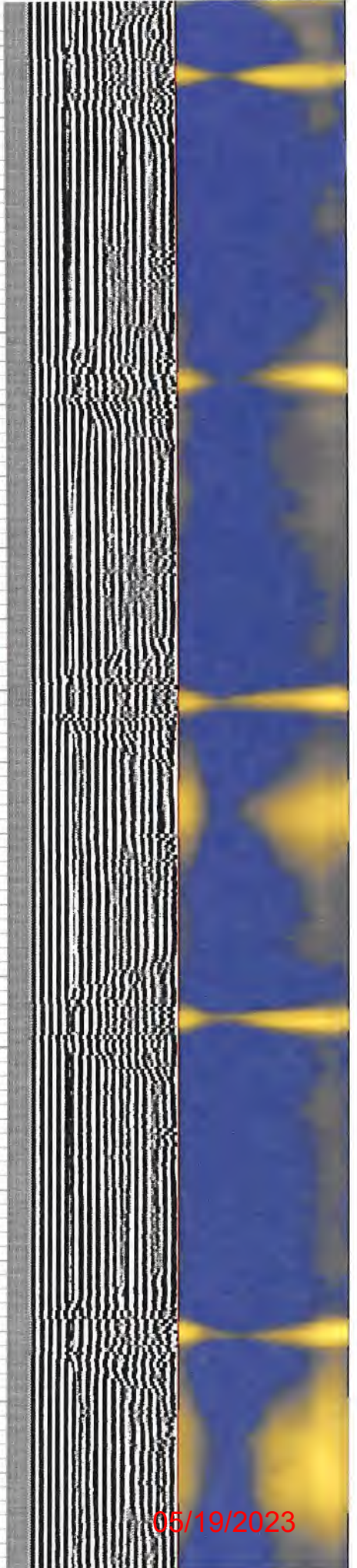
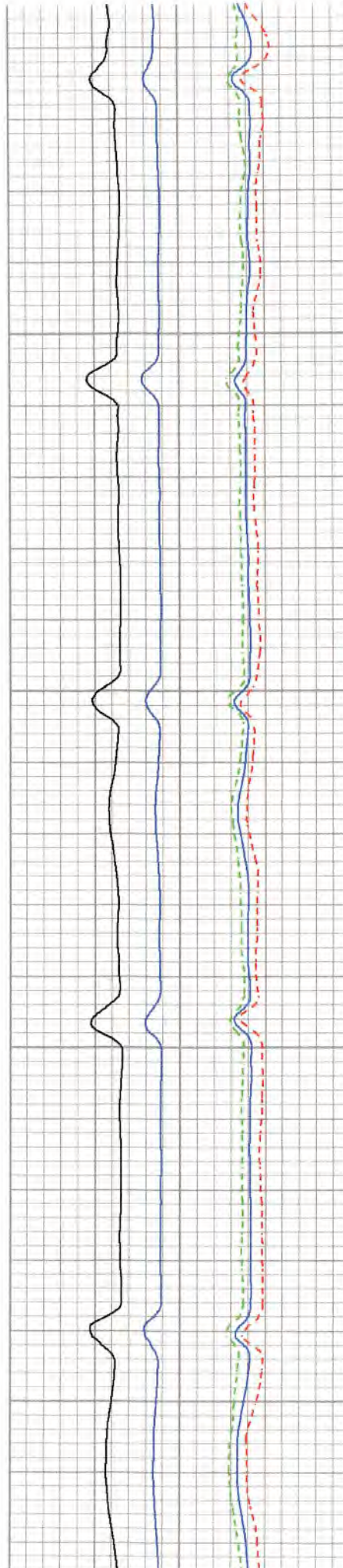


2200

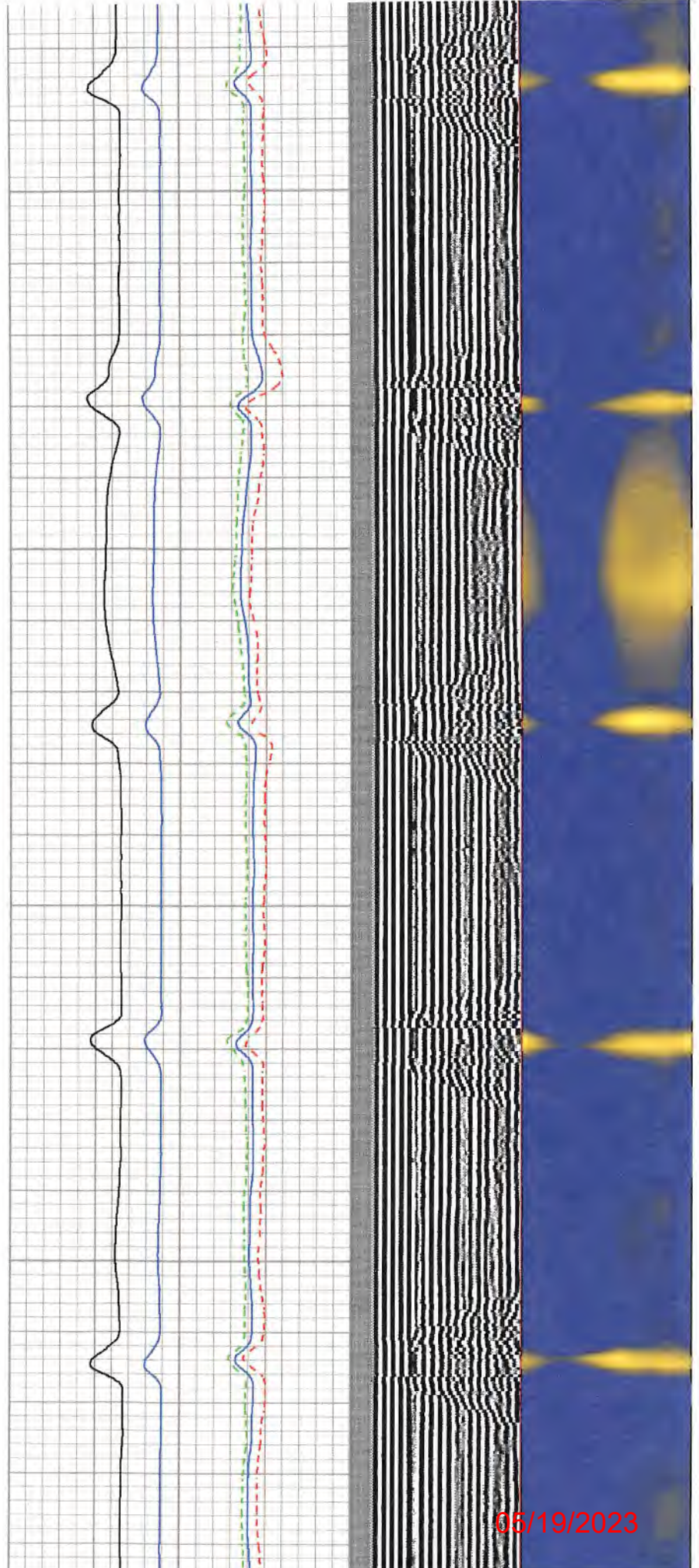
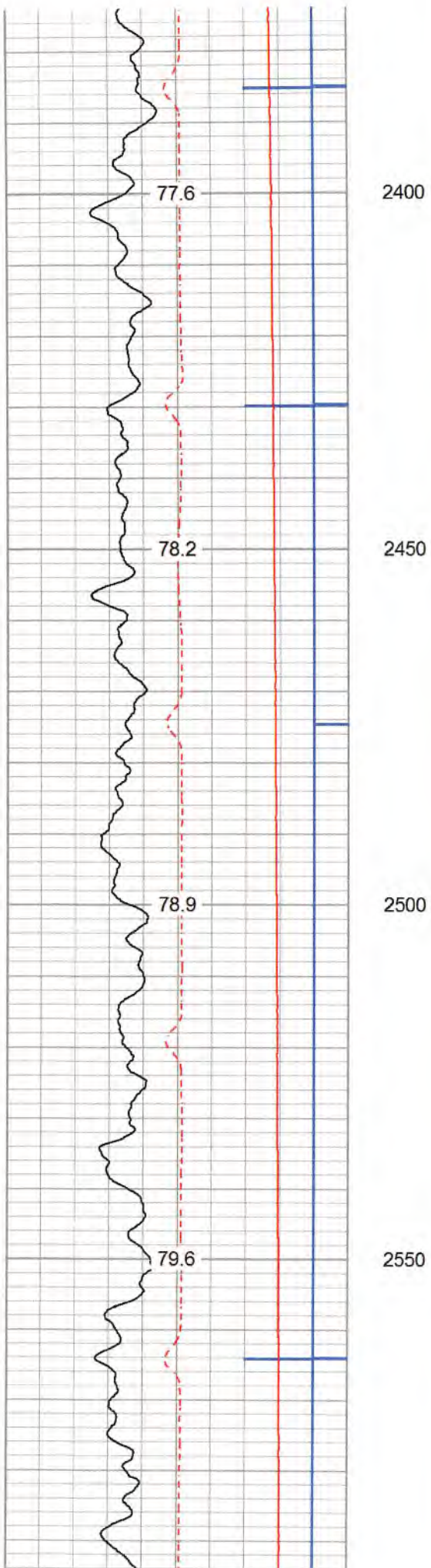
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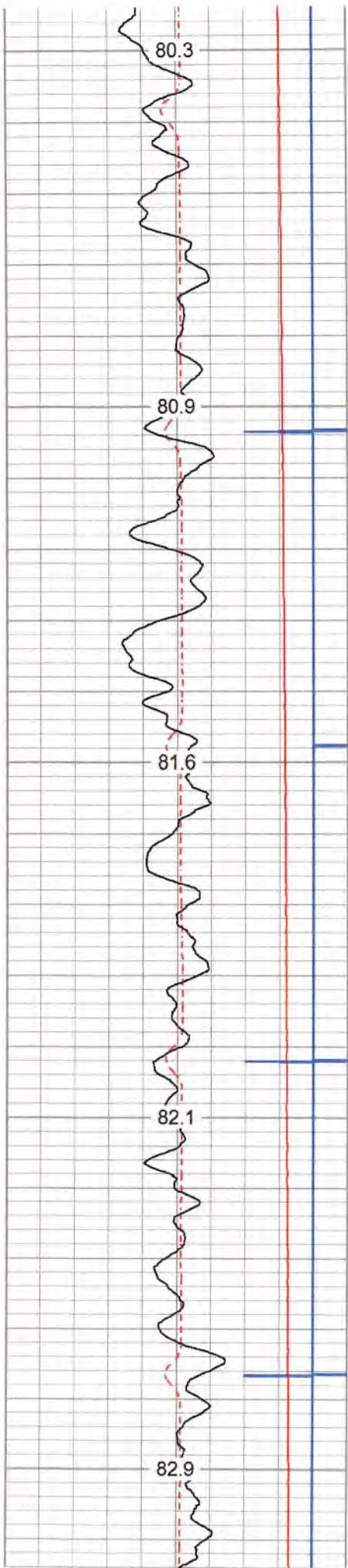
2300

2350

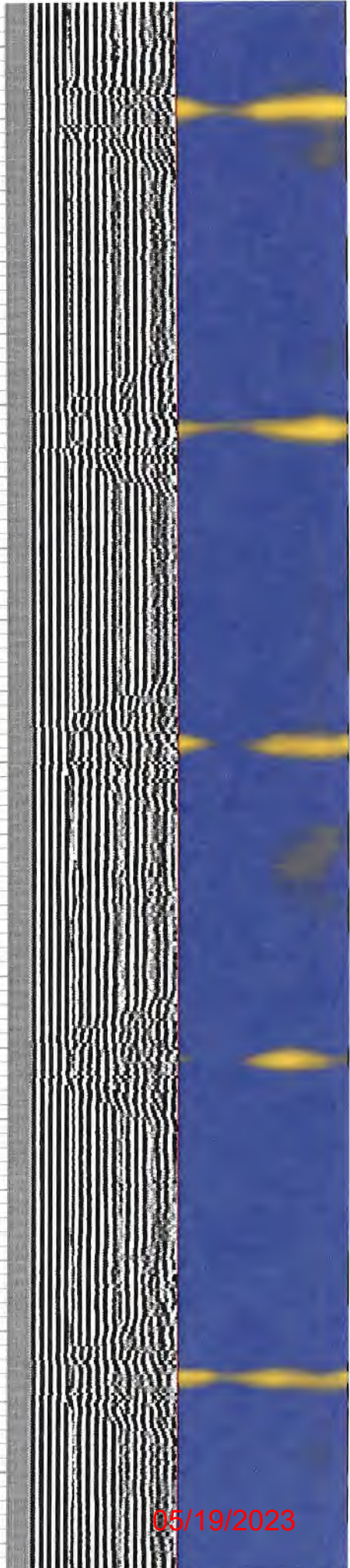
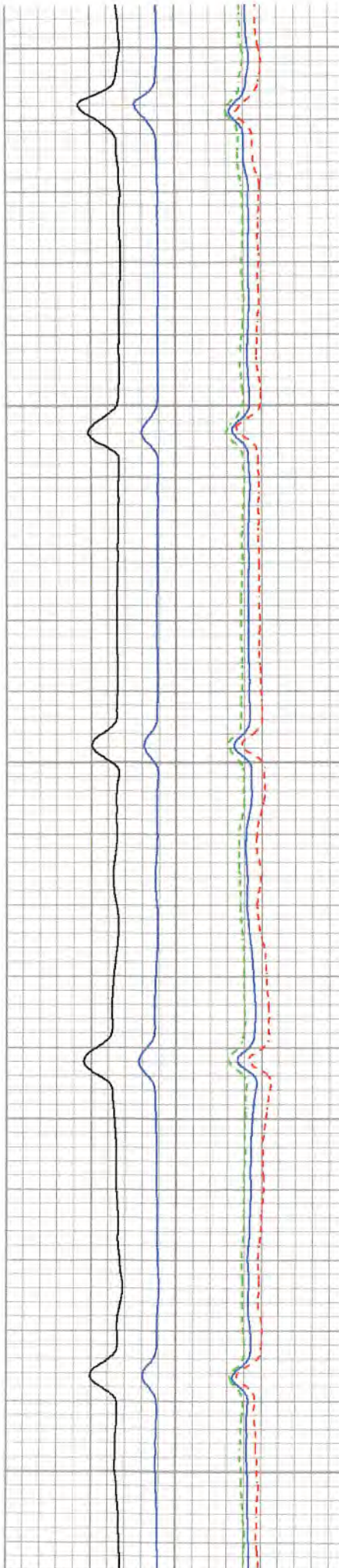


