Email: Chris.Ralston@maryland.gov

July 20, 2017

Mr. Christopher Ralston
Maryland Department of the Environment
Remediation Division, Oil Control Program
1800 Washington Blvd., Suite 620
Baltimore, Maryland 21230

RE: HydraSleeve™ Sampling Proposal – 3627A Southside Avenue Supply Well
Inactive Exxon Facility #28077
14258 Jarrettsville Pike
Phoenix, Baltimore County, Maryland
MDE Case # 2006-0303-BA2
Kleinfelder Project #: 20173385.001A

Dear Mr. Ralston:

As discussed during my phone call with Ellen Jackson on July 7, 2017, and documented in her subsequent email the same day[1], please find below our enhanced proposal for HydraSleeve™ sampling intervals for the supply well at 3627A Southside Avenue in Phoenix, MD.

Kleinfelder and ExxonMobil have considered the Maryland Department of the Environment's (MDE) request to conduct packer testing in the supply well. As discussed with the MDE during a meeting on June 7, 2017, HydraSleeve™ sampling is preferable in this case to packer testing for the following reasons:

1. Shorter duration when the homeowners will be without water;
2. Significantly lower risk of damaging the supply well;
3. Lower risk of property damage from drill rig and other heavy equipment;
4. No need to remove branches/trees for access to the well, as with a drill rig;
5. No disruption or heavy vehicle traffic on the local road and driveways.

HydraSleeve™ sampling methods have been in use throughout the project area for more than seven years and have demonstrated the ability to reveal distinct concentration profiles with

[1] MDE, July 7, 2017, Email RE: Craig supply well H/S sampling

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depth which are reproducible. Field studies have also shown HydraSleeve™ sampling results display a close correlation to inflatable packer sampling results.

BOREHOLE GEOPHYSICAL ANALYSIS

As previously reported to the Maryland Department of the Environment (MDE),[2] borehole geophysical logging was completed on the supply well for 3627A Southside Avenue on March 28-29, 2017 (**Attachment 1**). Based on the optical televiewer, well construction is interpreted as follows:

Depth below ground surface (feet below top of casing) (ft-toc)	Well construction
0-25.5	PVC casing
25.5-303.7	Open borehole
303.7-345.4	Steel casing
345.4-396	Open borehole
396	Terminal depth

The borehole geophysical information for the 3627A Southside Avenue private supply well was evaluated to identify depths where dissolved-phase analytes (e.g., MtBE) may be entering the well based on the northeast migration pattern identified as part of the conceptual site model (CSM). Only nine features with measurable aperture were identified within the saturated zone at depths ranging from 59.91 ft-toc to 394.46 ft-toc. Heat pulse flow meter readings were at or below the lower limit of the measurement tool, indicating little to no measureable borehole flow. Little deflection in the fluid temperature, conductivity, and resistivity logs does not indicate discrete fracture flow.

The February and March 2017 vertical MtBE concentration profiles for MW-189D were also compared to the borehole geophysical information for 3627A Southside Avenue in order to correlate potential migration (**Attachment 2**). In summary the following intervals are suggested for discrete depth sampling via HydraSleeve™:

[2] Kleinfelder, May 16, 2017, Email RE: MDE Case No. 2006-0303-BA2 / 28077 Phoenix: Proposed HydraSleeve intervals for supply well at 3627A Southside Avenue

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- 66.96 feet below top of casing (ft-toc) (open fracture)
- 149.99 ft-toc (open fracture)
- 173.45 ft-toc (open fracture)
- 231 ft-toc (open fracture)
- 250 ft-toc (open fracture)
- 287 ft-toc (partial open fracture)
- 301 ft-toc (open bedding plan)
- 346 ft-toc (bottom of blank casing in borehole)
- 370 ft-toc (depth of supply well pump)
- 395 ft-toc (open fracture)

HYDRASLEEVE™ SAMPLING

The following sections lay out the sequence of work for a single round of HydraSleeve™ sampling:

Day 1:

1. Supply well opened by Maryland-licensed plumber
2. Grab sample collected via bailer from top of static water column
3. Supply well pump and hosing removed and laid on plastic sheeting
4. Depth of well pump recorded and water level gauged with EIP (no purging of well)
5. HydraSleeve™ sampler string with 10 interval samplers deployed
6. Water column equilibrates for 24 hours.

Day 2:

1. After 24 hours, HydraSleeve™ sampler string retrieved and samples collected and sent to lab for analysis of VOCs/SVOCs by EPA method 524.2;
2. Well pump reinstalled by Maryland-licensed plumber; chlorine added to well in accordance with standard practice;
3. Samples collected and sent to lab on 24-hour turnaround for analysis of coliform/bacteria;
4. Well closed and sealed by plumber.

Day 3/4:

1. Once laboratory analytical results for coliform/bacteria received, well pump restarted.

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REPORTING OF RESULTS

Following the receipt of the laboratory analytical results for VOCs/SVOCs, Kleinfelder will report the results to the MDE for review and discussion.

CLOSING

Upon approval from the MDE, and at convenience of the homeowner, Kleinfelder will initiate the scope of work described above. MDE will be notified at least five (5) days prior to the initiation of work. Kleinfelder will continue to evaluate the analytical data collected monthly from the supply well at 3627A Southside Avenue, and will notify the MDE regarding any change in conditions or implementation of the proposed work plan.

Please contact the undersigned with any questions or requests for additional information at 410. 850.0404.

Sincerely,

KLEINFELDER

Stacey E. Schiding
Project Manager

Mark J. Schaaf, CPG
Project Director

ATTACHMENTS
1 Borehole Geophysical Report
2 Borehole Summary and Proposed HydraSleeve™ Intervals

cc: Mr. Clarke Bozeman - ExxonMobil Environmental Services Company (Project File)
Ms. Ellen Jackson - Maryland Department of the Environment
Mr. Andrew Miller - Maryland Department of the Environment
Carlos Bollar, Esquire - Archer & Greiner, P.C.

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ATTACHMENT 1

Borehole Geophysical Report

GEOPHYSICAL INVESTIGATION
Report

PW 3672A Well
Phoenix, MD

FOR

Kleinfelder
Hanover, MD

by

ENVIROPROBE SERVICE, INC.
81 Marter Avenue, Mt Laurel, NJ 08054

April 2017

April 6, 2017

Stacey Schiding
Kleinfelder
1340 Charwood Road, Suite I
Hanover, MD 21076

REPORT: GEOPHYSICAL INVESTIGATION
PW 3627A
Phoenix, MD

Dear Ms. Schiding:

We are pleased to present our report for the geophysical borehole logging investigation performed at the PW 3627A well in Phoenix, MD. The investigation was performed on March 28 and 29, 2016.

If you have any questions concerning this report please contact us at 856-858-8584. We look forward to working with you in the future.

Respectfully submitted,

EnviroProbe Service, Inc.

Matthew J. McMillen
Senior Geophysicist

1) INTRODUCTION AND PURPOSE

The private well PW3627A located in Phoenix, MD was the object of this geophysical survey.

The purpose of the geophysical borehole logging was to investigate lithology, fracture location and orientation, flow in the borehole, and overall physical condition of the borehole.

2) GEOPHYSICAL METHODOLOGY

Geophysical borehole logging was conducted using a Mount Sopris MXA winch with a Matrix console and Mount Sopris PEA1000 fluid probe, Mount Sopris 2PCA-1000 caliper probe, Mount Sopris 2PGA-1000 gamma probe, Mount Sopris HFP-2293 heat-pulse flowmeter, ALT QL40-2G acoustic televiewer, and an ALT QL40-OBI-2G optical televiewer.

The borehole logs consist of caliper, fluid resistivity/ conductivity, fluid temperature, natural gamma, self potential (SP), single point resistivity (SPR), optical televiewer, acoustic televiewer, and heat-pulse flowmeter.

3) INTERPRETATION

Fractures are classified in the structure logs and tadpole plots as three groups; open fractures, partial open fractures, and closed fractures. Additionally possible bedding planes are also identified.

Open fractures are fractures in the rock that appear to be open based on caliper data. Partial open fractures are fractures that appear not to be fully open in the borehole. Closed fractures show as fractures and have no significant caliper enlargement.

Flow values of 0.03 gals./min. or less are considered as no flow and approach the limit of the flowmeter. However, data below this limits may be useful in determining a trend within the borehole.

Interpretations are on the comments section of the log.

Appendix A has all the geophysical logs. Appendix B has the fracture data and heat pulse flowmeter data.

The well was approximately 396.4 feet in depth. Bottom of PVC casing is at 25.6 feet. Steel casing is located in the well from approximately 303.9 feet to 345.5 feet. Water level in the well was at approximately 44.9 feet.

The geophysical logging of this borehole detected fractures based on the caliper log. Significant fractures were detected at approximately:

1) 25.6 feet to 29.0 feet
2) 32.0 feet to 33.9 feet
3) 37.6 feet to 39.8 feet
4) 67.2 feet
5) 106.0 feet
6) 108.0 feet
7) 150.1 feet
8) 173.6 feet
9) 194.5 feet
10) 230.4 feet
11) 247.4 feet to 250.6 feet
12) 289.0 feet
13) 394.3 feet to 396.4 feet

Possible flow in or out of the well were detected at numerous possible locations based on the change in the fluid resistivity and fluid temperature. Eleven locations in the well were where flow may be occurring are at approximately:

1) 51.5 feet	
2) 58.3 feet	Possible from fracture at 57.7
3) 87.5 feet	Possible from fracture at 87.5 feet to 92.8 feet
4) 108.0 feet	Possible from fracture at 108.0 feet
5) 153.9 feet	Possible from fracture at 150.1 feet
6) 173.5 feet	Possible from fracture at 173.6 feet
7) 196.7 feet	Possible from fracture at 194.4 feet
8) 226.7 feet	Possible from fracture at 230.4 feet
9) 296.4 feet	
10) 326.0 feet	Inside casing
11) 394.0 feet	Possible from fracture at 394.4 feet

The areas without a significant fracture could have flow out of a bedding plane or small fracture not detected by the caliper.

The heat pulse flowmeter was conducted at 25 depths as shown on the caliper fluid log. Values for these were at or below the lower limit of the tool which indicated no or very low flow in the well under ambient conditions.

See Appendix A for the logs of this borehole.

Appendix B has the fracture orientation data and the heat pulse flowmeter data.

4) CONCLUSIONS

A geophysical borehole logging investigation of well PW3672A in Phoenix, MD was conducted using of caliper, fluid resistivity/conductivity, fluid temperature, natural gamma, self potential (SP), single point resistivity (SPR), acoustic televiewer, optical televiewer and heat pulse flowmeter. The purpose of this investigation was to investigate lithology, fracture location and orientation, flow in the borehole, and overall physical condition of the borehole.

Results are shown as borehole logs. A discussion of the borehole is given in the interpretation section.

Fracture orientation data below the steel casing is most likely not accurate due to the televiewers not being centralized in the well because of the smaller diameter of the steel casing.

