CORE ENVIRONMENTAL CONSULTANTS

46-11 54th Avenue, Maspeth, NY 11378 ◆ Phone: 718-786-4730 ◆ Fax: 718-786-4764
2312 Wehrle Drive, Buffalo, NY 14221 ◆ Phone: 716.204.8054 ◆ Fax: 716.204.8557

December 6, 2013

Mr. Ralph Keating
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233

Re: Phase II Remedial Investigation/Feasibility Study Work Plan
Former National Rubber Adhesives Site
38-25 9th Street, Long Island City, New York
Site ID 2-41-028

Dear Mr. Keating,

Enclosed please find the Phase II Remedial Investigation/Feasibility Study Work Plan for the above-referenced property in accordance with the Order on Consent and Administrative Settlement issued by NYSDEC.

If you have any questions regarding this document, please contact me immediately at (716) 204-8054.

Respectfully,
CORE ENVIRONMENTAL CONSULTANTS, INC.

Alyssa Cruikshank
Geologist

cc: Nathan Freeman, NYSDOH (Hard Copy and Electronic Copy)
James Quinn, NYSDEC (Electronic Copy Only)
Alali M. Tamuno, S.J.D., NYSDEC (Correspondence Only)

J:\Argento Properties\National Rubber BF Site\Remedial Investigation_Feasbility Study\RIFS Work Plan\Phase II Work Plan\RI Work Plan Transmittal Letter 120613.docx

CORE ENVIRONMENTAL CONSULTANTS
46-11 54th Avenue Maspeth, NY 11378 ◆ Phone: 718.762.0544 ◆ Fax: 718.762.0545

December 6, 2013

Mr. Ralph Keating
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233

RE: Phase II Remedial Investigation/Feasibility Study Work Plan
Former National Rubber Adhesives Site
State ID No. 2-41-028

Dear Mr. Keating:

Hamil Stratten Properties, LLC retained CORE Environmental Consultants, Inc. (CORE) to prepare this Phase II Remedial Investigation/Feasibility Study (RI/FS) Work Plan for the former National Rubber Adhesives Site (the "Site"), Site 2-41-028. This Phase II RI/FS Work Plan has been prepared in accordance with the requirements set forth in the Order on Consent (Index No. W2-1156-11-04) effective February 19, 2013. This Phase II Work Plan identifies the processes for further delineation of the environmental impacts from a potential release at the Site.

CORE implemented a Department-approved Phase I Work Plan to investigate subsurface conditions in September 2013. A membrane interphase probe (MIP) survey was conducted to preliminarily screen subsurface conditions across the Site to identify areas requiring further delineation.

MEMBRANE INTERFACE PROBE SITE ASSESSMENT RESULTS

Between September 30 and October 4, 2013, Columbia Technologies, LLC and CORE were on Site to advance a total of 34 MIP points. An MIP survey is performed by advancing a probe equipped with a heated, permeable membrane to refusal via direct-push. The membrane allows for diffusion of VOCs across the concentration gradient into the equipment, where it travels by carrier gas to an attached photoionization detector (PID) and flame ionization detector (FID). The MIP also uses direct sensing to measure electrical conductivity of the soils for use in conjunction with the PID and FID depth profiles.

Refusal was encountered at shallow depths in several locations. Where time permitted, attempts were made to advance the probe at secondary locations proximal to those where shallow refusal was encountered; these secondary borings are identified with A and B (e.g. – 12A, 12B) designations. Approximate locations of MIP points are presented in Figure 1.

Aromatic compounds (e.g. – benzene, toluene) were detected via the PID and FID at various levels at MIP points 1, 2, 3, 4, 5A, 6A, 10, 16, 18, 20, 21, and 25. Comparatively, the highest levels were detected at MIP point 25 at depths of approximately 9.5 to 10.5 feet below ground surface (bgs). MIP 25 is located in the southwestern-most corner of the building where elevated concentrations of toluene were previously detected in groundwater samples collected from monitoring well MW-2/GW-7. Lesser concentrations were detected at similar depths in MIP points 3 and 4A in the north/northwestern portion of the building. Shallower detections were noted at varying concentrations at points 1, 2, 5A, 6A, 10, 16, 18, 20, and 21. Common-scale MIP survey logs are included as Attachment A; individual-scale logs are included as Attachment B.