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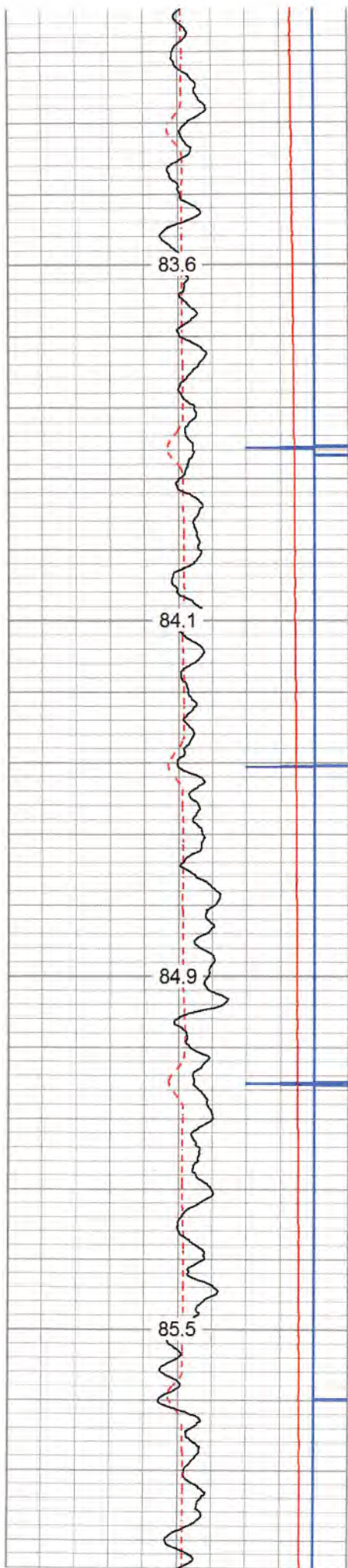




2600  
2650  
2700  
2750  
2800



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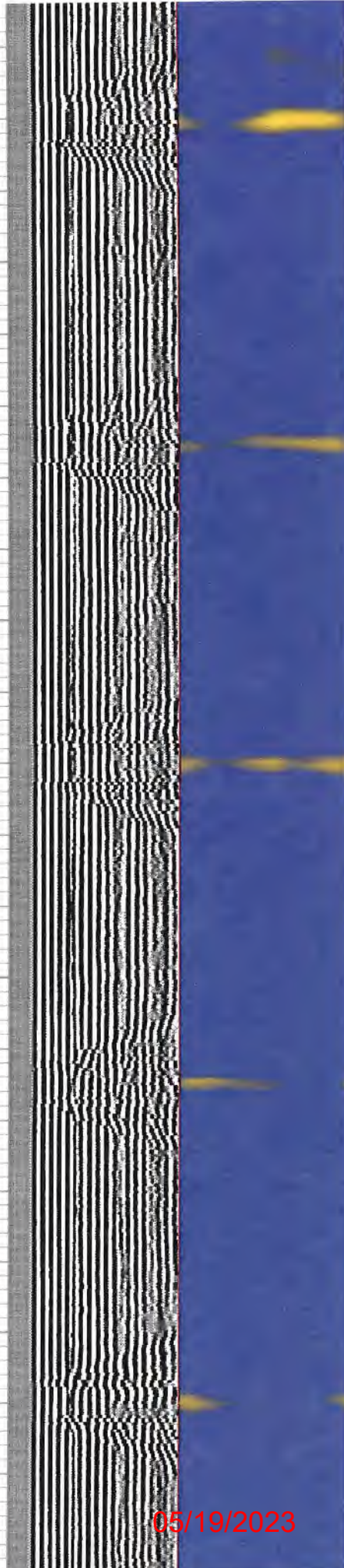


2850

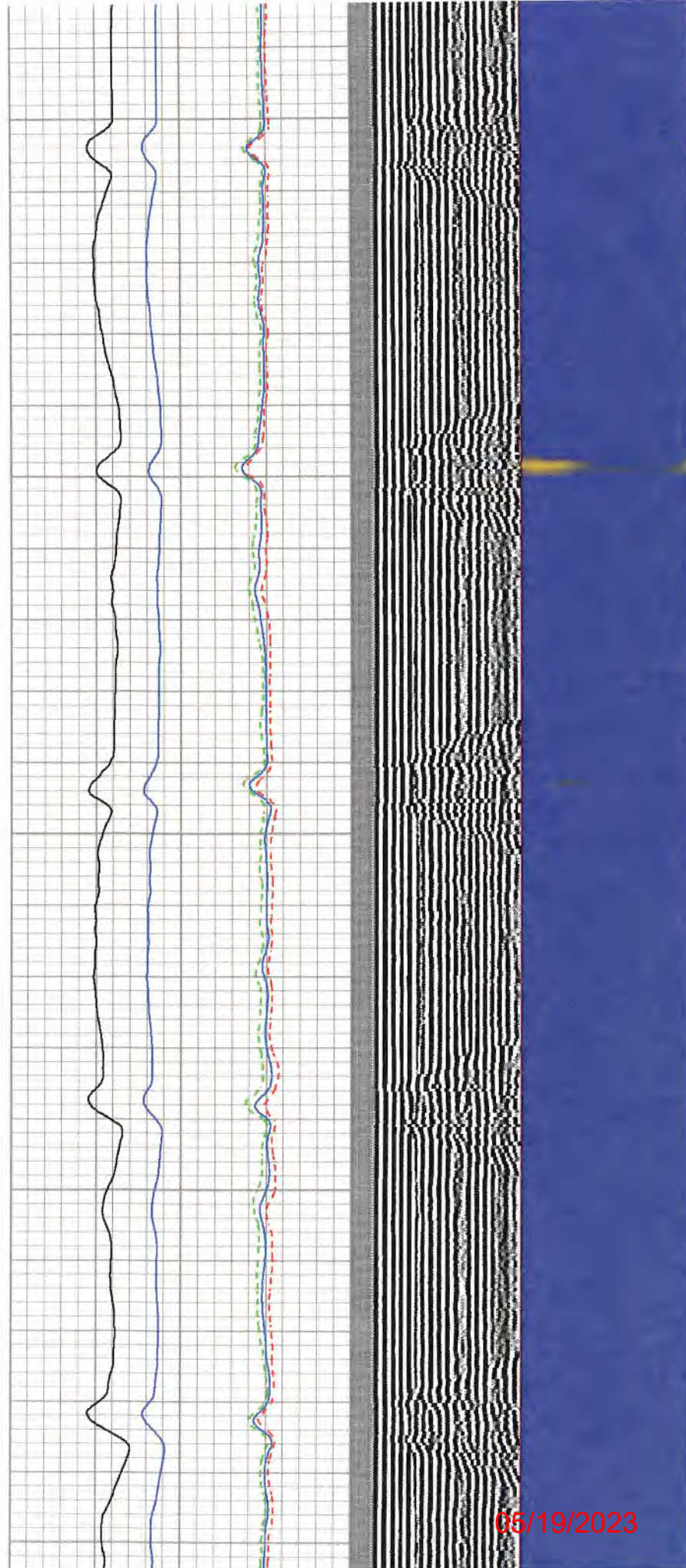
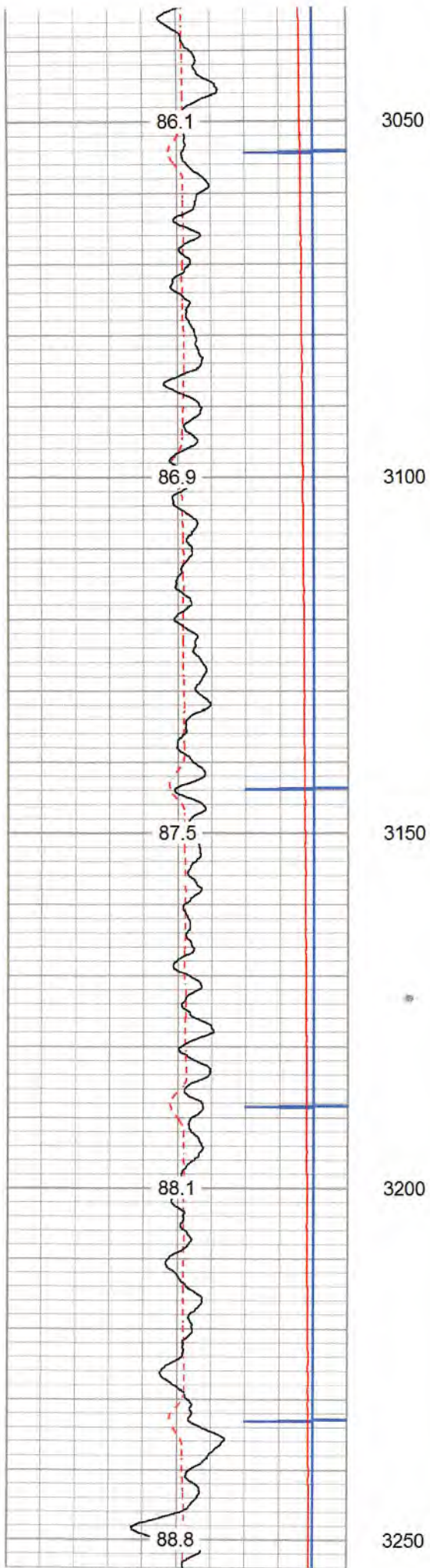
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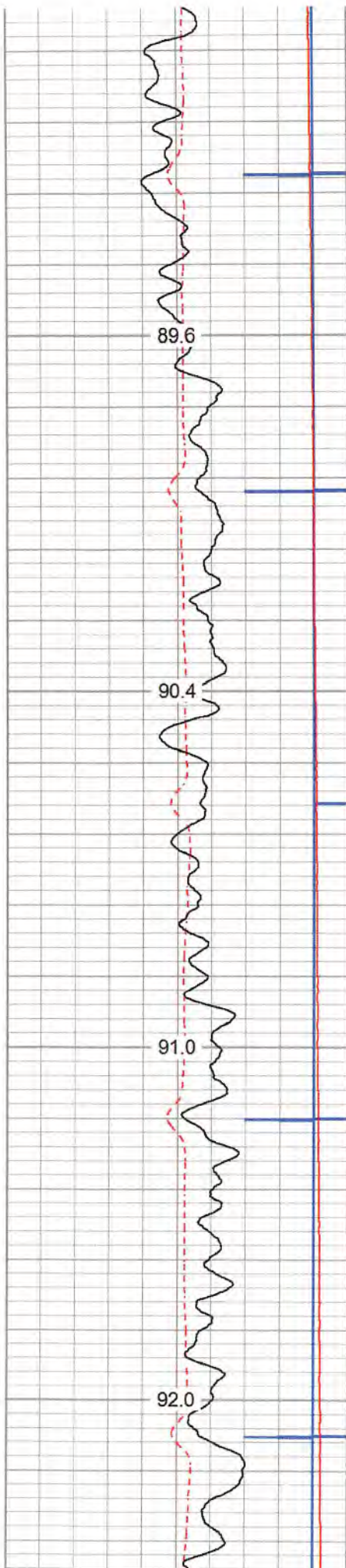
2950

3000



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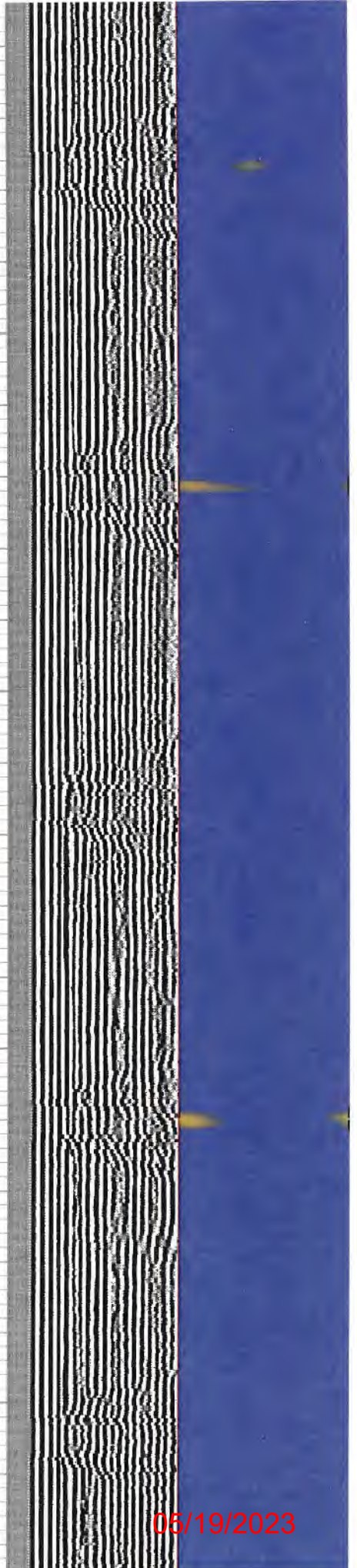
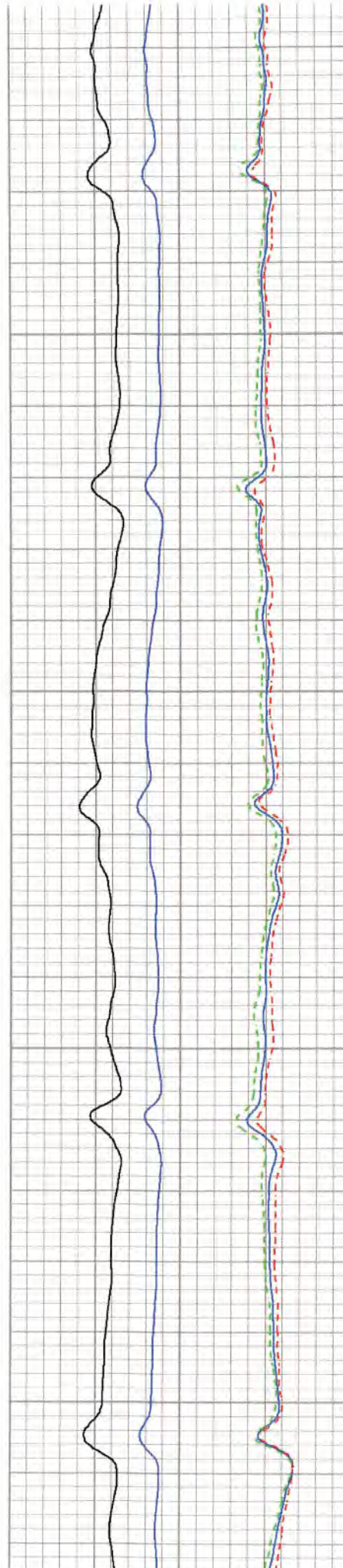