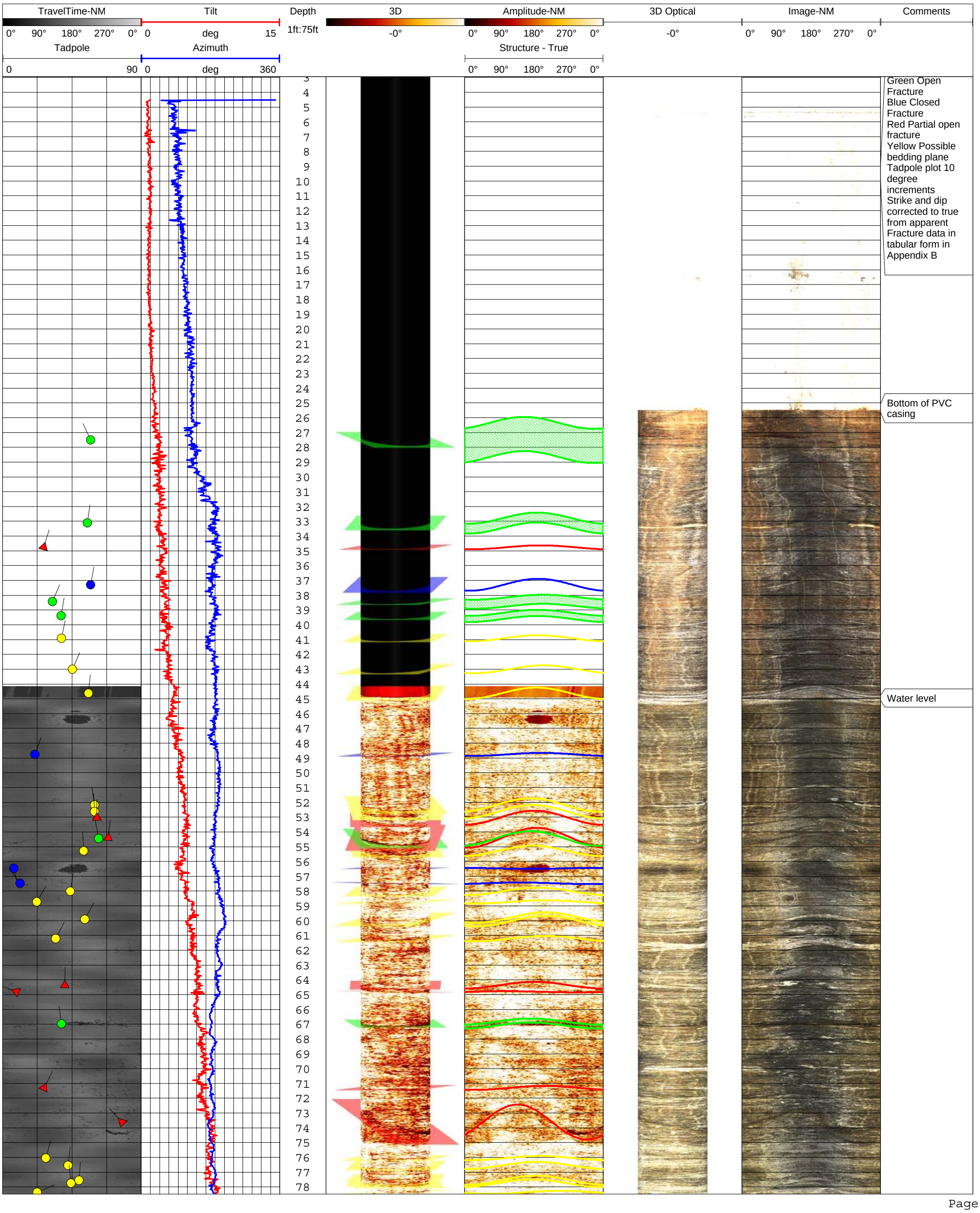
The casing thickness data may be inaccurate due to scale on the inside of the casing. Possible deterioration may be occurring at 304.0 feet to 305.7 feet and also at 325.4 to 330.0 feet. The 325.4 feet to 330.0 feet has possible flow indicated on the fluid logs.

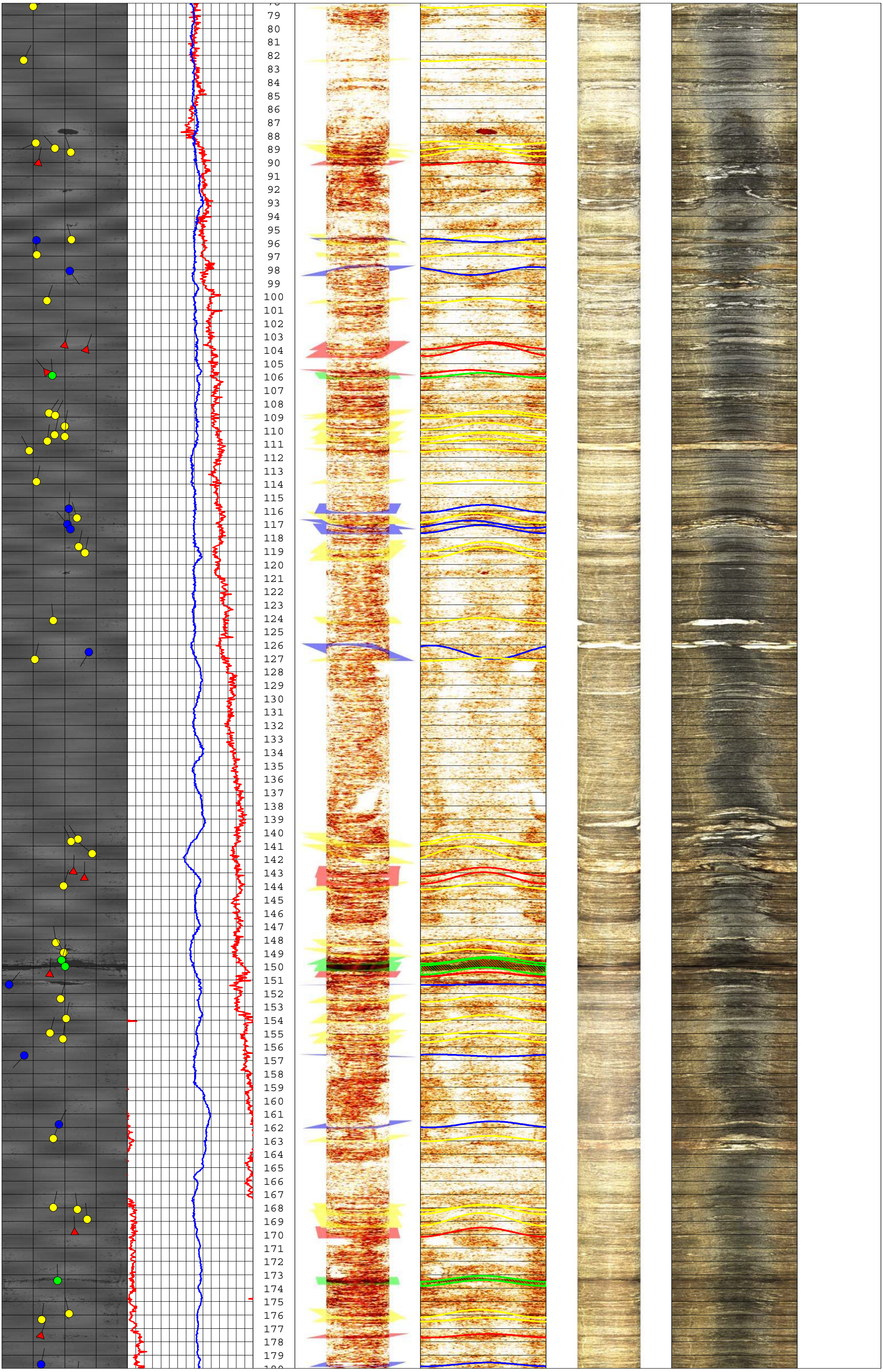
Appendix A shows the borehole logs.

Appendix B has the fracture orientation data and the heat pulse flowmeter data.

APPENDIX A

PW 3627A
Phoenix, MD
prepared for
Kleinfelder
Hanover, MD
by
Enviroprobe Service, Inc.
Mount Laurel, NJ
Acoustical and Optical Televiewer