During the advancement of MIP point 7 on October 3, 2013, on-Site personnel encountered an underground storage tank (UST). The tank was empty and the bottom was not punctured. Based on olfactory indications at the time of the incident, it is anticipated that the tank formerly contained methyl ethyl ketone (MEK). The incident was called into the New York State (NYS) Spill Hotline on October 3, 2013 and was assigned spill number 1306971. The spill was closed on October 4, 2013.

PHASE II REMEDIAL INVESTIGATION SCOPE OF WORK

UNDERGROUND STORAGE TANK CLOSURE

The UST encountered during MIP Site Assessment activities will be closed in place in compliance with New York State Department of Environmental Conservation (NYSDEC) DER-10/Technical Guidance for Site Investigation and Remediation (DER-10) guidelines.

Ground Penetrating Radar Survey

The on-Site MEK and other known USTs were expected to be located in the former courtyard area south of MIP 7 versus the UST encountered closer to the northwestern corner of the building. CORE will conduct a ground penetrating radar (GPR) survey in the area of the former courtyard and in the area in which the UST was encountered. It is expected that the GPR will assist in identifying the location of any additional USTs remaining on-Site.

DER-10 Compliant Underground Storage Tank Closure

Due to the location under the building located on-Site and the associated physical constraints of working inside the structure, the UST encountered during the MIP Site Assessment and other potential on-Site USTs will be abandoned in place.

Concrete slab and soil located above the UST(s) will be removed utilizing a small backhoe. Soil and concrete removed from the excavation area will be screened with a photo-ionization detector (PID) and stockpiled to be used as backfill or for off-Site disposal. To determine

whether a UST was properly abandoned in place, the UST will be opened to verify its contents. Properly abandoned UST(s) will be re-sealed. If any product is noted in the UST, a confirmatory sample will be collected for identification purposes and a vacuum truck will be used to remove any remaining product.

Prior to proper closure of the UST(s), confirmatory soil samples will be collected to determine if the UST is the source of impacts to the subsurface. CORE will retain a NYS Licensed drilling contractor to advance direct-push soil borings via pneumatic driven macrocore samplers along the centerline of the UST(s). Soil samples will be collected from immediately below the bottom of the UST. Soil samples will also be collected from the perimeter of the UST(s) via direct-push soil borings. Borings advanced around the tank perimeter will be backfilled with grout to surface. Soil samples collected for analysis will be analyzed for Target Compound List (TCL) VOCs, TCL semi-volatile organic compounds (SVOCs), TCL pesticides and Aroclors, heptane and hexane, and Target Analyte List (TAL) metals and cyanide.

The UST(s) will be filled with lightweight concrete and sealed. If soil from the excavation is impacted and unable to be used as backfill, the remaining area will be backfilled with clean fill. Concrete will be used to finish at the surface to replace the disturbed area of slab.

SOIL INVESTIGATION

Following proper closure of the on-Site UST(s) and collection of associated soil samples, CORE will advance 14 additional soil borings to further delineate the vertical and horizontal extent of subsurface impacts. Six of these borings will be converted to groundwater monitoring wells as discussed in the following section.

CORE will retain a NYS Licensed drilling contractor to advance direct-push soil borings via pneumatic driven macrocore samplers in areas requiring additional soil characterization. Borings will be continuously sampled for characterization and PID screening purposes. Soil sample collection from each boring will be determined in-field based on visual and olfactory indications of impacts to the subsurface as well as potential elevated PID readings. If there are no indications of impacts in the boring, the soil immediately above the saturated zone will be collected for analysis. Direct-push borings will be advanced to refusal. Borings will be abandoned by tremie-grouting the borehole.