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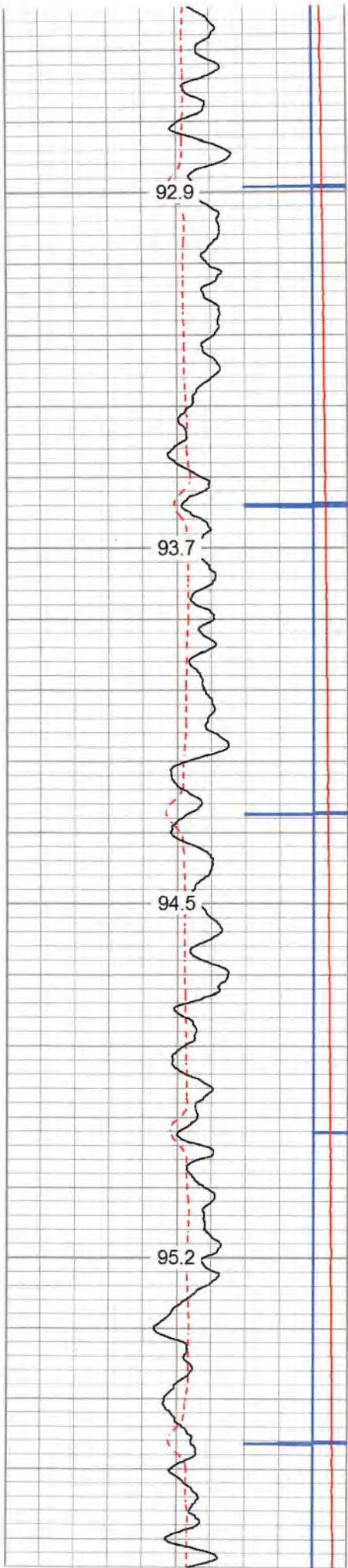
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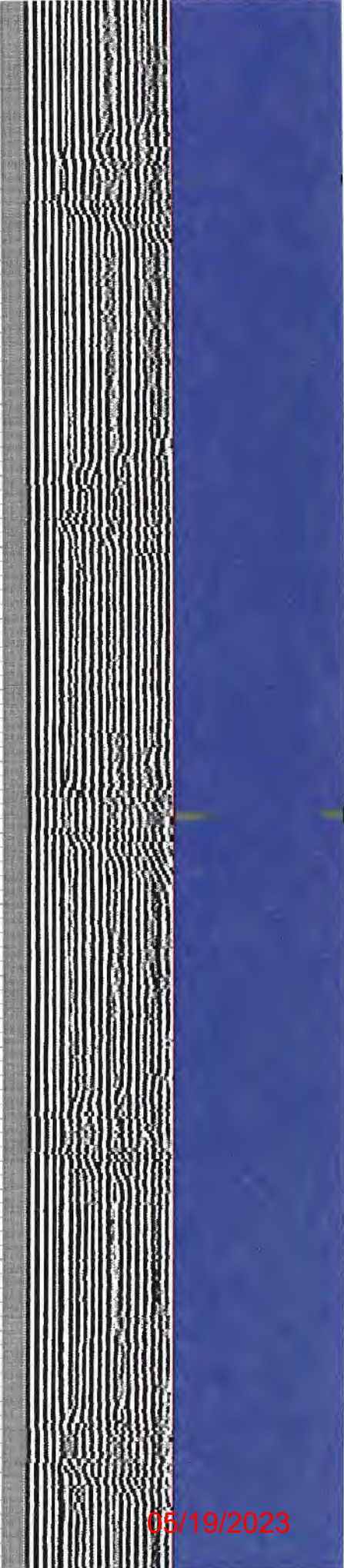
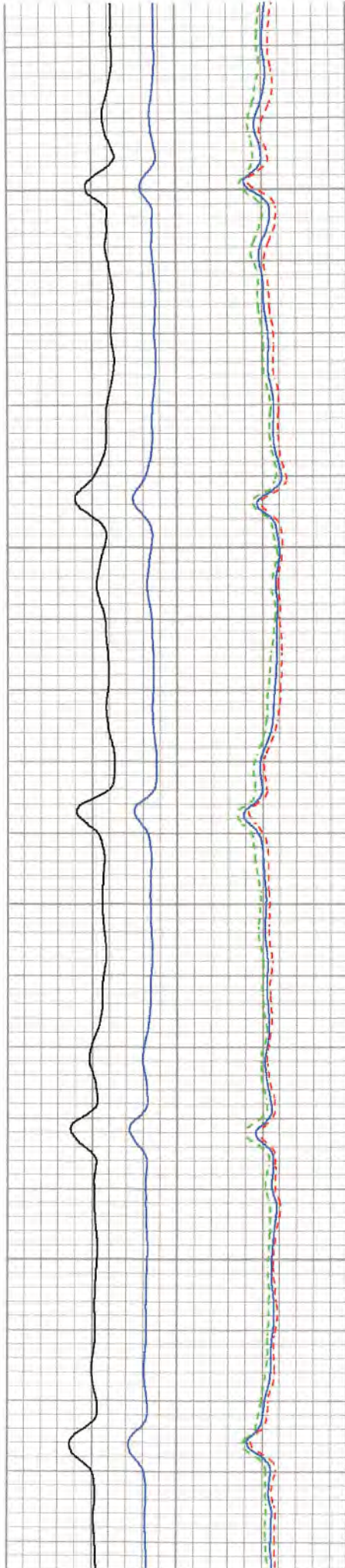
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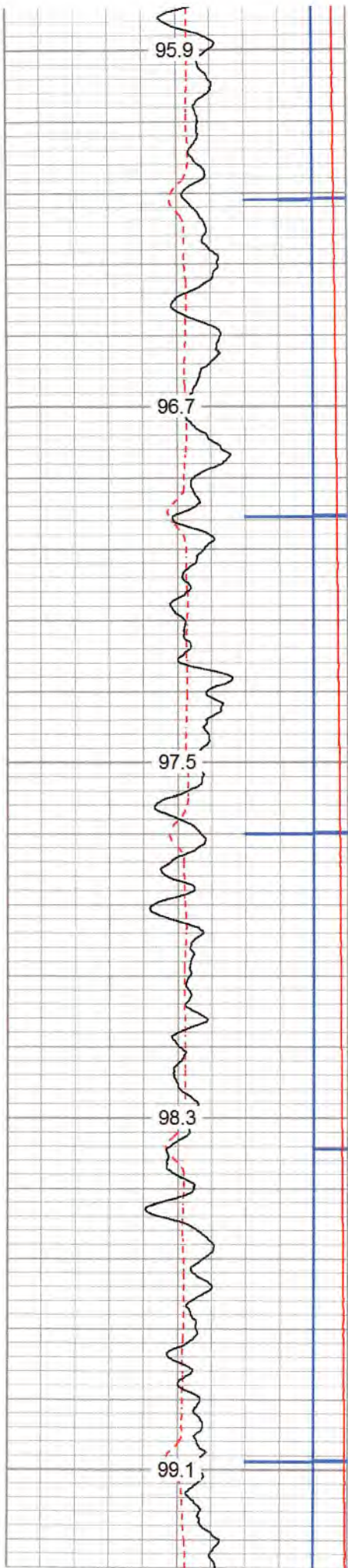
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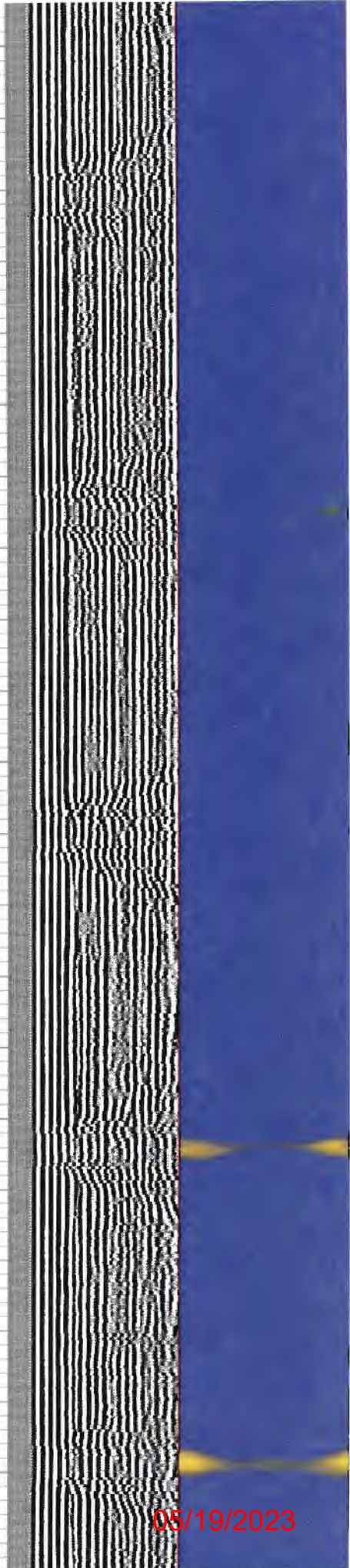
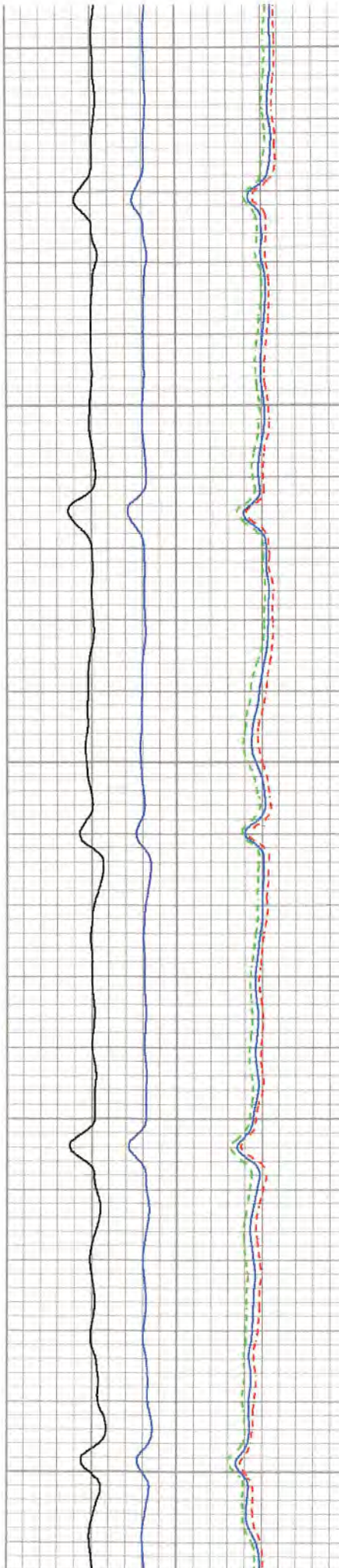
3500  
3550  
3600  
3650



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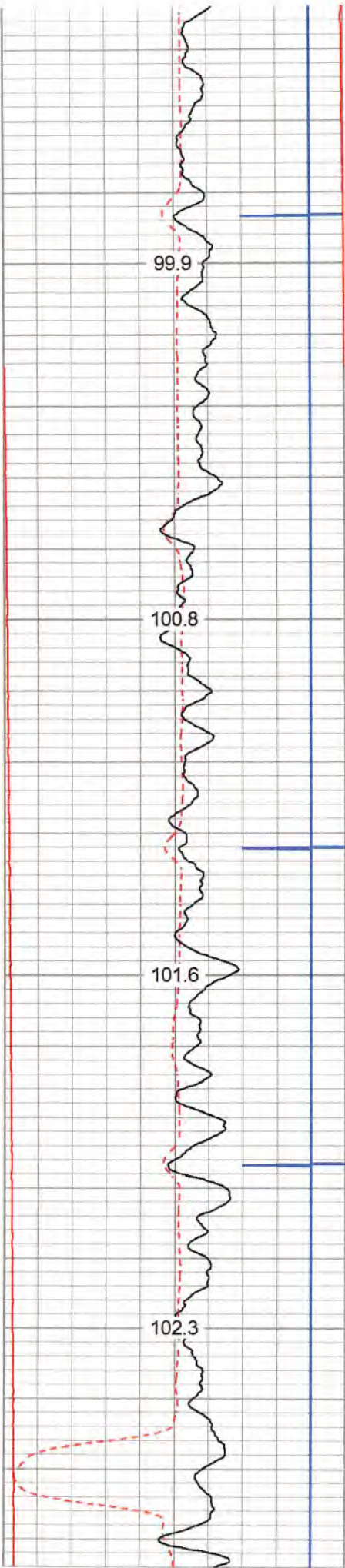