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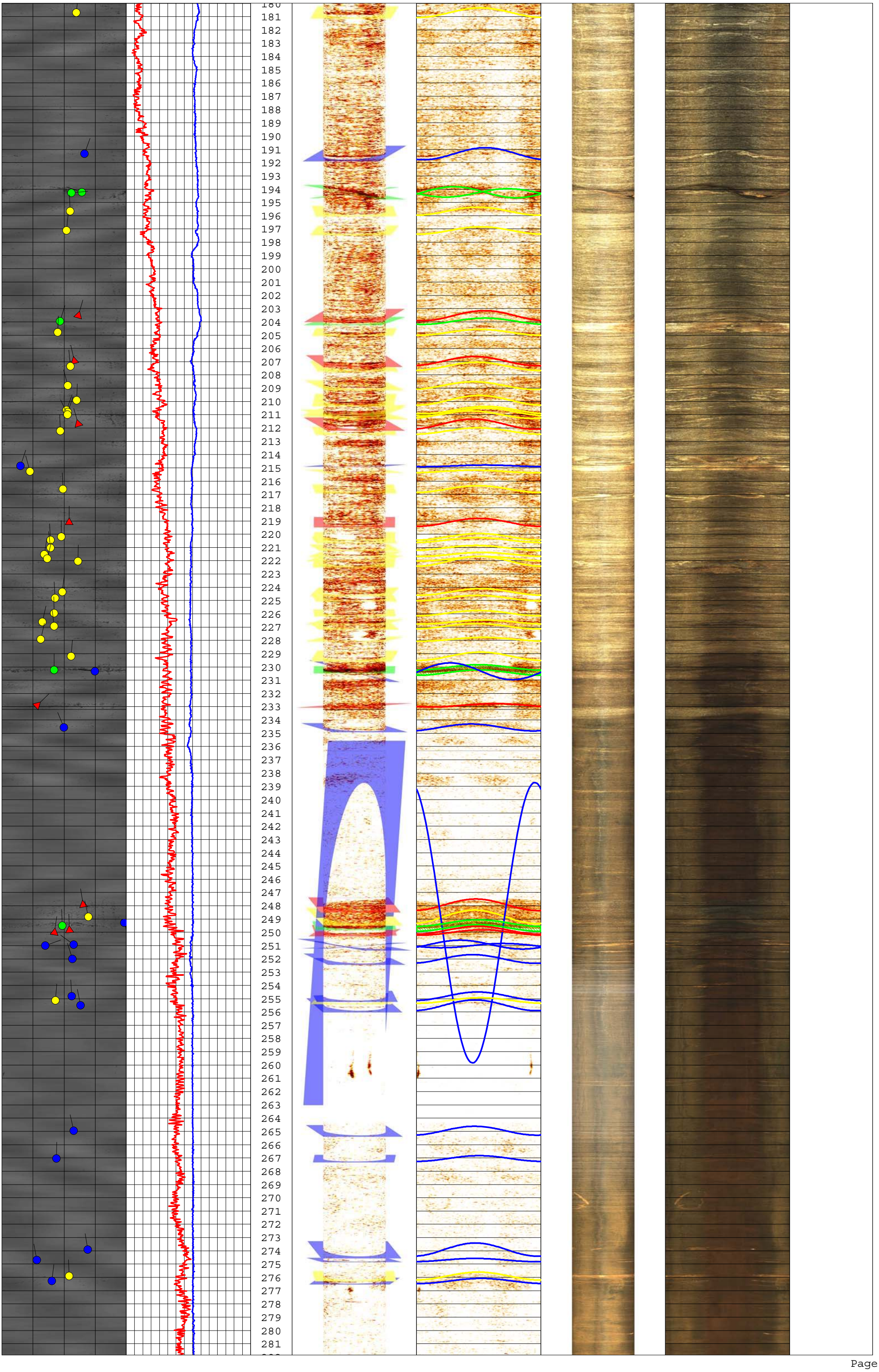
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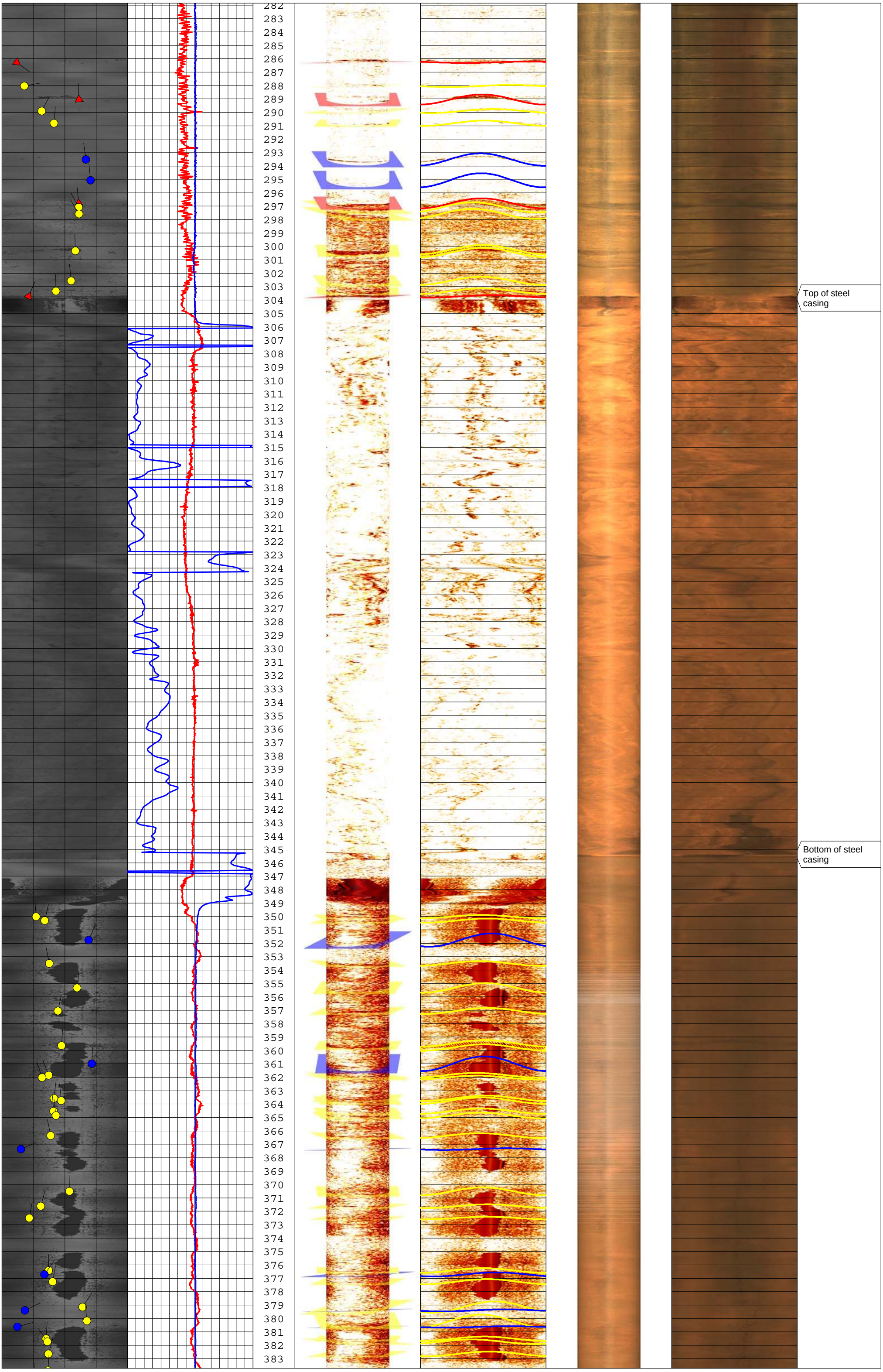
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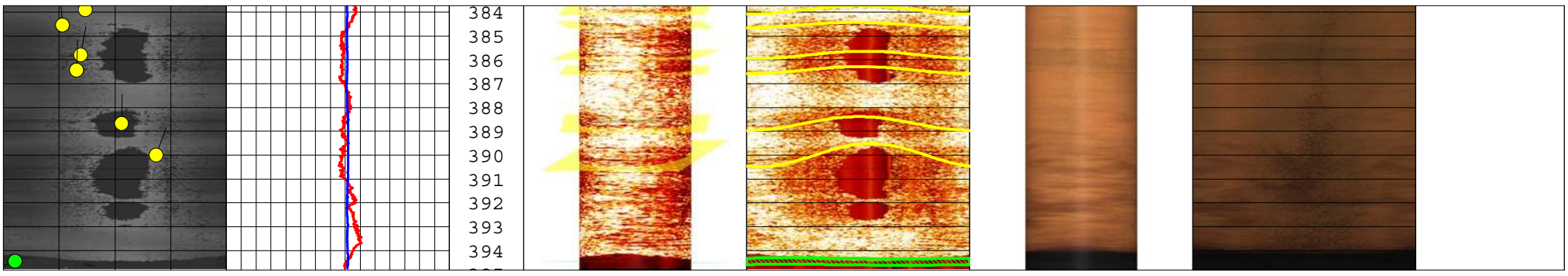
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PW 3627A
Phoenix, MD
prepared for
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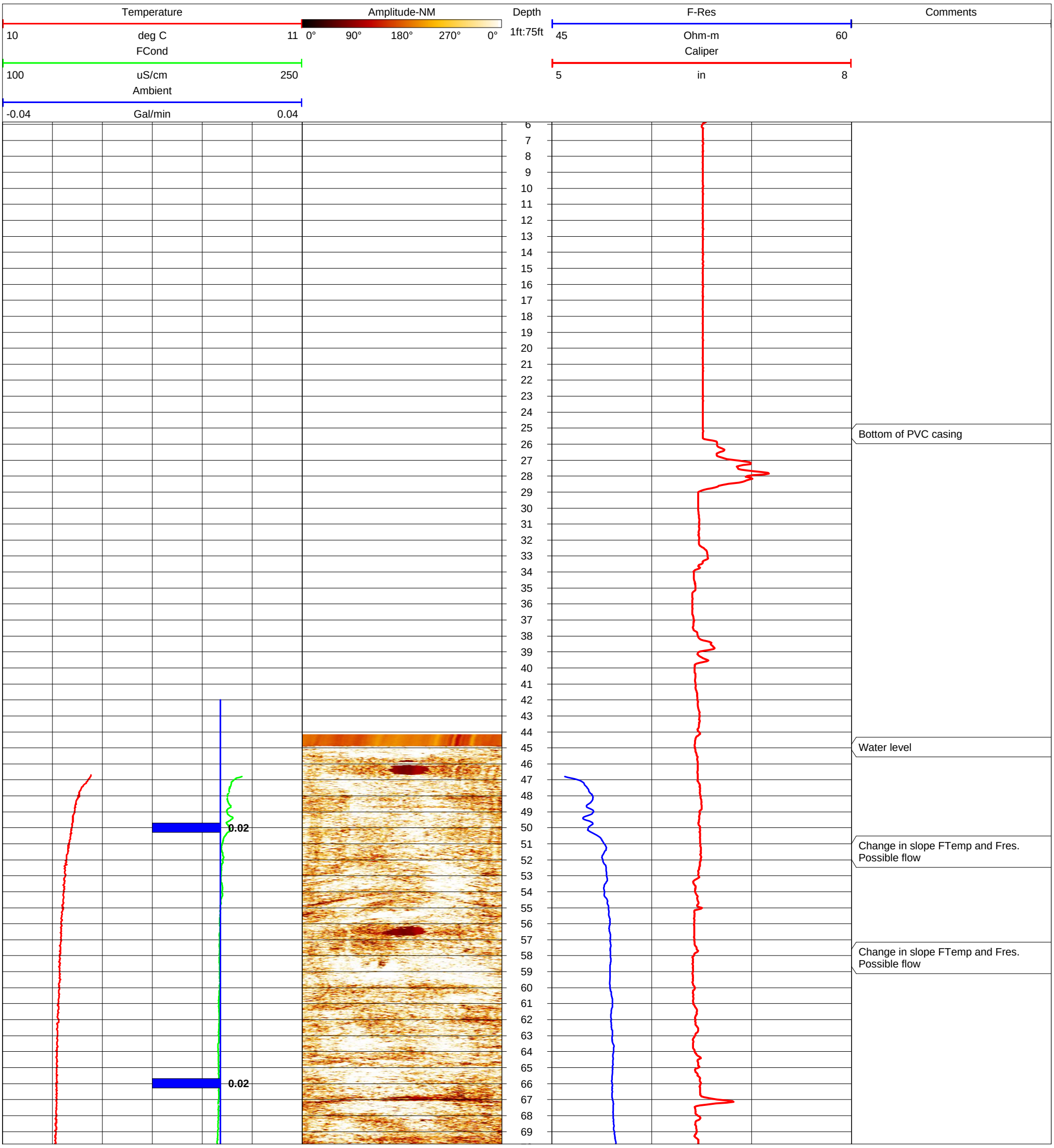
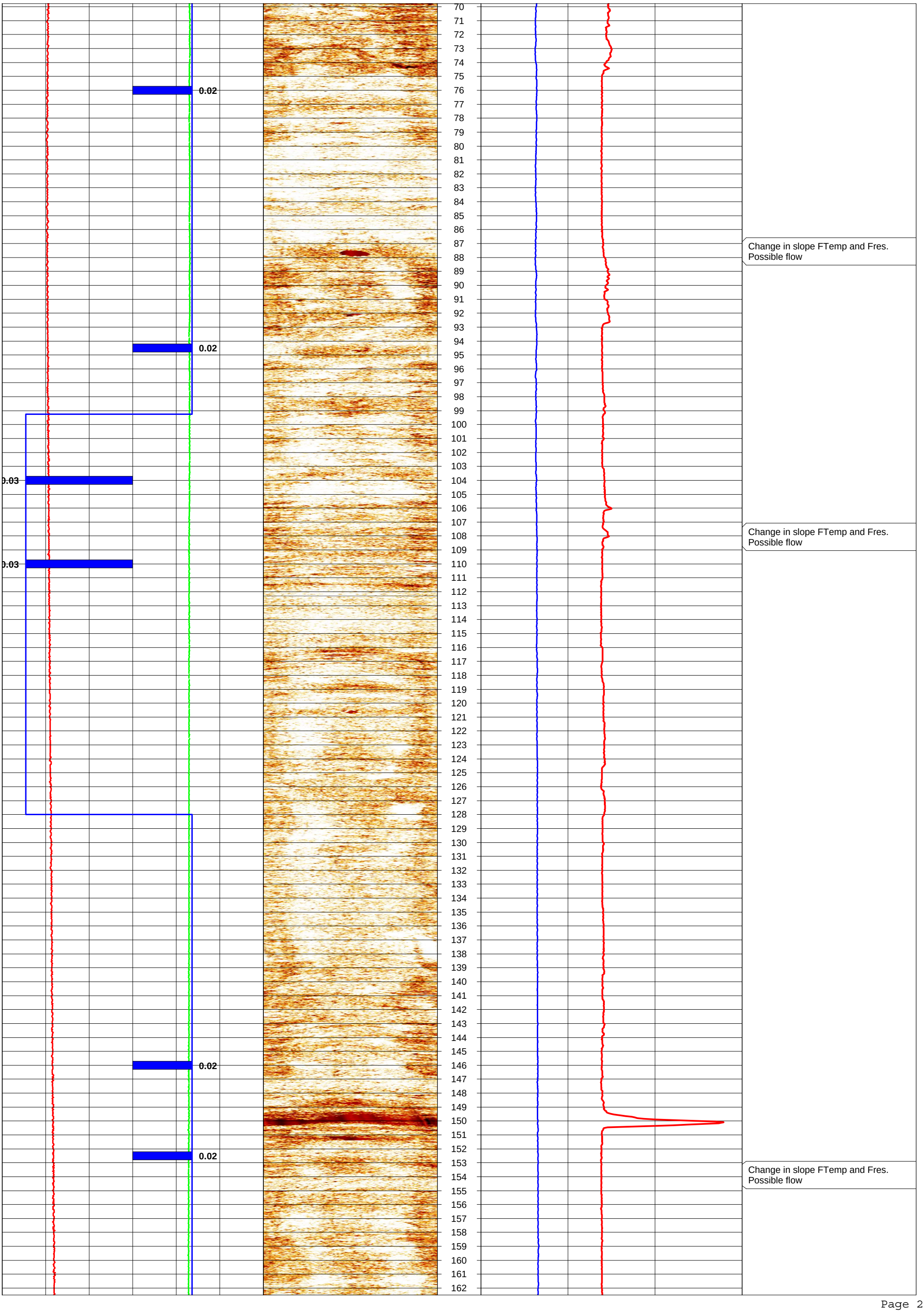
Hanover, MD
by
Enviroprobe Service, Inc.
Mount Laurel, NJ
Fluid and Caliper