Results from the MIP survey indicated aromatic compounds at various depths at MIP points 1 through 4, installed along the northern edge of the building. Soil borings will be installed near each of these locations for the purpose of determining the constituents present at each location. A boring will be installed in the vicinity of the floor drains in the northern portion of the building to delineate elevated readings noted in MIP points 5A and 6A at depths between 6 and 8 feet bgs.

Two borings will be installed in the former courtyard area, one each in upgradient and downgradient locations of the expected UST positions. Refusal in this area was encountered at shallow depths during the MIP survey and additional data is needed. Additional borings will be installed in the central portion of the building to delineate potential impacts in those areas following shallow refusal during the MIP survey. Two borings will be installed in proximity to MIP points 20 and 25 to delineate elevated readings encountered at both locations.

Refer to Figure 2 for proposed soil boring locations. All soil samples will be transported to York Analytical Laboratories, Inc. (York) of Stratford, Connecticut and will be analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and Aroclors, heptane and hexane, and TAL metals and cyanide. An analytical program summary is presented in Table 1.

GROUNDWATER INVESTIGATION

Six of the previously identified soil boring locations will be converted to groundwater monitoring wells. Soil borings to be converted to groundwater monitoring wells will be advanced to refusal via direct-push. The boring will be reamed with 4 ¼ or 6 ¼-inch hollow stem augers to allow for monitoring well installation. Three monitoring wells to be installed along the interior eastern wall of the building will provide upgradient groundwater monitoring data. Two additional monitoring wells will be installed along the interior western wall of the building to fill in data gaps in downgradient groundwater monitoring data. Proposed monitoring well locations are presented on Figure 2.

Overburden Monitoring Wells

Overburden monitoring wells will be constructed with 2-inch schedule-40 polyvinyl chloride (PVC) pipe. Up to a 10-foot well screen (0.020 slot) will intersect the water table. No. 2 size sand pack will be placed in the annular space to a minimum of 2 feet above the screen. A 1-foot bentonite seal will be placed on top of the sand pack, and the well will be grouted to the surface. Each well will be completed with flush-mount well boxes at the surface. A Monitoring Well Construction Plan is included as Figure 3.

Bedrock Monitoring Wells

If subsurface conditions indicate that a monitoring well should be advanced into bedrock, the boring will be reamed to the appropriate size and a steel casing will be grouted in place to minimize downward migration of potential impacts during advancement of the boring into bedrock. The grout will be allowed to cure overnight, after which the boring will be advanced to the appropriate depth to intersect the water table. If conditions permit, bedrock monitoring wells will remain open-hole. If necessary to maintain monitoring well integrity, the bedrock wells will be constructed with 10 feet of 2-inch 0.020 slot well screen and 2-inch schedule-40 PVC riser to the surface.

Monitoring Well Development and Sampling

All existing and newly installed groundwater monitoring wells will be developed prior to sample collection. New groundwater monitoring wells will be developed no sooner than 24 hours following installation. A submersible pump will be used to purge each well until temperature, conductivity, pH, and turbidity of the purge water have stabilized as measured on a Horiba U-10. All readings will be recorded on a Well Development Log.

Two rounds of groundwater samples will be collected from all newly-installed and four existing on-Site groundwater monitoring wells. The initial round of groundwater samples will be collected to establish a data baseline, and will occur within two weeks of monitoring well development. The second round of samples will be collected approximately three months after the baseline samples. Depth to water measurements will be measured prior to the commencement of groundwater sampling and will be used to create groundwater elevation contour maps to evaluate groundwater movement at the Site. Water quality parameters will be measured using a Horiba U-10 and recorded on a Monitoring Well Sampling Log until stabilized to within ten percent over a period of three consecutive readings. In addition to on-Site wells, NYSDEC off-site monitoring wells located in the vicinity will be sampled to provide a full set of contemporaneous data which can be used to more accurately evaluate toluene plume location and migration. Groundwater samples will be transported to York for analysis for TCL VOCs, TCL SVOCs, TCL pesticides and Aroclors, heptane and hexane, and TAL metals and cyanide.