3700  
3750  
3800  
3850  
3900

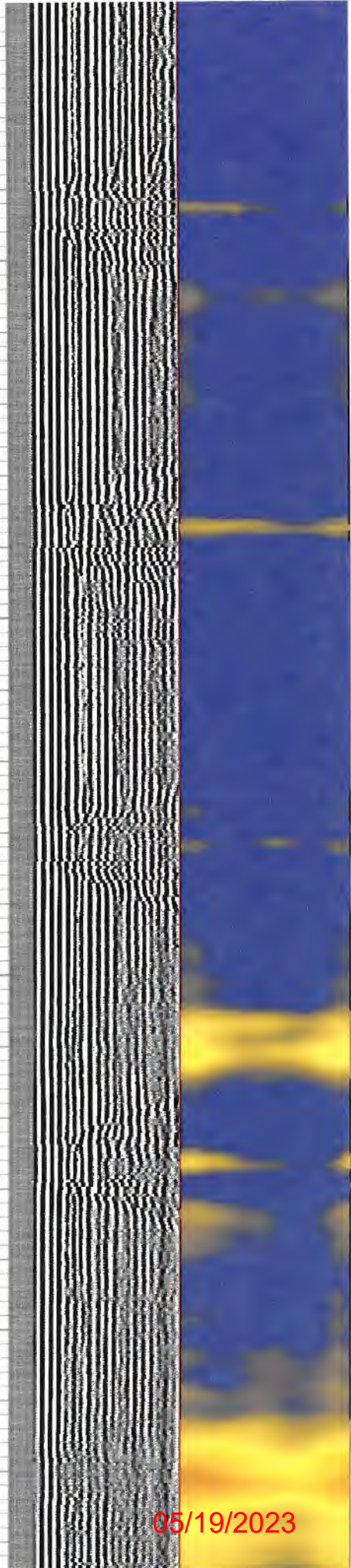
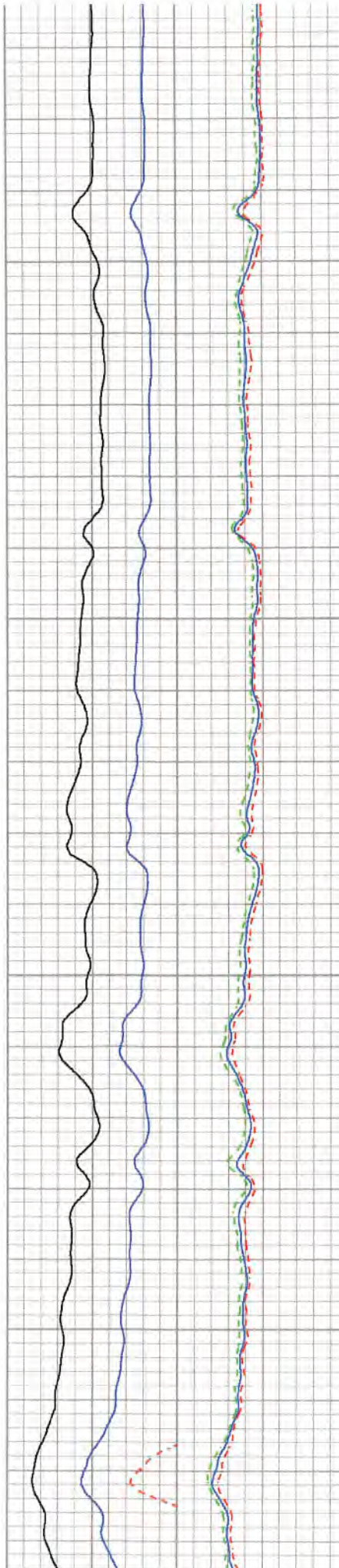


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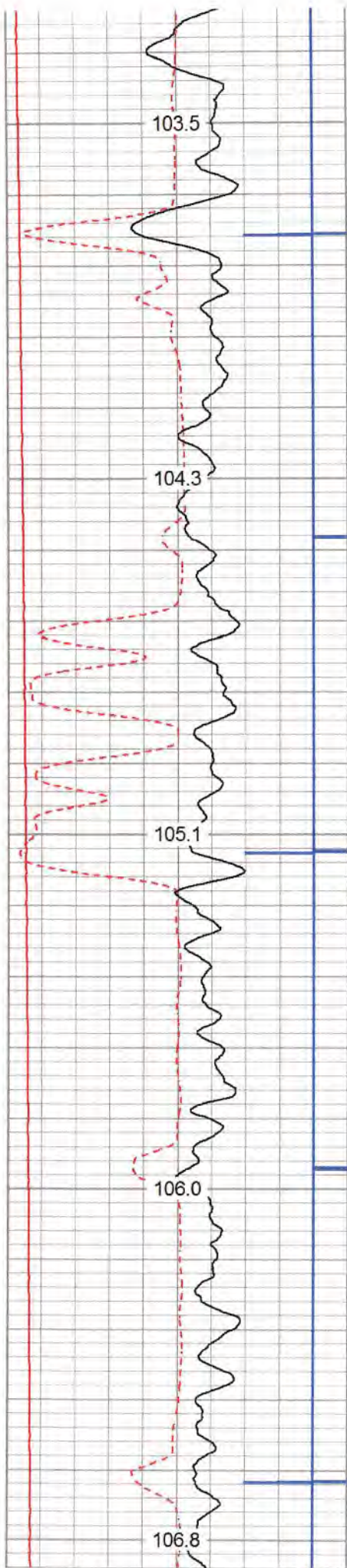




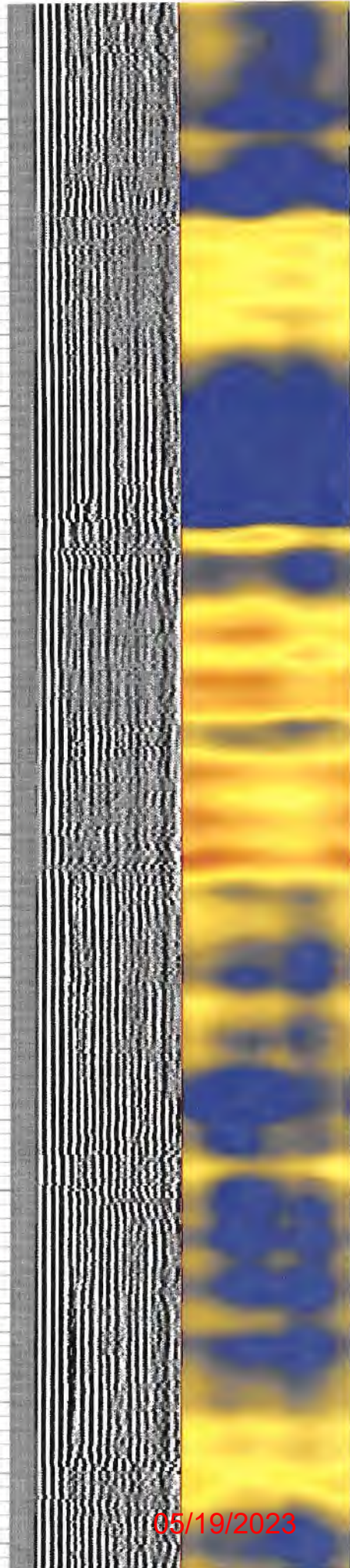
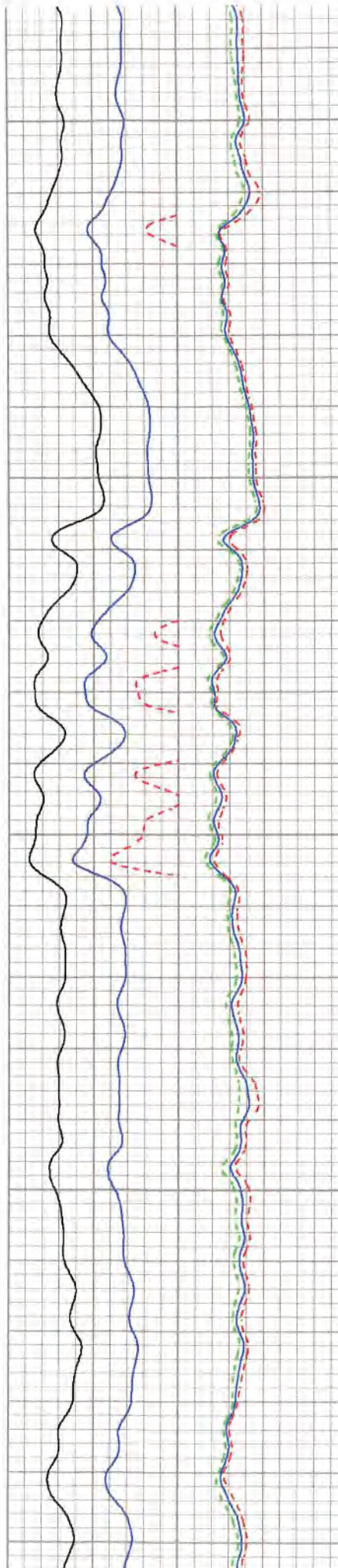
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4000  
4050  
4100



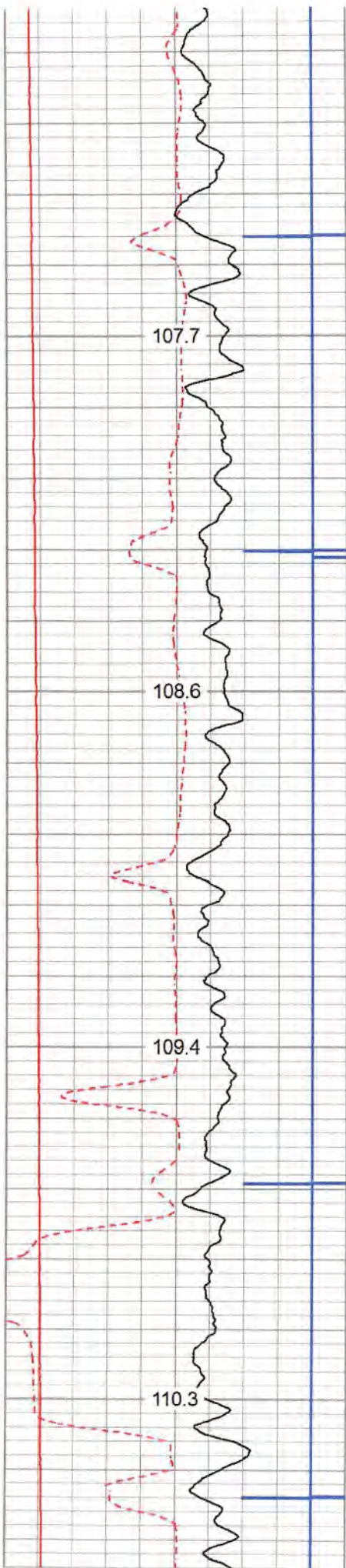
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4150  
4200  
4250  
4300  
4350



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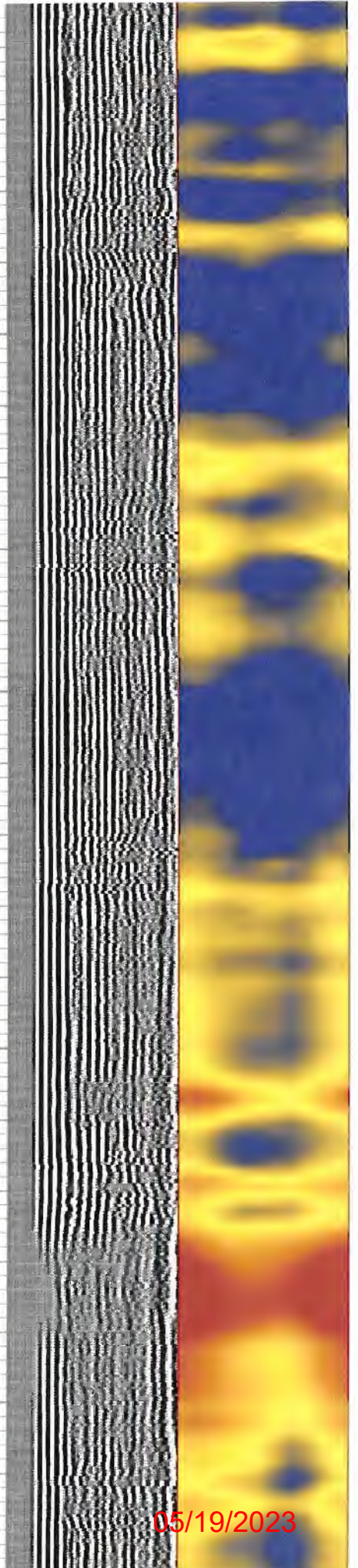
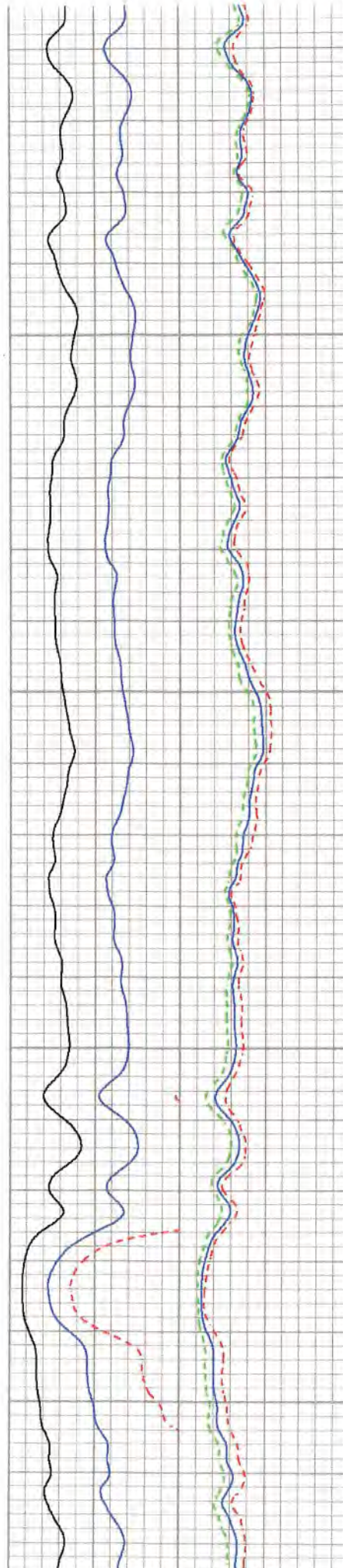