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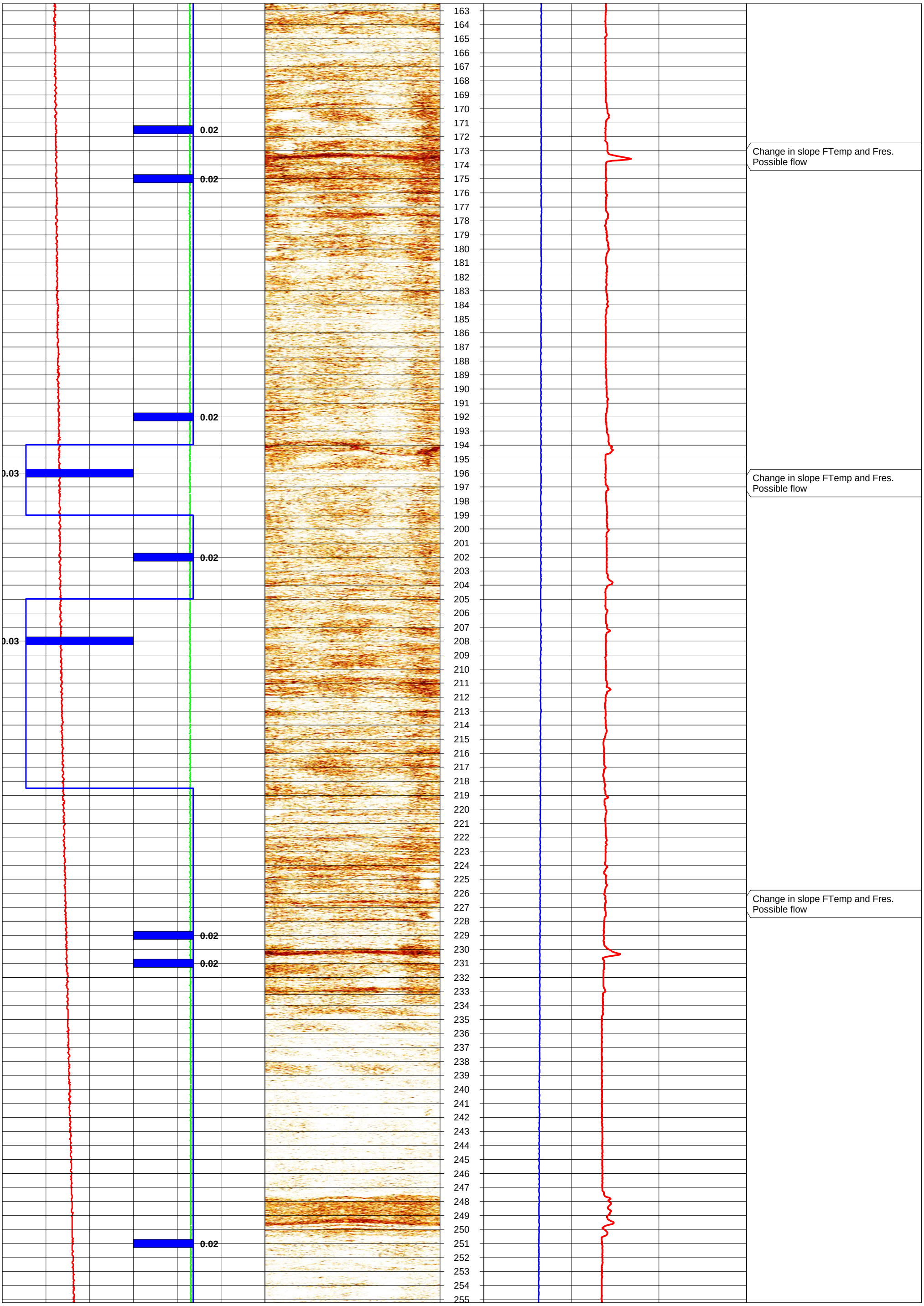
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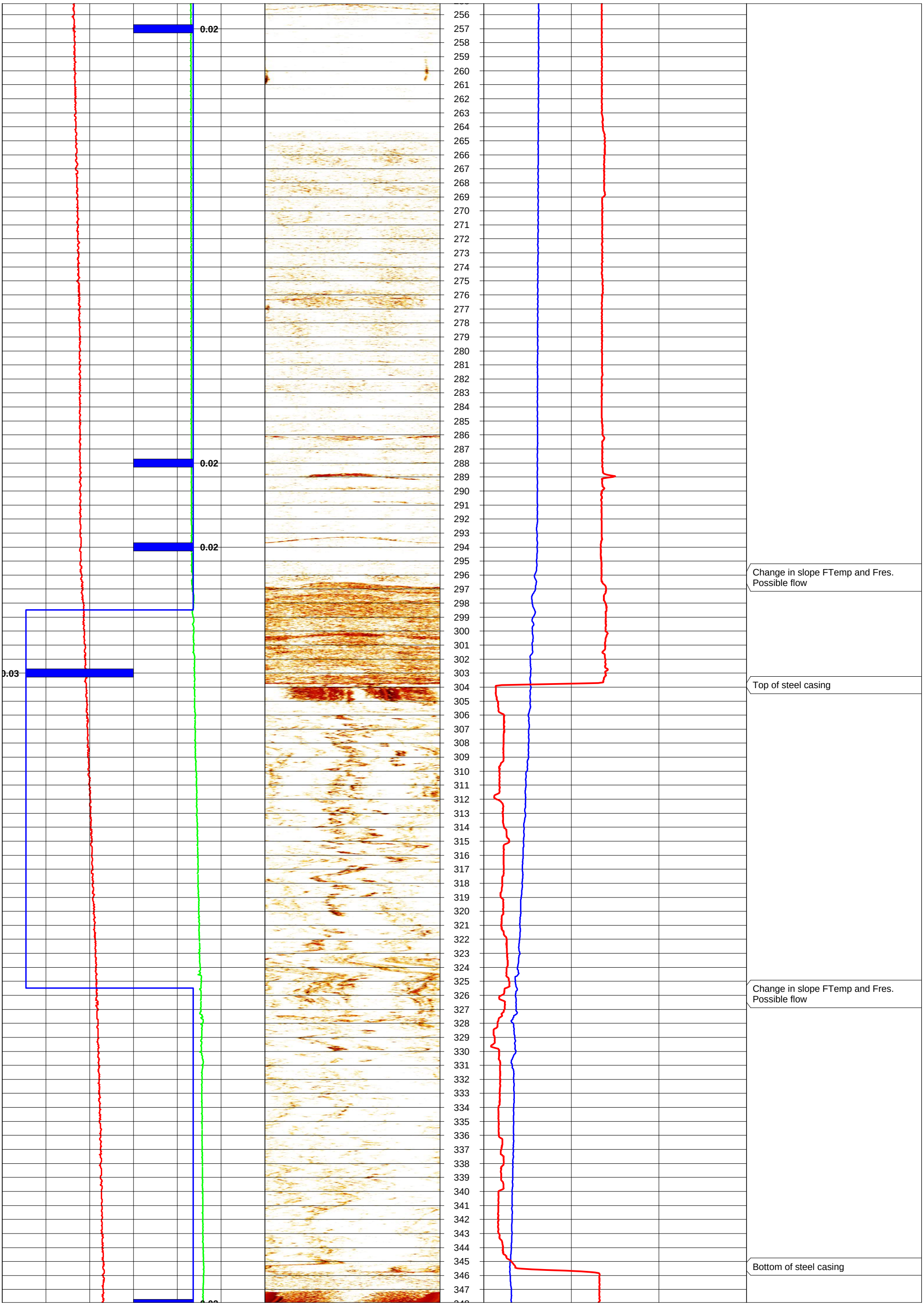
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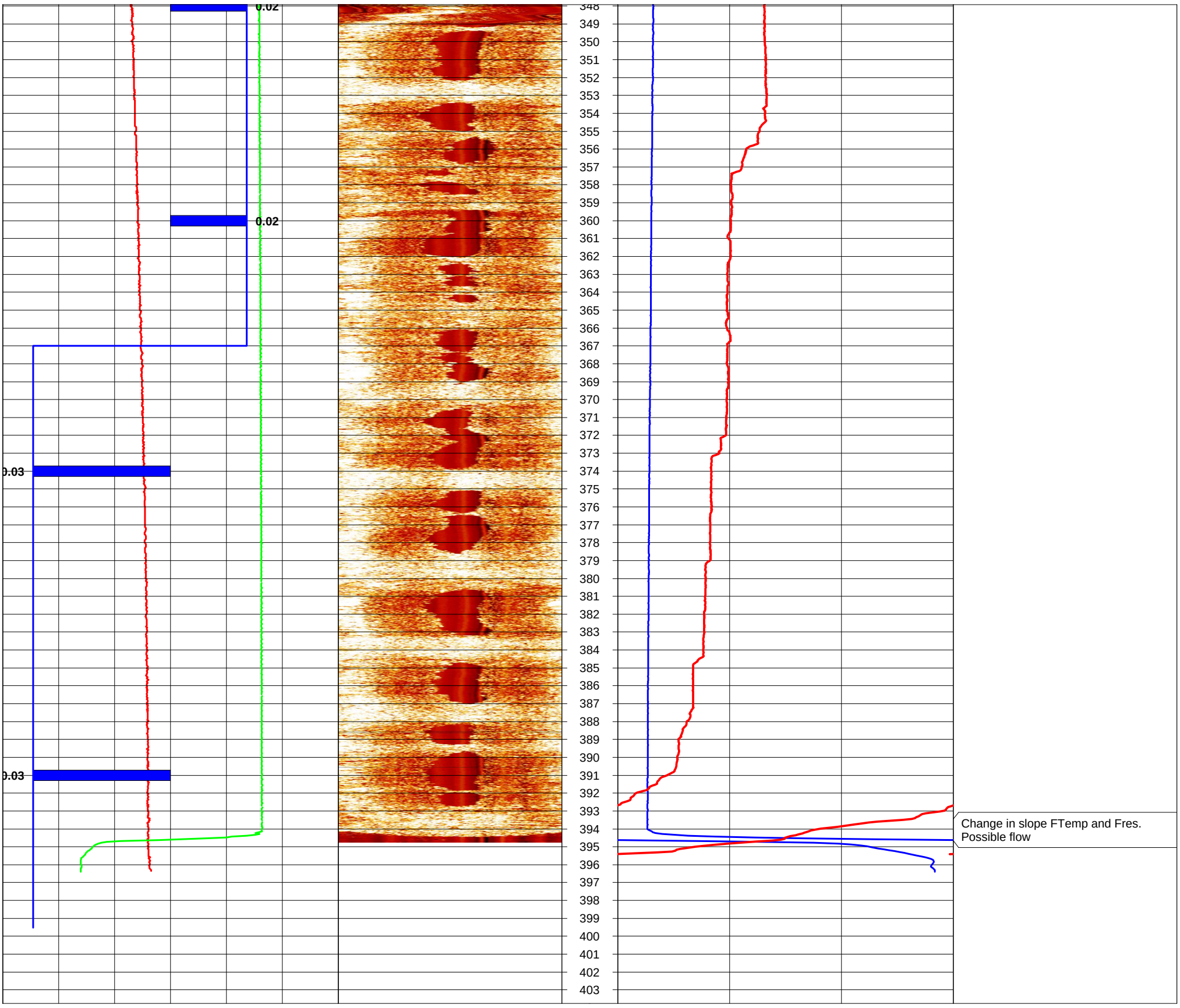
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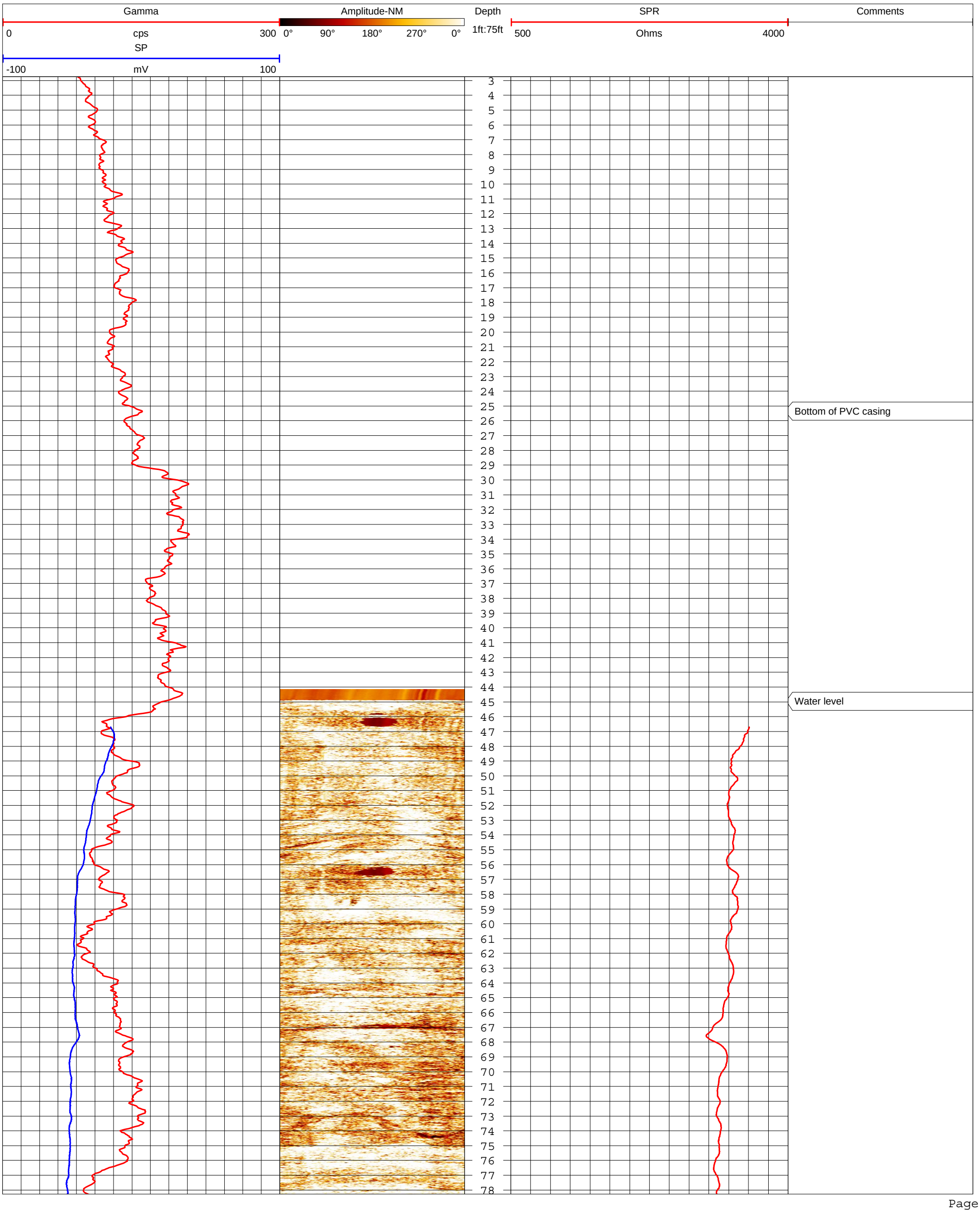
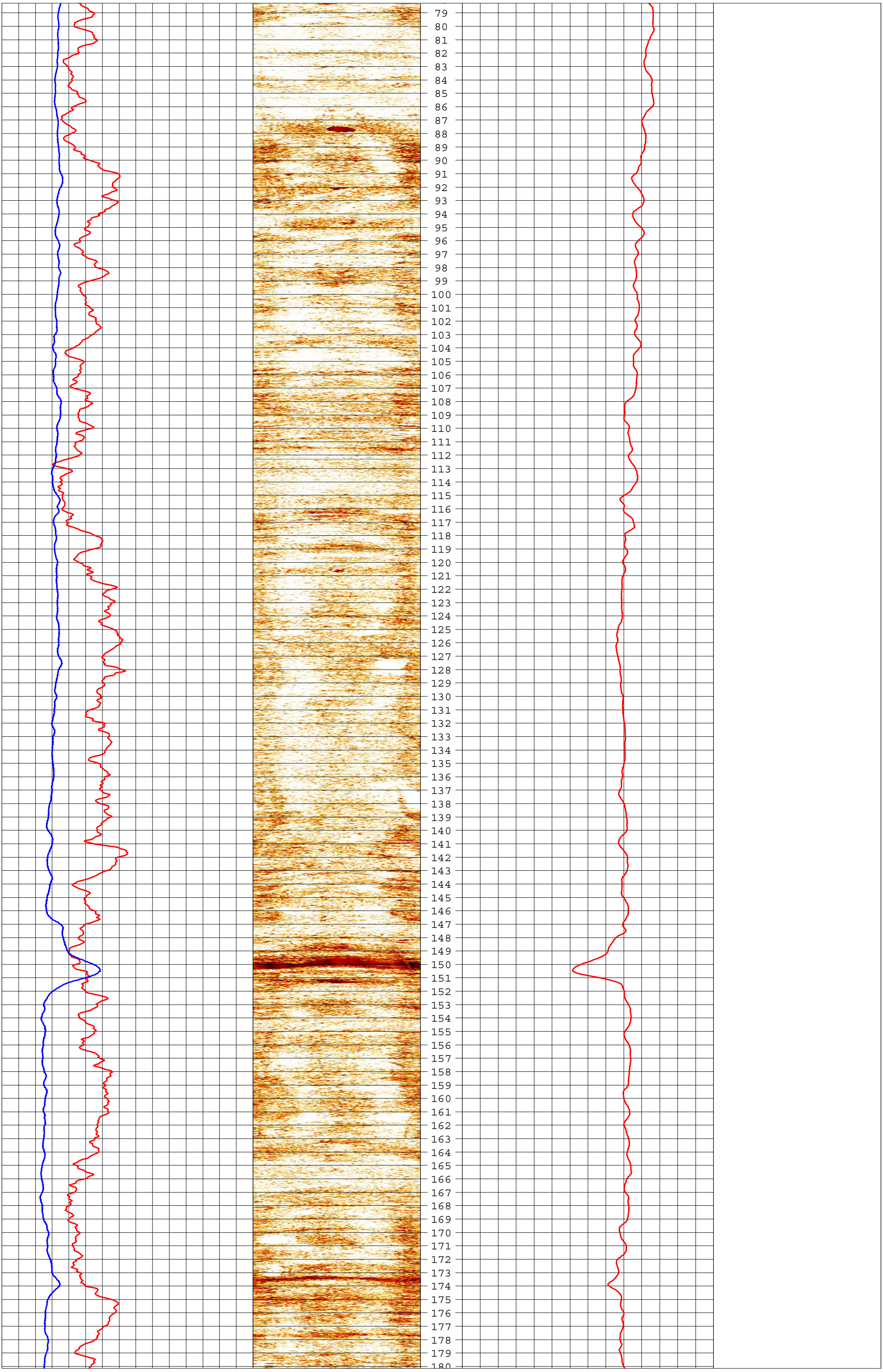
PW 3627A
Phoenix, MD
prepared for
Kleinfelder
Hanover, MD
by
Enviroprobe Service, Inc.
Mount Laurel, NJ
Electrical and Natural Gamma