INDOOR AIR QUALITY AND SUB-SLAB VAPOR SAMPLE COLLECTION

All field activities will be performed in accordance with NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (2006). IAQ and sub-slab vapor samples will be used to assess the potential exposures for the on-Site building and personnel.

Indoor Air Quality

The IAQ survey will include the following tasks:

- A pre-sample collection building inspection of the building, identifying potential cracks in the slab and locating all rooms, closets, and storage areas, etc.;
- A chemical inventory of all chemicals maintained and used by on-Site personnel;
- Collection of four IAQ samples; and
- Collection of an ambient outdoor air sample for comparison purposes.

Building Inspection and Chemical Inventory

Prior to sample collection, a thorough inspection of the building will be performed. During this inspection CORE will identify cracks in the building slab, drains or sumps, or other irregularities that could contribute to vapor intrusion. During this inspection, an inventory of all chemicals

kept by on-Site businesses will be recorded. A photoionization detector (PID) capable of detecting low levels of VOCs will be used to screen indoor air for organic vapors.

Indoor Air and Ambient Sample Collection

During sample collection, the heating, ventilation, and air conditioning (HVAC) system will run in a manner consistent with normal building operations. This will provide the most accurate simulation of potential exposure of workers on a regular basis. An ambient air sample will be collected from a location outside the exterior walls of the building to provide background information helpful in determining what, if any, influence outdoor conditions have on IAQ.

IAQ and ambient air samples will be collected using individually certified clean 6-liter Summa® canisters equipped with pre-calibrated flow controllers over an eight hour time period. The samples will be taken between 3 to 5 feet above ground surface to most accurately simulate the breathing zone of on-Site personnel. The initial vacuum of each Summa® canister will be recorded immediately after opening; the final vacuum immediately prior to closure.

Summa® canisters will be labeled and shipped under Chain-of-Custody procedures to York for VOC analysis by United States Environmental Protection Agency (USEPA) method TO-15.

Sub-Slab Vapor

The sub-slab vapor survey will include the following tasks:

- Installation of up to 10 permanent sub-slab vapor monitoring points; and
- Collection of sub-slab vapor samples.

Sub-Slab Vapor Monitoring Point Installation

CORE will install up to 10 Vapor Pin™ sub-slab vapor monitoring points. Each point will be installed and covered with a flush-mount, secure cover. The monitoring points can remain in place as long as necessary. The standard operating procedures for installing the Vapor Pin™ and secure cover are included as Attachment C.

Sub-Slab Vapor Sample Collection

Sub-slab vapor samples will be collected using individually certified clean 6-liter Summa® canisters equipped with pre-calibrated flow controllers over a one hour time period. The initial vacuum of each Summa® canister will be recorded immediately after opening; the final vacuum immediately prior to closure. Samples will be transported to York and analyzed for VOCs by USEPA method TO-15.

SOIL GAS INVESTIGATION

A Site walk-through by CORE personnel identified five useable soil gas vapor sampling points. SG-1 (2007), SG-2A, SG-3 (2007), SG-3A, and SG-4A installed by American Environmental Solutions (AES) were located and identified to be in useable condition at the time of the Site walk-through. Remaining points have either been destroyed as a result of on-Site activities or could not be located due to obstructions in the area.

Existing sample points SG-2A and SG-4A, SG-3 (2007) and SG-3A, and SG-1 (2007) are located near groundwater monitoring wells GW-1, MW-1, and MW-2, respectively. As a result, additional soil gas sampling points will not be installed in proximity to those monitoring wells.

SG-1 (2005) and SG-2 (2007) appear to have been destroyed as a result of on-Site activities. SG-1 was located near the anticipated location of a groundwater monitoring well installation as part of this RI. A replacement soil gas sampling point will be installed near the newly installed groundwater monitoring well. SG-2 (2007) was located in proximity to groundwater monitoring well GW-3. A replacement soil gas vapor point will be installed in proximity to GW-3 to monitor soil gas vapor intrusion potential in that area.