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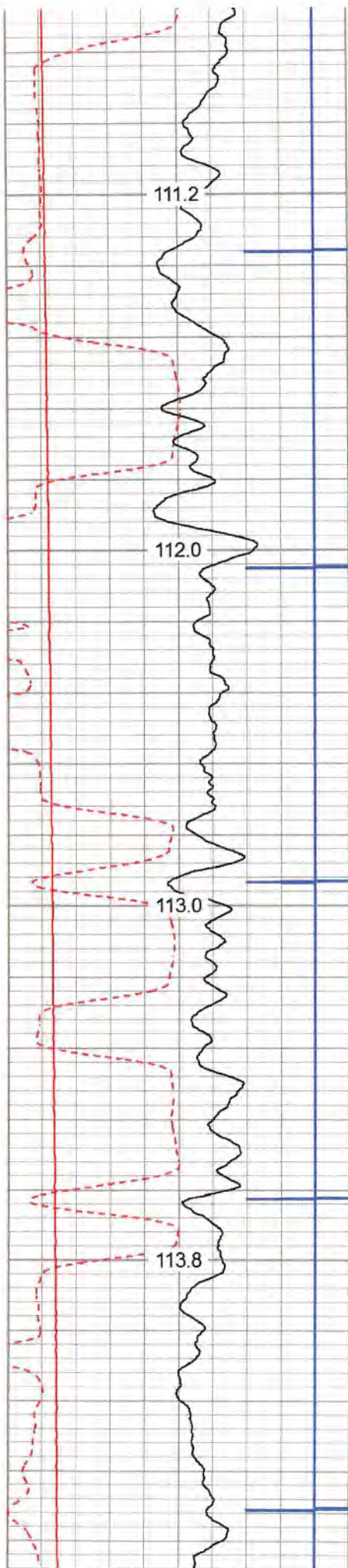
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4550



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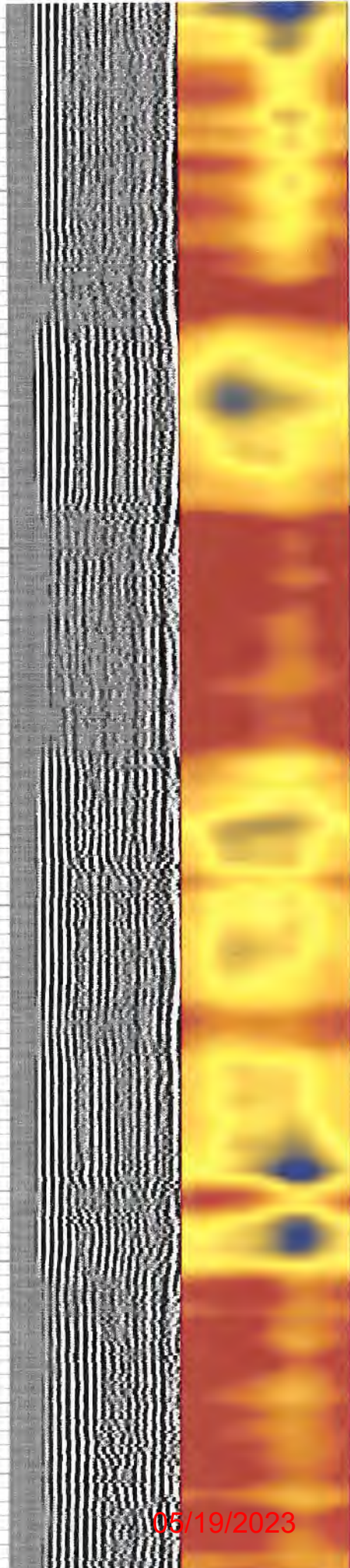
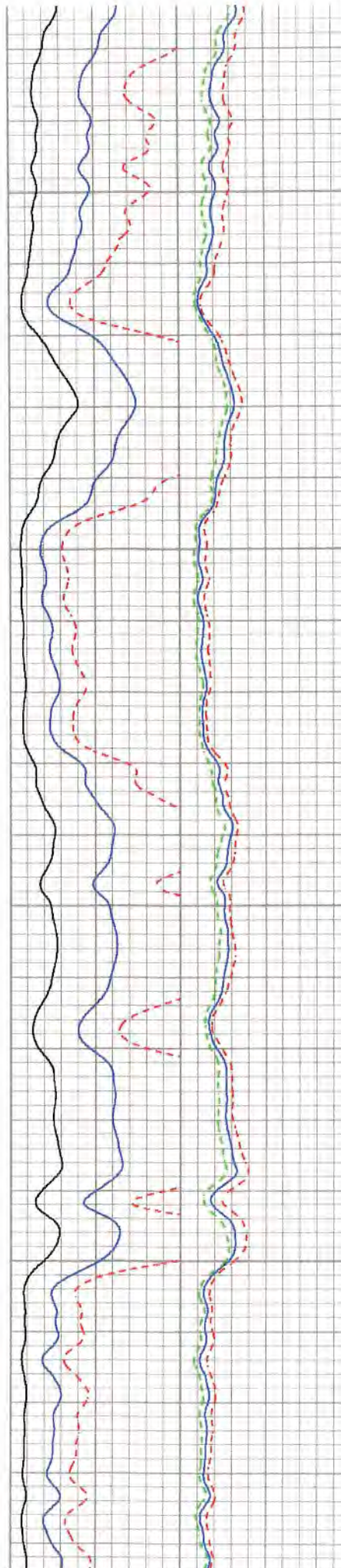


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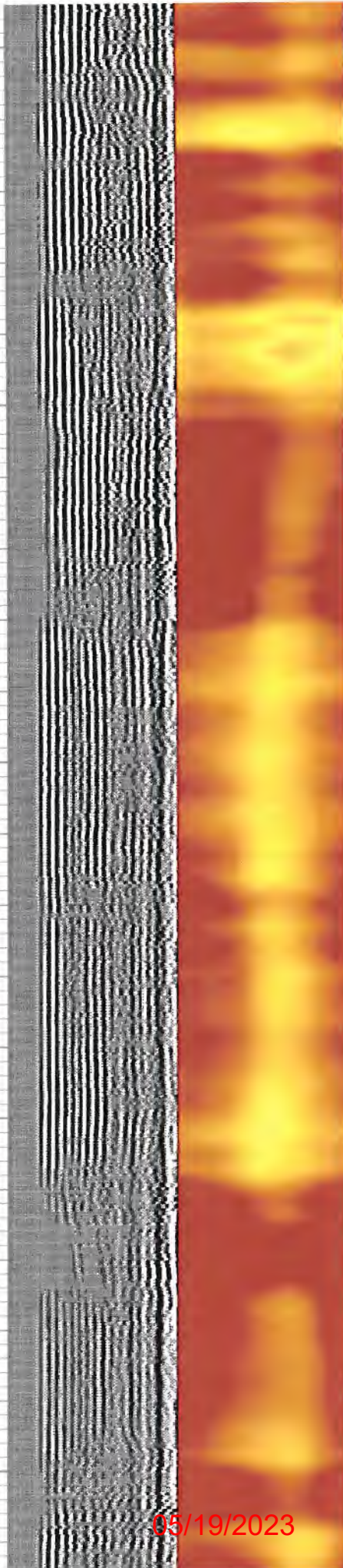
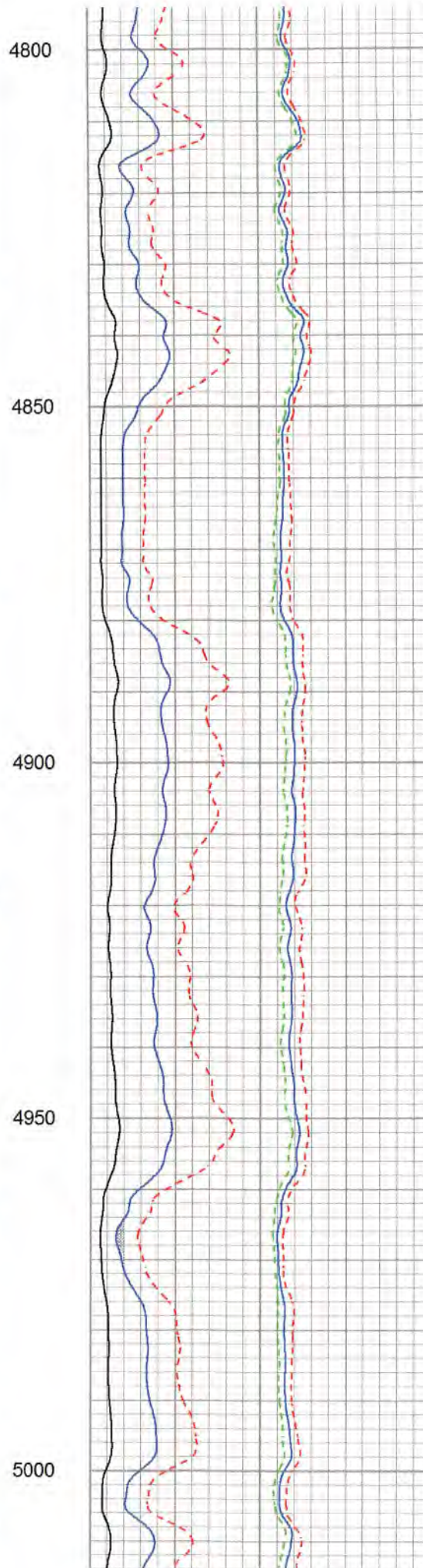
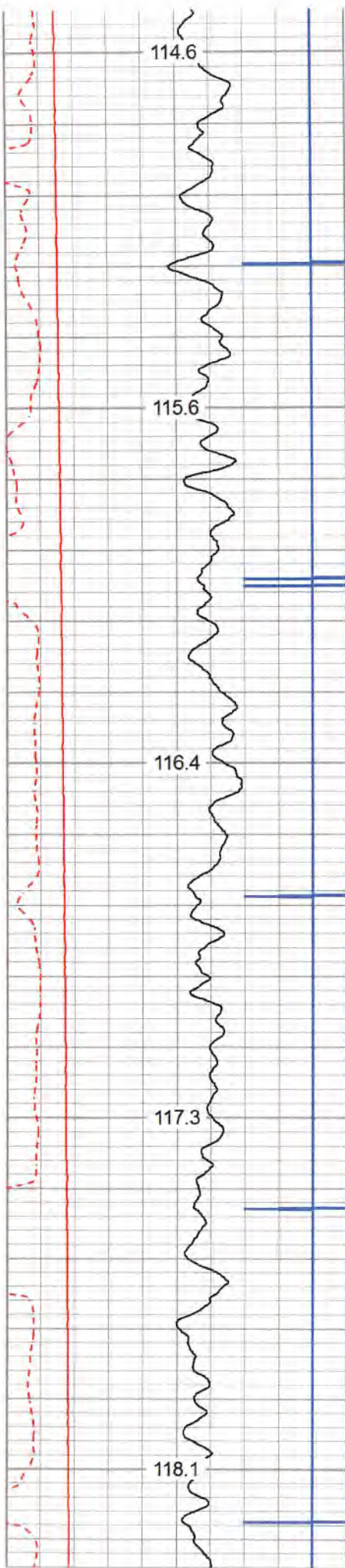
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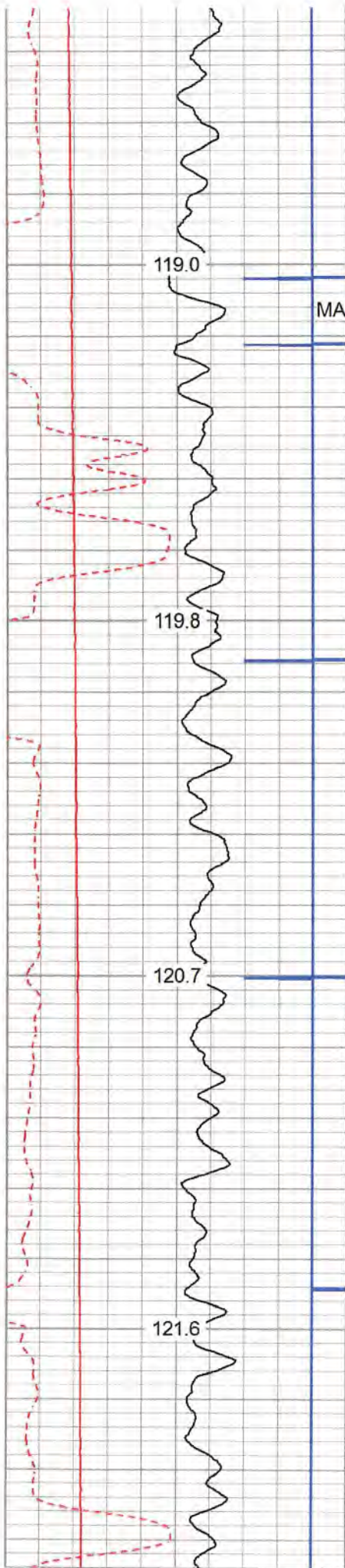
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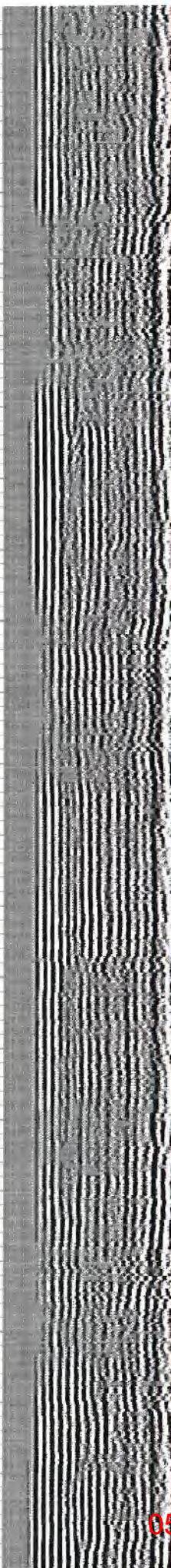
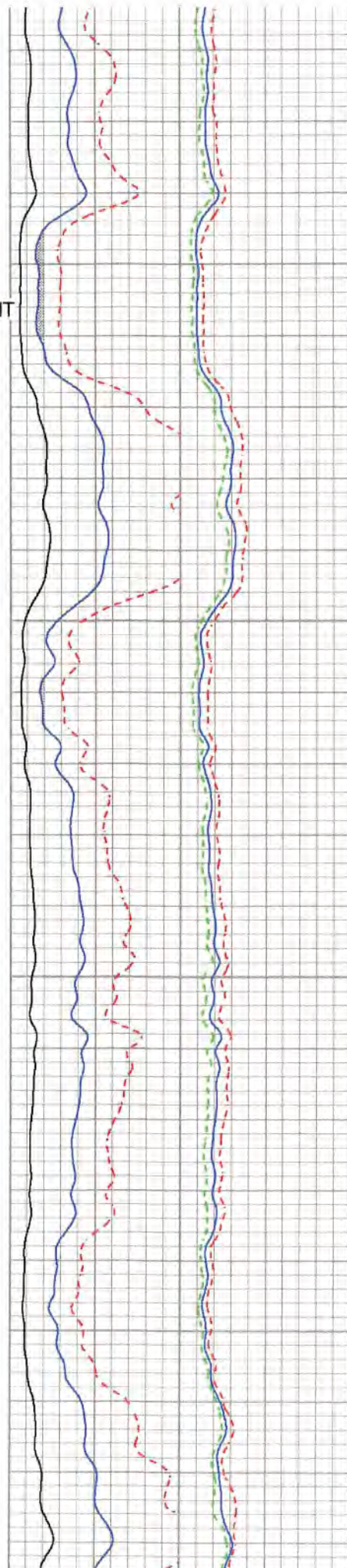
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MARKER JOINT