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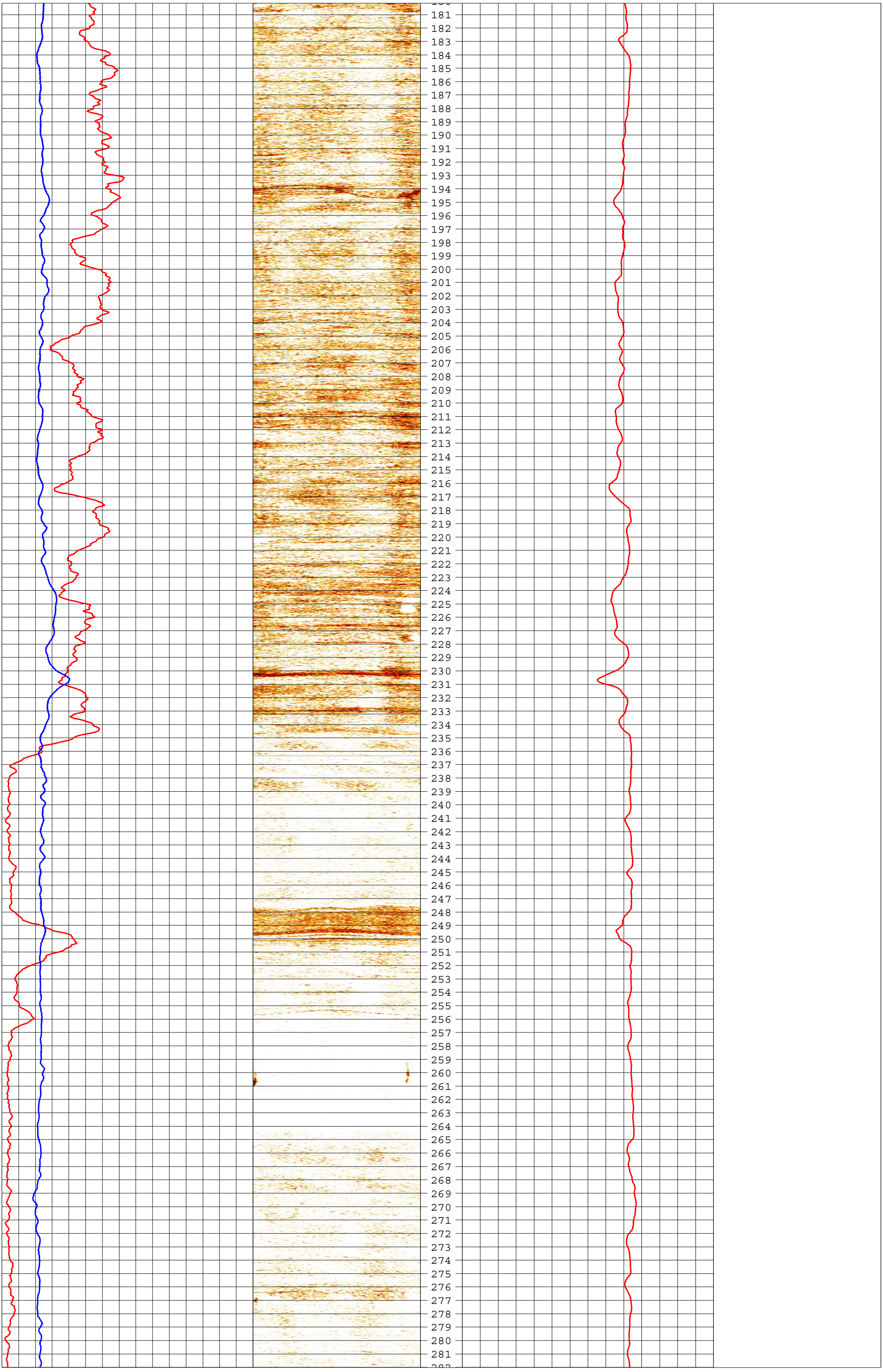
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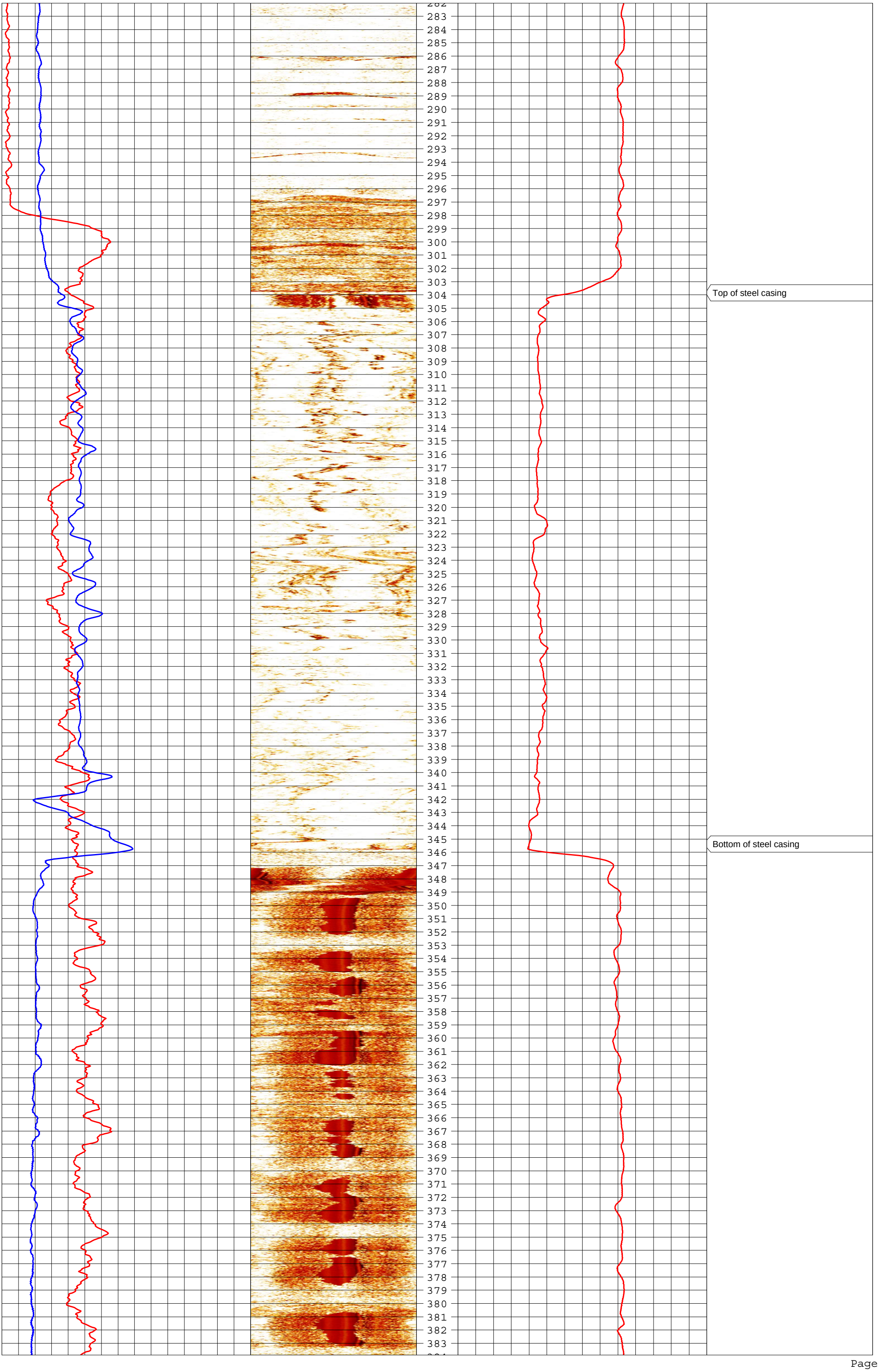
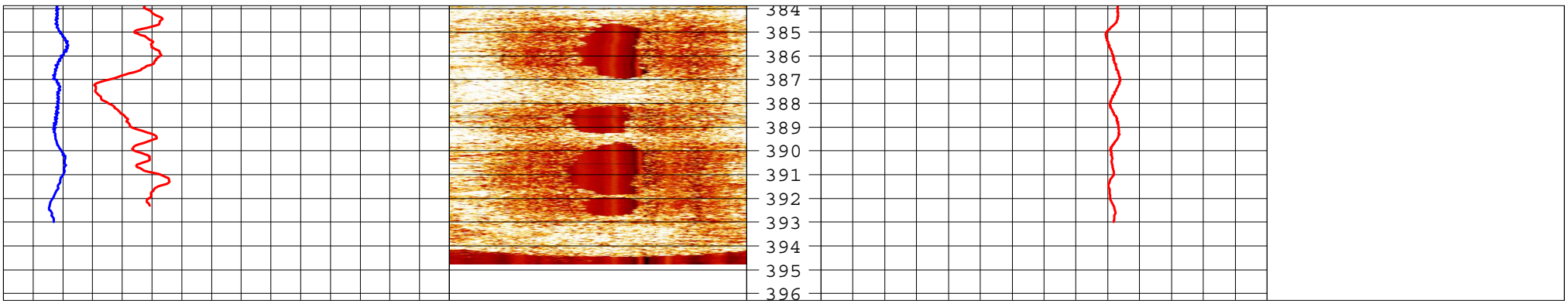