5050

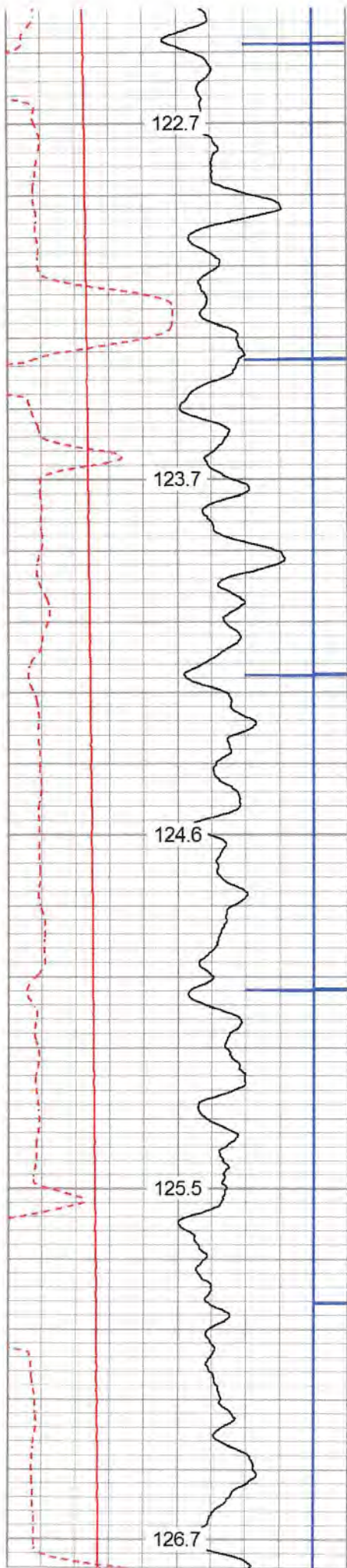
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5150

5200



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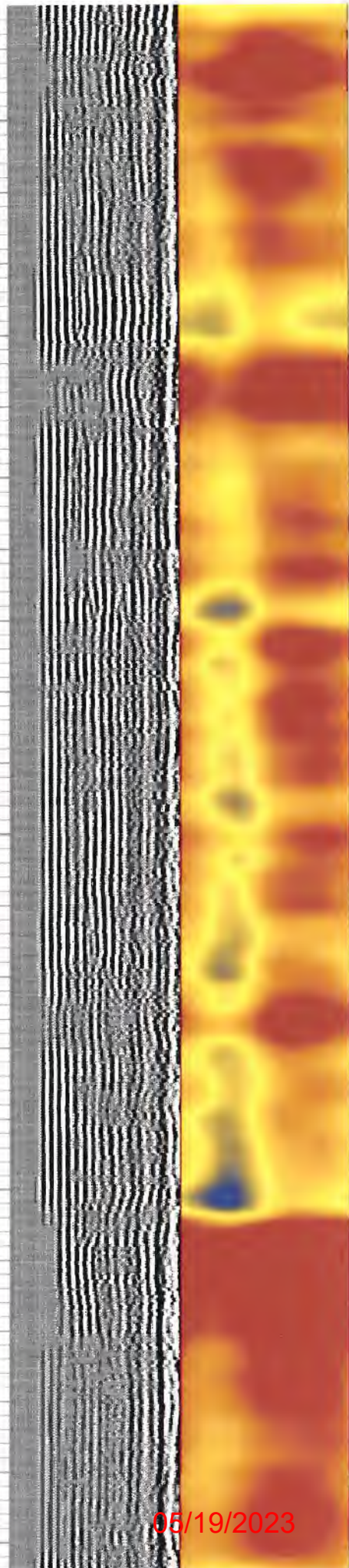
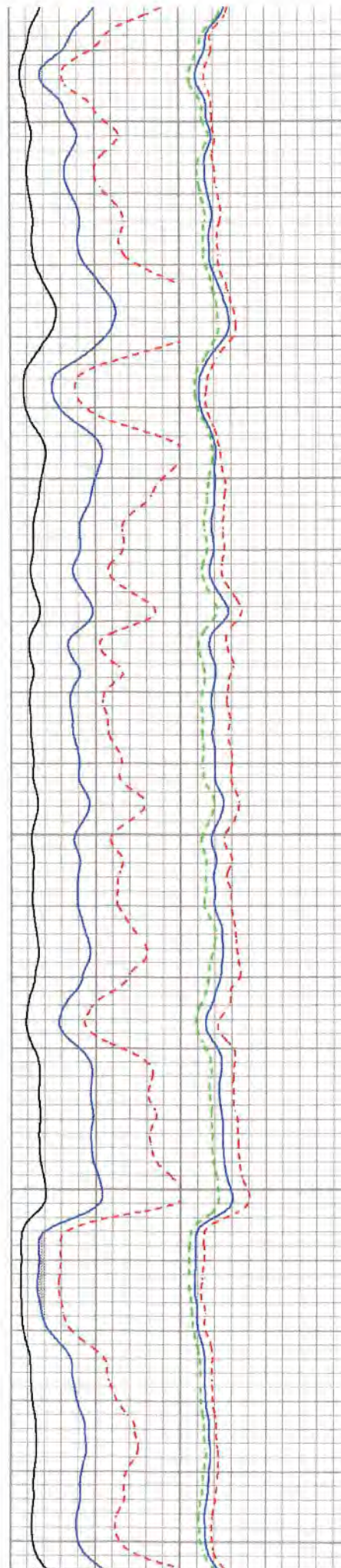
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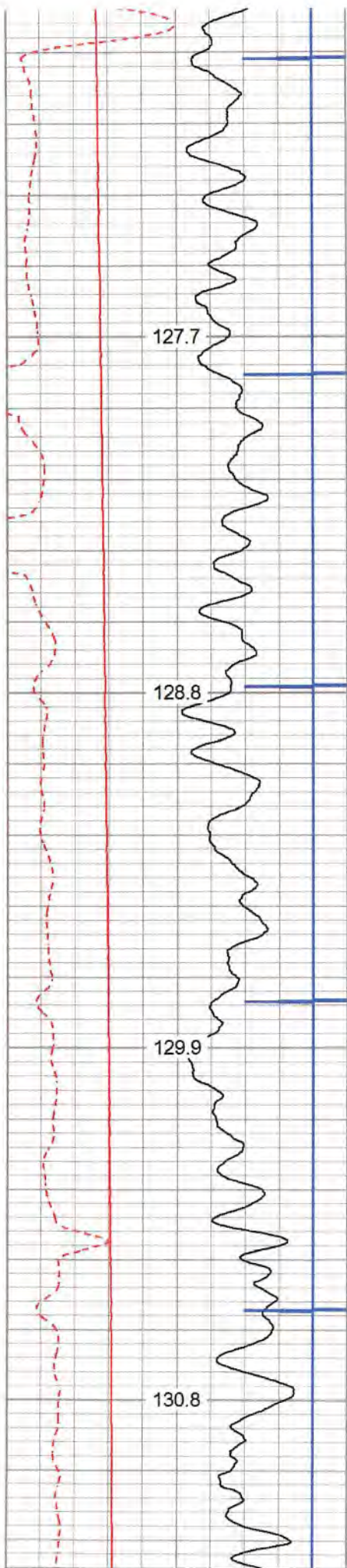
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5400

5450



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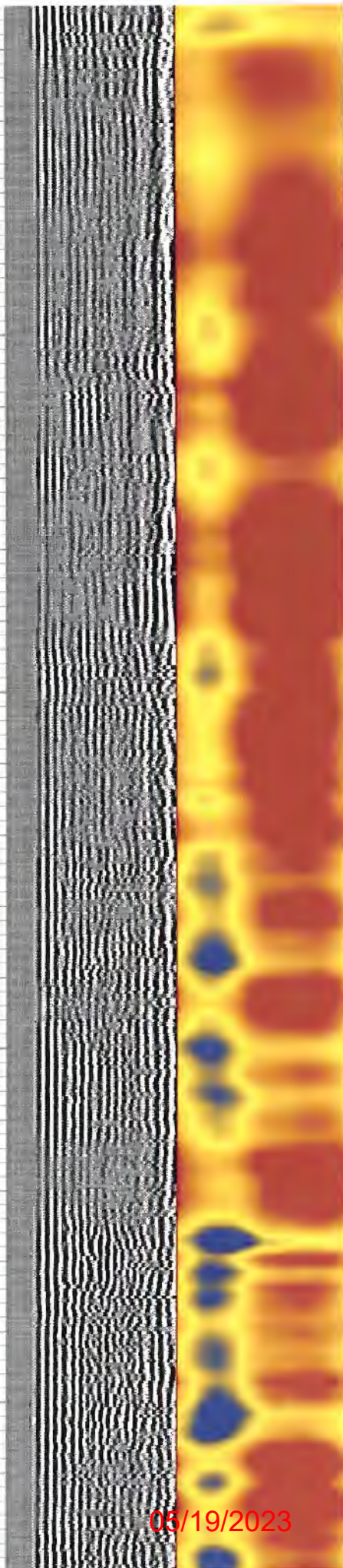
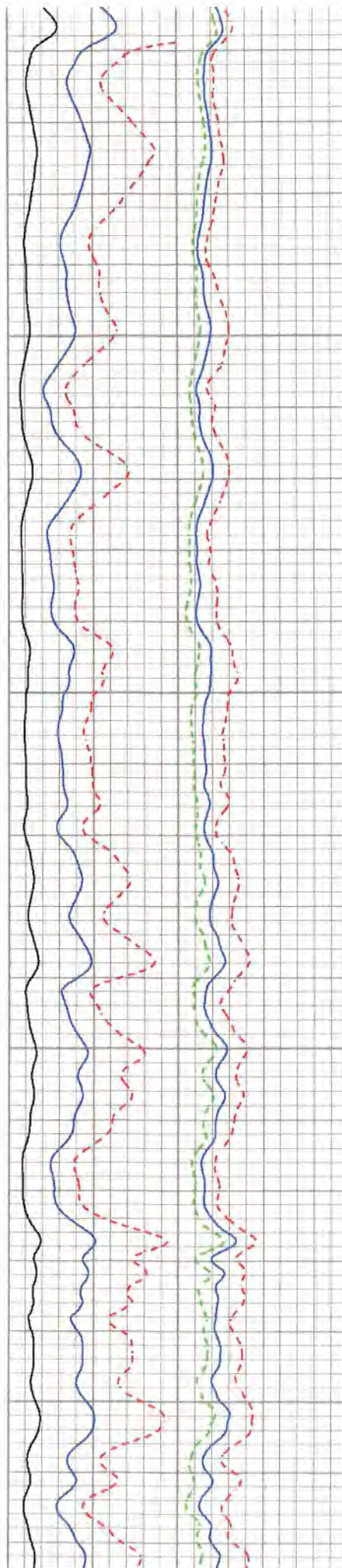


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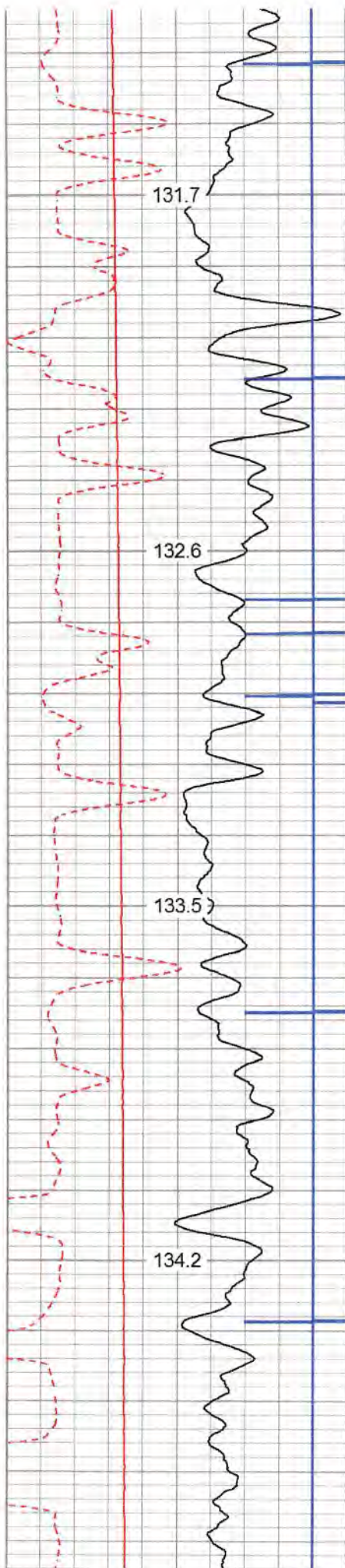
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5650



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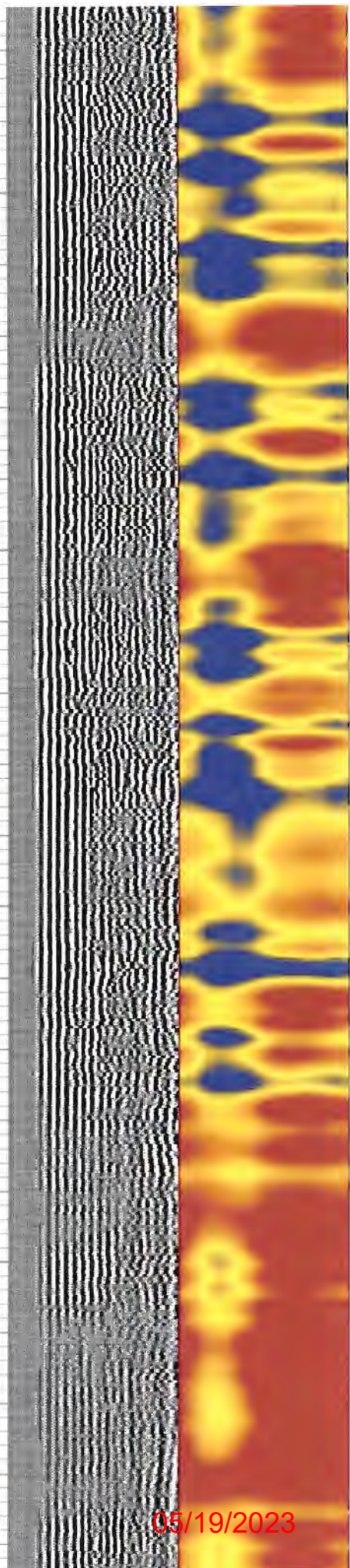
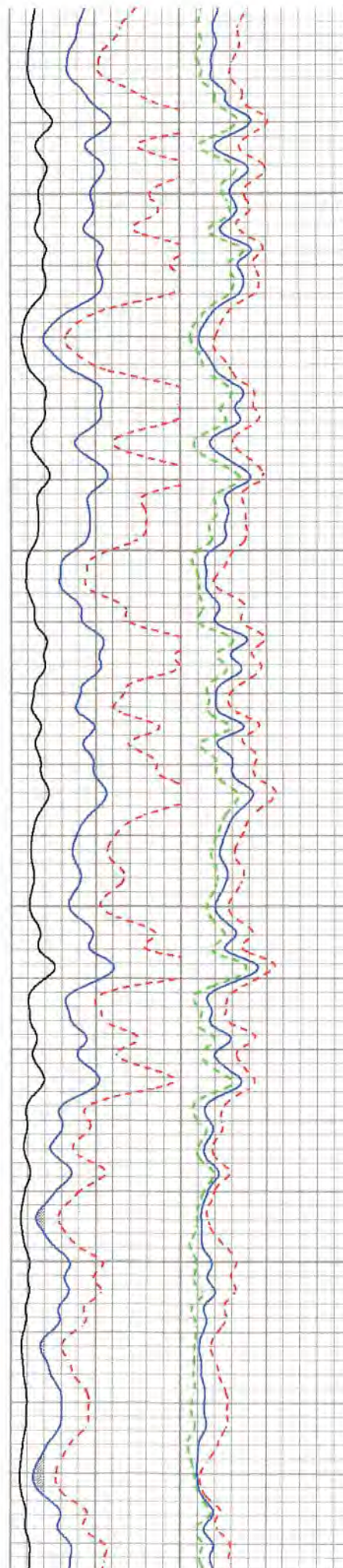


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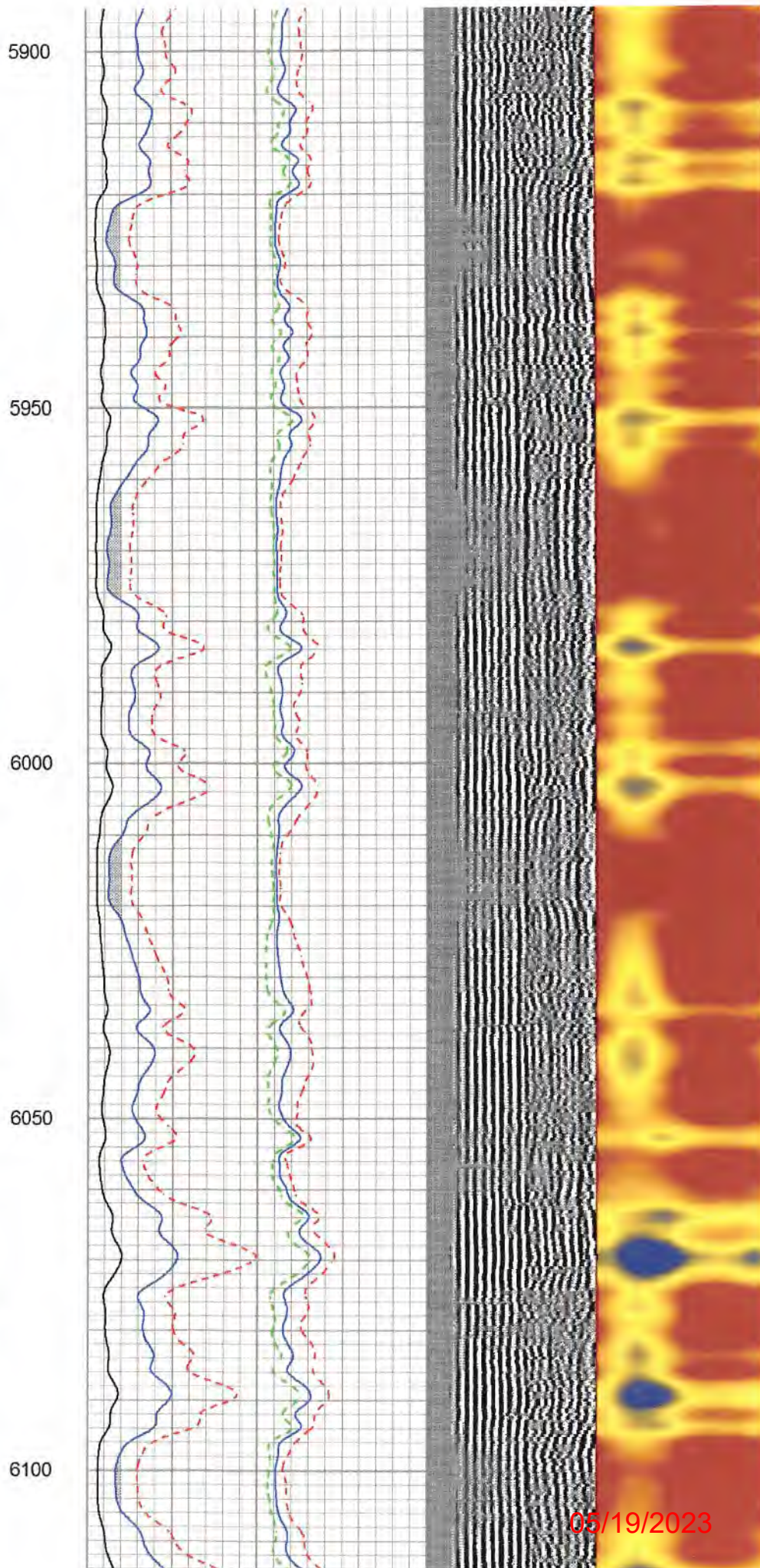
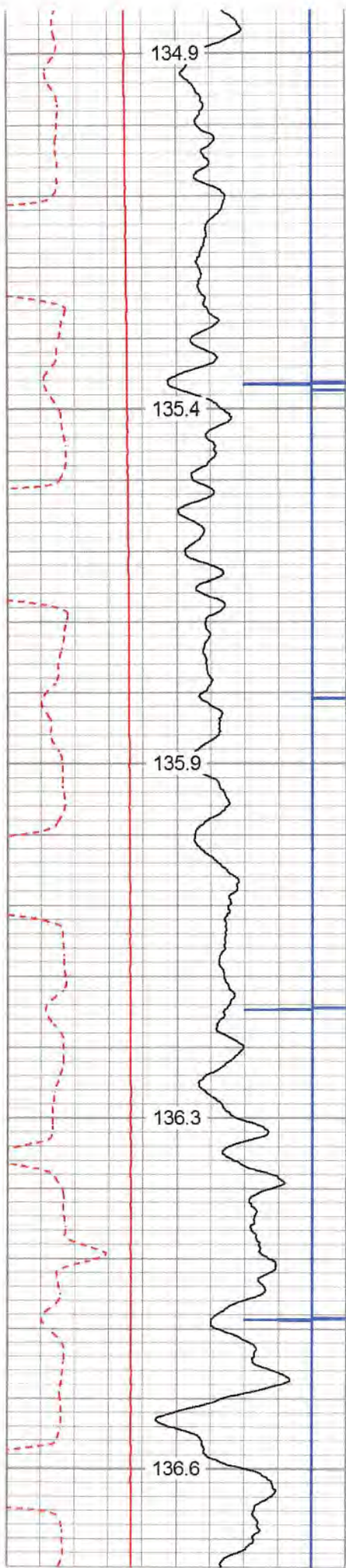
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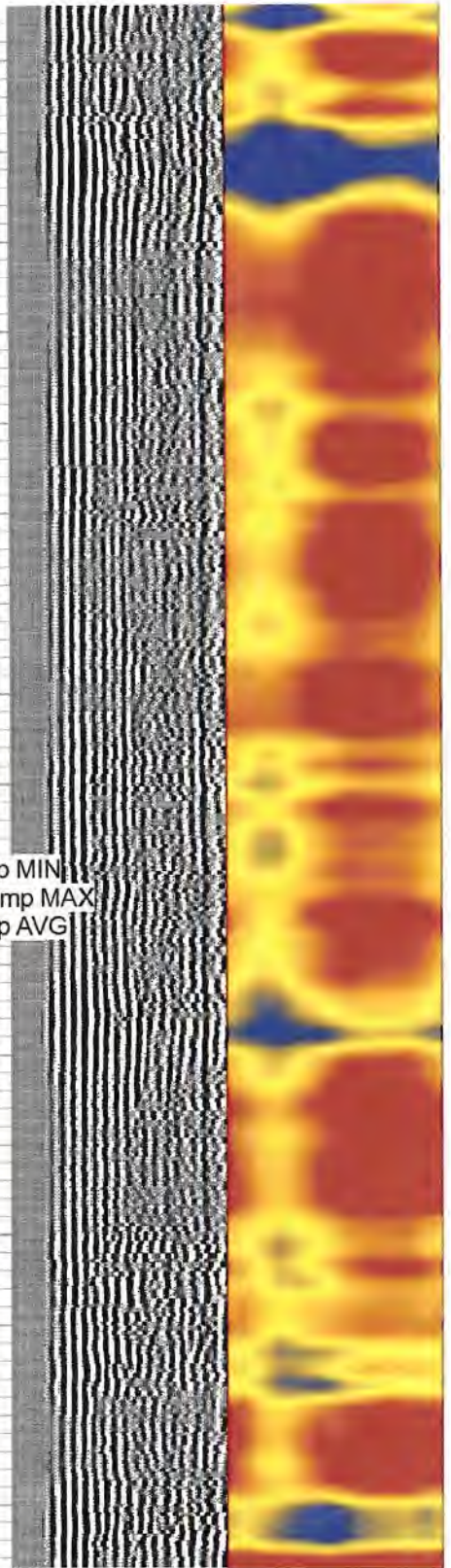
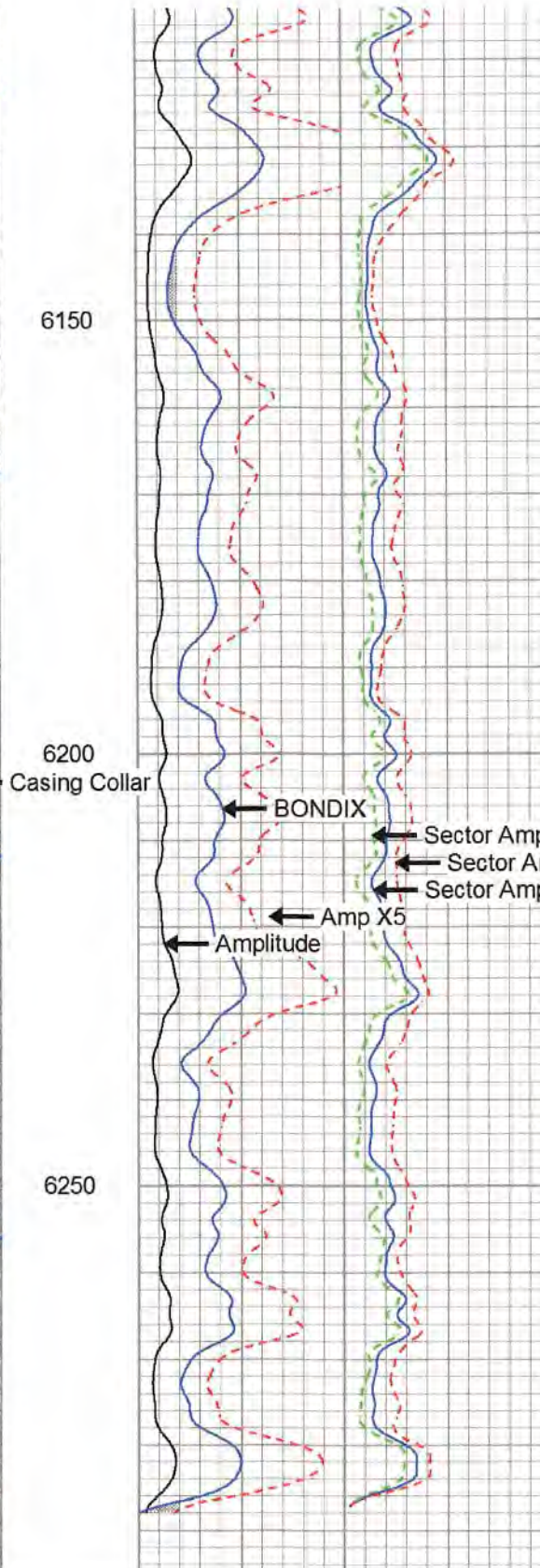
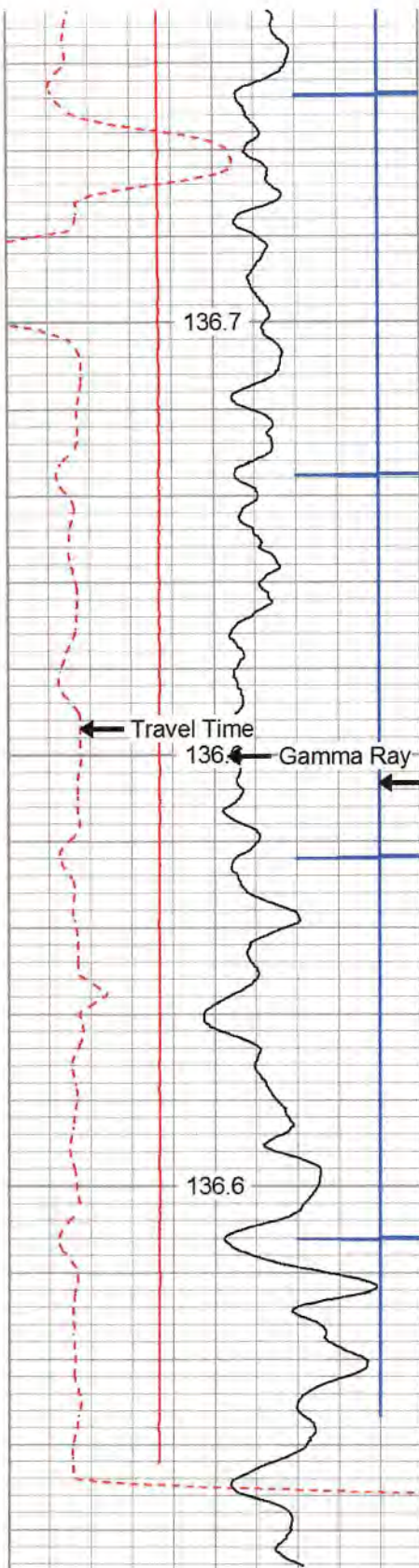
5850