Top of steel casing
Bottom of steel casing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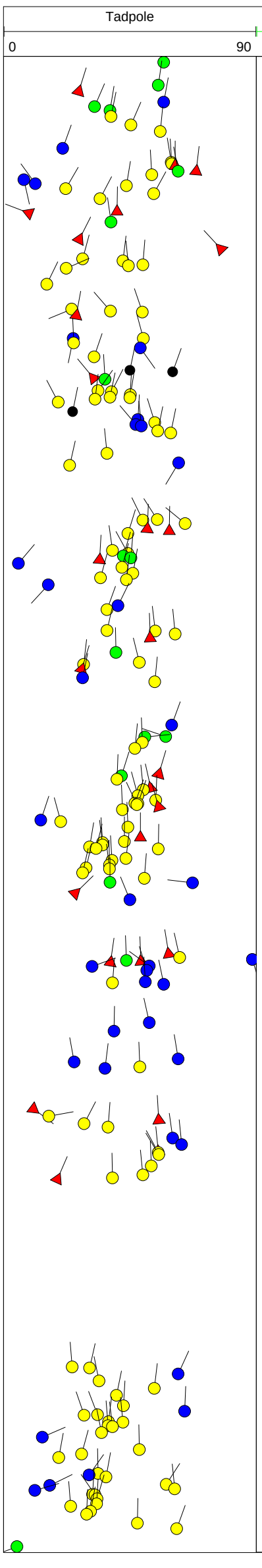
PW 3627A
Phoenix, MD
prepared for
Kleinfelder
Hanover, MD
by
Enviroprobe Service, Inc.
Mount Laurel, NJ
Rose Diagram