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

0	Amplitude (mV)	100
0	Amp X5 (mV)	20
1	BONDIX	0

1	Sector Map	12
200	VDL (usec)	1200

TEMP  
(degF)

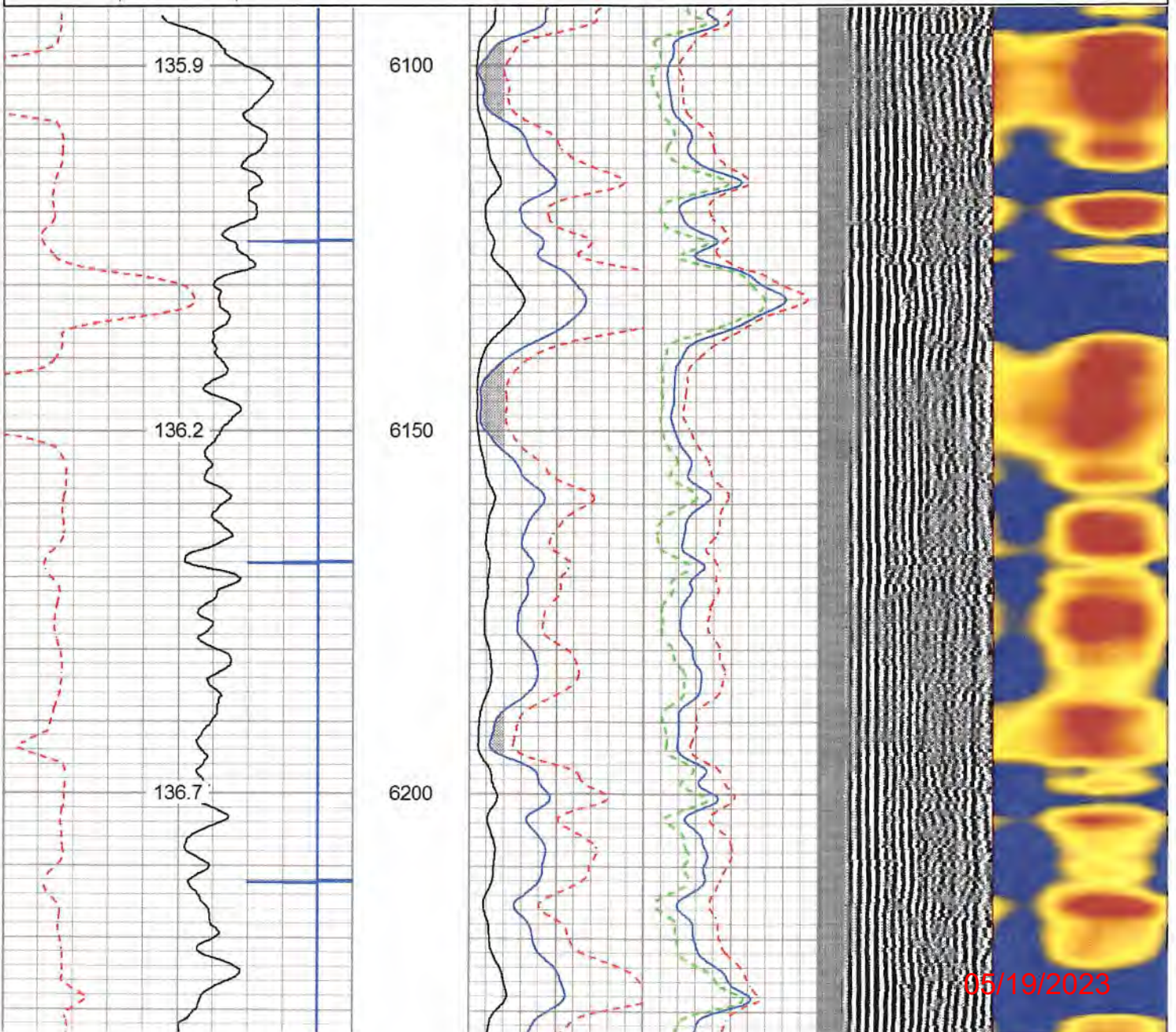
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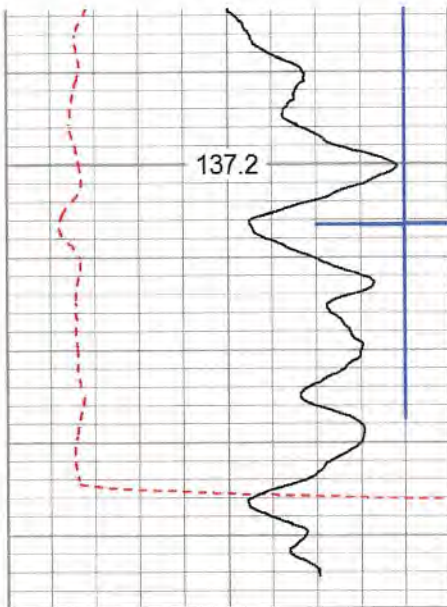
# REPEAT PASS 1500 PSI

Database File e:\8\_6\_20\_antero\_alpinewestunit1h.db  
 Dataset Pathname pass5  
 Presentation Format antero  
 Dataset Creation Thu Aug 06 09:53:11 2020  
 Charted by Depth in Feet scaled 1:240

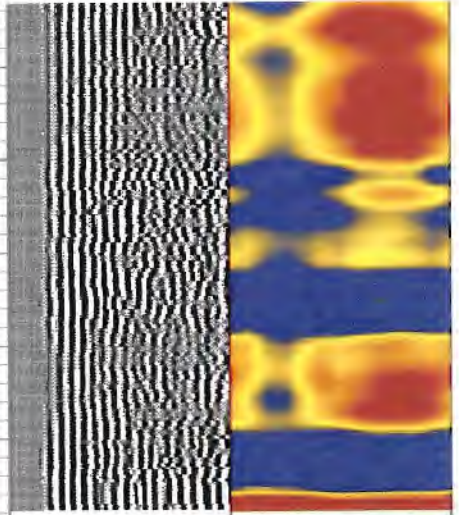
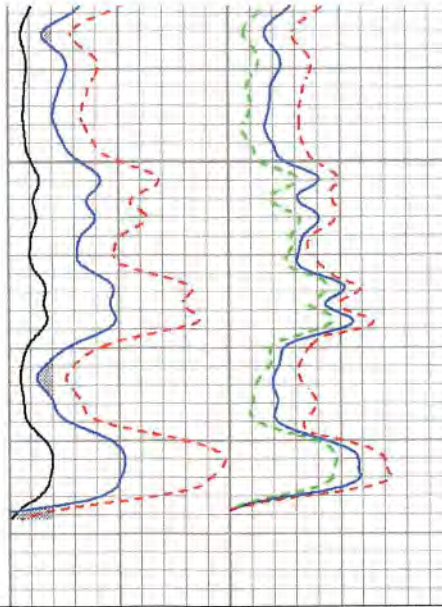
280	Travel Time (usec)	180	Amplitude	Sector Amp AVG	VDL	1 Sector Map 12
9	Casing Collar	-1	0 (mV) 100	Sector Amp MAX	200 (usec) 1200	
0	Gamma Ray	180	Amp X5	Sector Amp MIN		
0	TEMP (degF)	100	0 (mV) 20			
180	GR	360	1 BONDIX 0			
	TEMP (degF)					



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6250



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

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

1 Sector Map 12

TEMP  
(degF)

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
CCL	20.30		CCL-312tekco (I08X3-01) Tekco 3 1/8" 450 Deg. "F" SmCo Logging CCL	1.82	3.12	25.00
			Tek-3.125 3 1/8" Titan Adjustable Centralizer	3.42	3.13	50.00
TEMP	13.46					
WVFS12	12.17		SCBL-Tek12 (IOL40-03_5_5) Tekco 400 Deg F 12 Sector RIB with Temp	9.13	3.25	135.00
WVFS11	12.17					
WVFS10	12.17					
WVFS9	12.17					
WVFS8	12.17					
WVFS7	12.17					
WVFS6	12.17					

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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					
WVFTEMP	7.08					
			Tek-3.125 3 1/8" Titan Adjustable Centralizer	3.42	3.13	50.00
			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					

Dataset: 8\_6\_20\_antero\_alpinewestunit1h.db: field/well/run1/pass6.1  
 Total length: 21.44 ft  
 Total weight: 300.00 lb  
 O.D.: 3.25 in

### Calibration Report

Database File e:\8\_6\_20\_antero\_alpinewestunit1h.db  
 Dataset Pathname pass6.3  
 Dataset Creation Fri Aug 07 15:05:59 2020

### 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: 1850.792 ft

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Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.001	0.782	3.400	71.921	87.745	3.272

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CAL	0.865	0.413	3.400	71.921	85.397	3.435
5'	-0.000	0.802				
SUM						
S1	0.011	1.945	3.400	100.000	49.957	2.842
S2	0.010	1.905	3.400	100.000	50.985	2.884
S3	0.012	1.889	3.400	100.000	51.465	2.788
S4	0.013	1.844	3.400	100.000	52.760	2.707
S5	0.013	1.838	3.400	100.000	52.929	2.716
S6	0.015	1.989	3.400	100.000	48.947	2.664
S7	0.015	2.010	3.400	100.000	48.423	2.654
S8	0.014	2.058	3.400	100.000	47.243	2.751
S9	0.013	2.110	3.400	100.000	46.071	2.790
S10	0.012	2.113	3.400	100.000	45.995	2.834
S11	0.012	2.041	3.400	100.000	47.611	2.850
S12	0.012	1.999	3.400	100.000	48.626	2.820

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



Company ANTERO RESOURCES CORPORATION  
Well ALPINE WEST UNIT 1H  
Field MARCELLUS  
County TYLER  
State WV Country US

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