Open Fracture

Azimuth - Percent Interval (Count)

Depth

1ft:375ft

26
31
36
41
46
51
56
61
66
71
76
81
86
91
96
101
106
111
116
121
126
131
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141
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321
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366
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376
381
386
391

Partial Open Fracture

Azimuth - Percent Interval (Count)

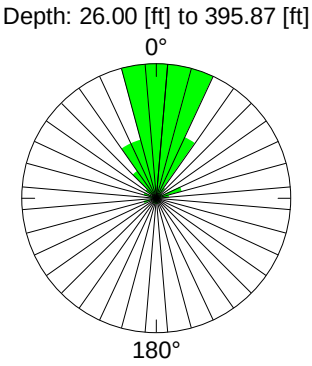
Closed Fracture

Azimuth - Percent Interval (Count)

Possible Bedding Plane

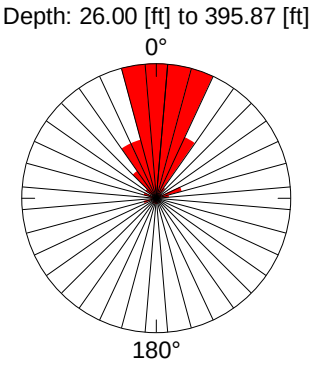
Azimuth - Percent Interval (Count)

Depth: 26.00 [ft] to 395.87 [ft]



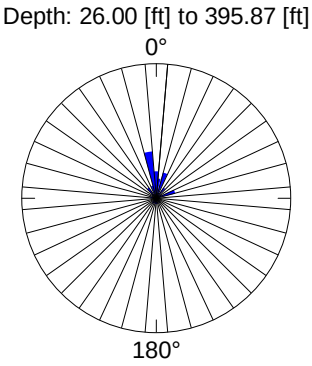
Components:	Azimuth
Counts:	198.00
Mean (3D):	0.88
Min:	0.08
Max:	359.84

Depth: 26.00 [ft] to 395.87 [ft]



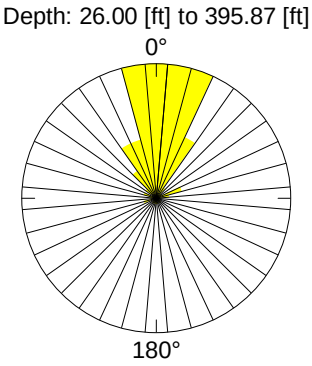
Components:	Azimuth
Counts:	198.00
Mean (3D):	0.88
Min:	0.08
Max:	359.84

Depth: 26.00 [ft] to 395.87 [ft]



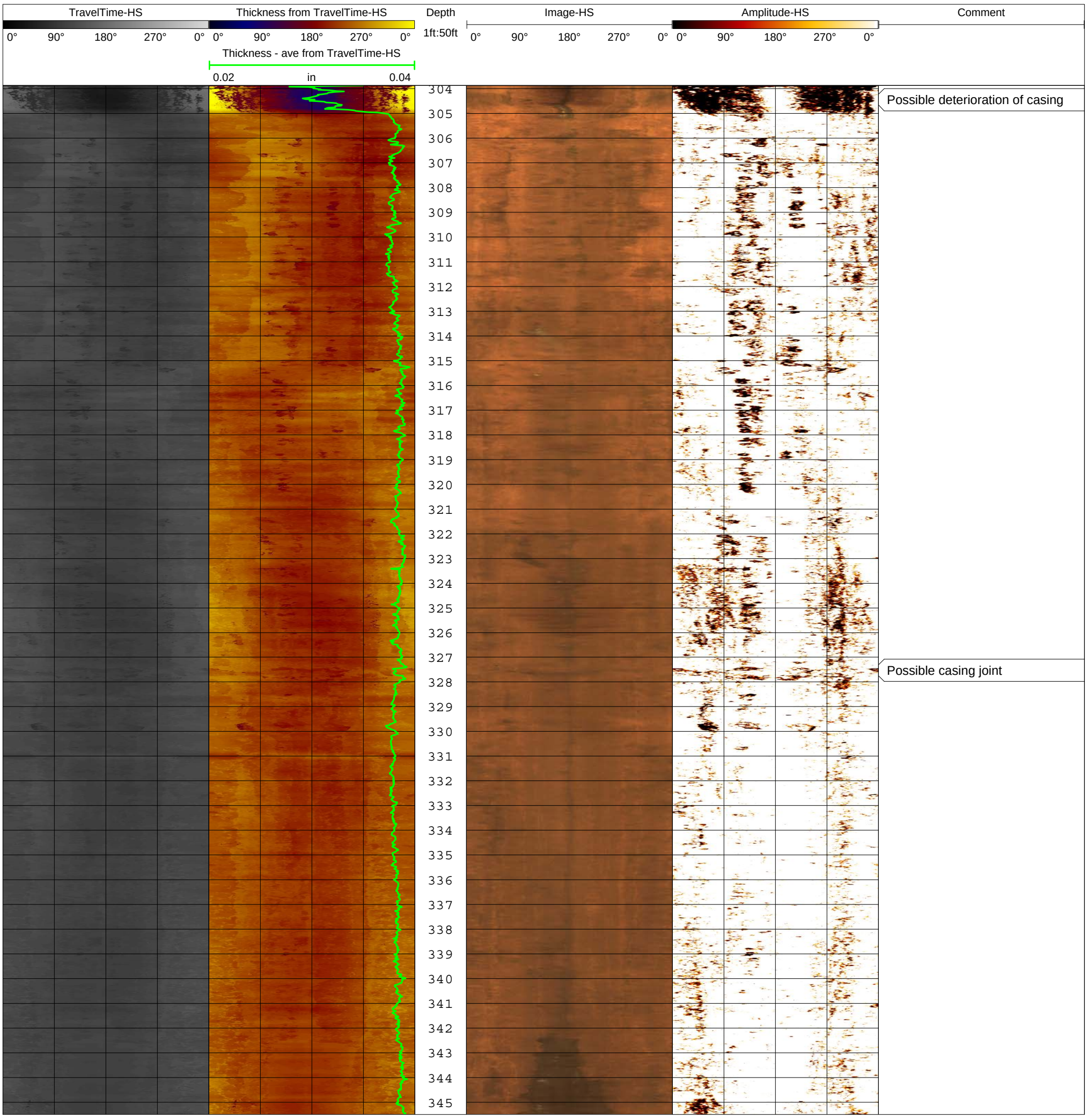
Components:	Azimuth
Counts:	37.00
Mean (3D):	359.21
Min:	1.19
Max:	356.09

Depth: 26.00 [ft] to 395.87 [ft]



Components:	Azimuth
Counts:	198.00
Mean (3D):	0.88
Min:	0.08
Max:	359.84

PW 3627A
Phoenix, MD
prepared for
Kleinfelder
Hanover, MD
by
Enviroprobe Service, Inc.
Mount Laurel, NJ
Casing



APPENDIX B

PW3627A	
Heatpulse Ambient	
Depth	Flow
ft	Gal./min.
50.00	0.018132
66.00	0.018127
76.00	0.018132
94.50	0.018132
104.00	-0.03277
110.00	-0.03276
146.00	0.018129
152.50	0.018127
171.50	0.018129
175.00	0.018129
192.00	0.018129
196.00	-0.03276
202.00	0.018129
208.00	-0.03277
229.00	0.018134
231.00	0.018134
251.00	0.018129
257.00	0.001165
288.00	0.018129
294.00	0.018129
303.00	-0.03276
348.00	0.018129
360.00	0.018129
374.00	-0.03277
391.00	-0.03276

PW3627A					
Fracture data					
Depth	Azimuth	Dip	Aperture	Fracture	
ft	deg	deg	inch/10		
27.5	334.69	57.08	152.33	Fracture Open	
33.12	8.11	55.12	45.93	Fracture Open	
34.75	17.18	26.74	0	Partial open fracture	
37.3	10.73	57.09	0	Fracture Closed	
38.43	23.75	32.45	62.84	Fracture Open	
39.4	9.1	37.95	39.77	Fracture Open	
40.9	11.44	38.35	0	Bedding Plane	
43	24.18	45.31	0	Bedding Plane	
44.63	6.08	55.77	0	Bedding Plane	
48.77	19.57	21	0	Fracture Closed	
52.17	350.48	59.68	0	Bedding Plane	
52.62	356.97	59.85	0	Bedding Plane	
53.05	359.84	61.15	0	Partial open fracture	
54.4	6.75	68.6	0	Partial open fracture	
54.44	349.57	62.27	0	Fracture Open	
55.27	356.25	52.75	0	Bedding Plane	
56.45	167.73	7.24	0	Fracture Closed	
57.47	324.01	11.38	0	Fracture Closed	
58.01	8.78	43.84	0	Bedding Plane	
58.72	30.36	22.2	0	Bedding Plane	
59.91	29.24	53.47	17.28	Bedding Plane	
61.2	27.94	34.44	0	Bedding Plane	
64.36	0.66	40.46	0	Partial open fracture	
64.79	291.43	8.99	0	Partial open fracture	
66.96	351.61	38.28	26.69	Fracture Open	
71.29	27.06	27.01	0	Partial open fracture	
73.6	316.98	77.46	0	Partial open fracture	
76.05	15.27	28.16	0	Bedding Plane	
76.55	6.57	42.45	0	Bedding Plane	
77.55	4.93	49.64	0	Bedding Plane	
77.75	354.46	44.47	0	Bedding Plane	
78.36	66.84	22.37	0	Bedding Plane	
82.37	26.15	15.5	0	Bedding Plane	
88.56	248	24.34	0	Bedding Plane	
88.93	319.18	38.08	0	Bedding Plane	
89.23	340.75	49.4	0	Bedding Plane	
90.04	10.4	25.88	0	Partial open fracture	
95.75	345.14	49.73	0	Bedding Plane	
95.8	191.21	24.79	0	Fracture Closed	
96.89	358.04	25.05	0	Bedding Plane	
98.08	144.66	48.71	0	Fracture Closed	
100.31	18.87	32.29	0	Bedding Plane	

103.67	11.94	44.94	0	Partial open fracture
103.98	19.73	60.31	0	Partial open fracture
105.66	320.48	32.06	0	Partial open fracture
105.91	356.52	36.12	0	Fracture Open
108.69	34.82	33.72	0	Bedding Plane
108.87	27.03	38.37	0	Bedding Plane
109.67	8.96	45.13	0	Bedding Plane
110.33	11.27	37.84	0	Bedding Plane
110.44	3.4	45.07	0	Bedding Plane
110.8	7.44	32.61	0	Bedding Plane
111.5	332.83	19.57	0	Bedding Plane
113.82	11.5	24.7	0	Bedding Plane
115.83	3.54	47.87	0	Fracture Closed
116.52	342.88	53.89	0	Bedding Plane
117.01	320	47.08	0	Fracture Closed
117.36	353.93	49.08	0	Fracture Closed
118.68	11.9	54.93	0	Bedding Plane
119.14	12.03	59.54	0	Bedding Plane
124.17	354.27	36.78	0	Bedding Plane
126.55	211.1	62.32	0	Fracture Closed
127.08	12.32	23.64	0	Bedding Plane
140.5	327.16	54.67	0	Bedding Plane
140.68	334.46	49.57	0	Bedding Plane
141.59	309.19	64.69	0	Bedding Plane
142.92	2.72	51.21	0	Partial open fracture
143.41	0.66	59.06	0	Partial open fracture
143.98	17.59	44.22	0	Bedding Plane
148.22	351.93	38.85	0	Bedding Plane
148.95	330.72	44.31	0	Bedding Plane
149.52	16.8	42.78	0	Fracture Open
149.99	4.19	45.27	59.5	Fracture Open
150.57	3.24	34.28	0	Partial open fracture
151.35	40.11	5.28	0	Fracture Closed
152.4	15.39	42.12	0	Bedding Plane
153.87	10.34	46.09	0	Bedding Plane
154.95	14.7	34.54	0	Bedding Plane
155.4	7.45	43.72	0	Bedding Plane
156.64	222.47	15.99	0	Fracture Closed
161.78	25.69	40.76	0	Fracture Closed
162.82	19.56	36.92	0	Bedding Plane
167.99	12.79	36.86	0	Bedding Plane
168.13	353.21	54.02	0	Bedding Plane
168.86	354.31	61.16	0	Bedding Plane
169.83	357.9	52.32	0	Partial open fracture
173.45	358.49	40	31.41	Fracture Open
175.91	346.57	48.3	0	Bedding Plane
176.35	7.34	28.54	0	Bedding Plane

177.55	17.52	27.87	0	Partial open fracture
179.68	11.86	28.19	0	Fracture Closed
180.69	5.32	53.82	0	Bedding Plane
191.32	19.28	59.88	0	Fracture Closed
194.23	288.35	57.76	0	Fracture Open
194.27	83.8	50.24	0	Fracture Open
195.66	357.26	49.43	0	Bedding Plane
197.12	5.59	46.7	0	Bedding Plane
203.53	16.18	55.31	0	Partial open fracture
203.95	17.33	42.04	0	Fracture Open
204.78	2.58	40.39	0	Bedding Plane
206.97	347.55	52.37	0	Partial open fracture
207.35	354.67	49.71	0	Bedding Plane
208.79	344.9	47.75	0	Bedding Plane
209.9	2.08	54.17	0	Bedding Plane
210.65	19.5	46.84	0	Bedding Plane
210.8	19.16	47.8	0	Bedding Plane
210.99	334.67	47.4	0	Bedding Plane
211.72	343.29	55.34	0	Partial open fracture
212.23	357.29	42.3	0	Bedding Plane
214.84	18.07	13.35	0	Fracture Closed
215.27	344.9	20.35	0	Bedding Plane
216.6	357.69	44.21	0	Bedding Plane
219.11	0.08	48.76	0	Partial open fracture
220.19	0.46	43	0	Bedding Plane
220.45	356.21	35.18	0	Bedding Plane
221.02	352.54	35.31	0	Bedding Plane
221.53	9.72	30.6	0	Bedding Plane
221.83	13.98	32.93	0	Bedding Plane
222.04	1.59	55.03	0	Bedding Plane
224.36	6.51	43.62	0	Bedding Plane
224.82	356.82	38.58	0	Bedding Plane
225.95	359.13	37.71	0	Bedding Plane
226.63	13.02	29.36	0	Bedding Plane
226.94	353.41	37.73	0	Bedding Plane
227.92	13.25	28.14	0	Bedding Plane
229.19	4.6	50.11	0	Bedding Plane
230.23	0.38	37.88	35.42	Fracture Open
230.33	277.18	67.37	0	Fracture Closed
232.89	45.67	25.59	0	Partial open fracture
234.57	337.45	44.91	0	Fracture Closed
247.93	351.3	58.78	0	Partial open fracture
248.83	347.47	62.71	0	Bedding Plane
249.29	162.29	88.58	0	Fracture Closed
249.49	357.96	43.68	31.75	Fracture Open
249.84	357.35	48.93	0	Partial open fracture
250.02	8.12	38.08	0	Partial open fracture

250.93	306.11	51.89	0	Fracture Closed
251	70.07	31.5	0	Fracture Closed
252.02	342.57	51.08	0	Fracture Closed
254.82	356.09	50.48	0	Fracture Closed
255.14	4.94	38.84	0	Bedding Plane
255.5	348.27	57.05	0	Fracture Closed
264.96	347.6	51.9	0	Fracture Closed
267.05	1.19	39.37	0	Fracture Closed
273.92	350.22	62.13	0	Fracture Closed
274.69	349.06	25.16	0	Fracture Closed
275.91	358.04	48.61	0	Bedding Plane
276.28	6.95	36.15	0	Fracture Closed
286.27	126.95	10.69	0	Partial open fracture
288.03	79.26	16.09	0	Bedding Plane
289.05	356.7	55.28	0	Partial open fracture
289.9	27.78	28.64	0	Bedding Plane
290.81	4.02	37.27	0	Bedding Plane
293.51	351.97	60.21	0	Fracture Closed
295.06	353.87	63.5	0	Fracture Closed
296.78	354.27	55.07	0	Partial open fracture
297.08	331.03	55.03	0	Bedding Plane
297.58	328.62	55.23	0	Bedding Plane
300.34	358.01	52.61	16.21	Bedding Plane
302.58	354.45	49.6	0	Bedding Plane
303.35	359.18	38.72	0	Bedding Plane
303.74	24.03	19.2	0	Partial open fracture
350.02	355.43	24.46	0	Bedding Plane
350.32	12.37	30.7	0	Bedding Plane
351.75	24.42	62.17	0	Fracture Closed
353.52	348.25	34.08	0	Bedding Plane
355.32	6.58	53.75	0	Bedding Plane
357.04	11.95	40.13	0	Bedding Plane
359.63	3.45	42.73	27.55	Bedding Plane
360.99	2.35	64.41	0	Fracture Closed
361.86	338.65	33.47	0	Bedding Plane
362.03	341.16	28.73	0	Bedding Plane
363.57	7.37	37.39	0	Bedding Plane
363.74	354.44	42.46	0	Bedding Plane
364.54	355.15	37.14	0	Bedding Plane
364.85	352.55	38.75	0	Bedding Plane
366.36	348.89	34.91	0	Bedding Plane
367.37	66.35	13.76	0	Fracture Closed
370.52	358.51	48.34	0	Bedding Plane
371.63	14.61	27.78	0	Bedding Plane
372.5	10.51	19.63	0	Bedding Plane
376.41	359.4	33.62	0	Bedding Plane
376.71	35.87	30.44	0	Fracture Closed

377.24	10.66	36.42	0	Bedding Plane
379.16	32.33	57.89	0	Bedding Plane
379.38	63.48	16.56	0	Fracture Closed
380.18	354.2	60.95	0	Bedding Plane
380.63	74.01	11.16	0	Fracture Closed
381.51	3.09	31.75	0	Bedding Plane
381.72	325.39	32.55	0	Bedding Plane
382.65	16.42	33.39	0	Bedding Plane
383.9	3.67	33.18	0	Bedding Plane
384.53	355.27	23.85	0	Bedding Plane
385.79	9.92	31.08	0	Bedding Plane
386.44	2.33	29.55	0	Bedding Plane
388.67	1.62	47.65	0	Bedding Plane
390.01	19.54	61.72	0	Bedding Plane
394.46	249.23	4.81	31.59	Fracture Open

ATTACHMENT 2

Borehole Summary and Proposed HydraSleeve™ Intervals

MW-189D / 3627A Concentration Profile and Geophysical Correlation

MW-189D				3627A Southside	Notable 3627A Southside Borehole Geophysical Information
Sample Depth (ft-toc)	**Feb 2017 MtBE (µg/L)**	**Mar 2017 MtBE (µg/L)**	**Apr 2017 MtBE (µg/L)**	**Corresponding Depth* (ft-toc)**	
79	7	8	2	102	Open fracture at 66.96 ft-toc
91.5	15	4	5	114.5	---
118	39	13	9	141	---
122	38	16	4	145	Open fracture at 149.99 ft-toc
139	25	21	9	162	---
161	22	21	10	184	Open fracture at 173.45
216	110	39	15	239	Open fracture at 230.23 ft-toc (3.5-inch aperture) w/ strike azimuth 90.38° (East); Partial open fracture at 247.93 ft-bgs w/ strike azimuth 81.3° (NE); Open fracture at 249.49 ft-toc (3.2-inch aperture) w/strike azimuth 87.96° (NE).
257	68	48	20	280	Partial open fracture at 286.27 ft-bgs w/ strike azimuth 216.95° (SW) [36.95° NE]
278	170	16	26	301	2nd highest Feb 2017 conc in MW-189D (170 ug/L), corresponds to open bedding plane (1.6-inch aperture) w/ strike azimuth 88.01° (NE) at 300.34 ft-toc.
315	190	55	21	338	Max. Feb 2017 Concentration in MW-189D, corresponds to cased off interval in 3627A (303.9 to 345.5 ft-toc).
357	55	65	21	380	---
374	110	85	14	397	Max. March 2017 conc in MW-189D, corresponds to open fracture (3.2-inch aperture) in 3627A at 394.46 ft-toc.
		Approximate corresponding depth at 3627A Southside Avenue based on elevation difference relative to MW-189D.			

Based on this analysis, HydraSleeve™ samples are proposed at the following depths within the 3627A Southside private supply well:

- 66.96 feet below top of casing (open fracture)
- 149.99 ft-toc (open fracture)
- 173.45 ft-toc (open fracture)
- 231 ft-toc (open fracture)
- 250 ft-toc (open fracture)
- 287 ft-toc (partial open fracture)
- 301 ft-toc (open bedding plan)
- 346 ft-toc (bottom of blank casing in borehole)
- 370 ft-toc (depth of supply well pump)
- 395 ft-toc (open fracture)