AES Soil gas sampling points SG-3 (2005), SG-4, SG-5, and SG-6 could not be located during the Site walk-through due to obstructions in the areas of each point. Elevated levels of toluene have been detected historically at three of these points (SG-3 (2005), SG-5, and SG-6). SG-3 (2005), SG-4, and SG-6 are/were located within a reasonable distance of the anticipated locations of groundwater monitoring well installations as part of this RI. Assuming the points cannot be located, soil gas sampling points will be installed near their former locations. If CORE is unable to locate SG-5 during RI field activities, a new sampling point will be installed in proximity to its former location.

Additional soil gas sampling points will be located in proximity to newly installed groundwater monitoring well locations where soil gas sampling points do not currently exist. Soil gas samples will be collected using individually certified clean 6-liter Summa® canisters equipped with pre-calibrated flow controllers over a one hour time period. The initial vacuum of each Summa® canister will be recorded immediately after opening; the final vacuum immediately prior to closure. Samples will be transported to York and analyzed for VOCs by USEPA method TO-15. A Soil Gas Monitoring Point Construction Plan is included as Figure 4. Refer to Figure 2 for proposed soil gas sampling locations.

DATA COLLECTION AND REPORTING

All field activities and subsequent reporting will be completed in accordance with the procedures in Department-approved RI/FS Work Plan and included Health and Safety Plan (HASP), Quality Assurance Project Plan (QAPP), and Community Air Monitoring Plan (CAMP) dated June 2013.

Any changes to the proposed field activities prescribed herein will be approved by Department personnel prior to completion.

SCHEDULE

RI Activity	Target Duration
Phase II Work Plan Approval	Written Notice from Agency
Approximately 20 weeks	
Soil boring/monitoring well installation	3 weeks
Soil gas point installation	1 week
Sub-slab vapor point installation	1 week
Groundwater sampling (baseline)	2 weeks
Groundwater sampling (round 2)	2 weeks (3 months after baseline)
Soil gas/Sub-slab/IAQ sampling	1 week
Post-Field/Reporting Activities Approximately 15 weeks	
Laboratory Sample Analysis	3 weeks
Field/Lab Data Compilation and Interpretation	4 weeks
Preparation of Draft RI Report	6 weeks

REFERENCES

AES, 2006. *Remedial Investigation Report. Voluntary Cleanup Agreement, National Rubber Adhesives, Inc. NYSDEC Index No. W2-0967-03-07.*

AES, 2007. *Soil Vapor Extraction Pilot Study Report*. *Voluntary Cleanup Agreement, National Rubber Adhesives, Inc. NYSDEC Index No. W2-0967-03-07.*

CORE Environmental Consultants, Inc. (CORE), 2013. *Health and Safety Plan, Former National Rubber Adhesives Site, 38-25 9th Street, Long Island City, New York 11101, State ID #2-41-028.*

CORE, 2013. *Remedial Investigation/Feasibility Study Work Plan, Initial Phase, Former National Rubber Adhesives Site, 38-25 9th Street, Long Island City, New York 11101, State ID #2-41-028.*

CORE, 2013. *Quality Assurance Project Plan, Former National Rubber Adhesives Site, 38-25 9th Street, Long Island City, New York 11101, State ID #2-41-028.*

New York State Department of Environmental Conservation (NYSDEC), 2010. *DEC Program Policy. DER-10/Technical Guidance for Site Investigation and Remediation.*

New York State Department of Health (NYSDOH), 2006. Guidance for Evaluating Soil Vapor Intrusion in the State of New York

SUMMARY OF ATTACHMENTS

Tables

Table 1 – Analytical Program Summary

Figures

Figure 1 – Membrane Interface Probe Point Location Map
Figure 2 – Proposed Sampling Point Location Map
Figure 3 – Monitoring Well Construction Plan
Figure 4 – Vapor Monitoring Point Construction Plan

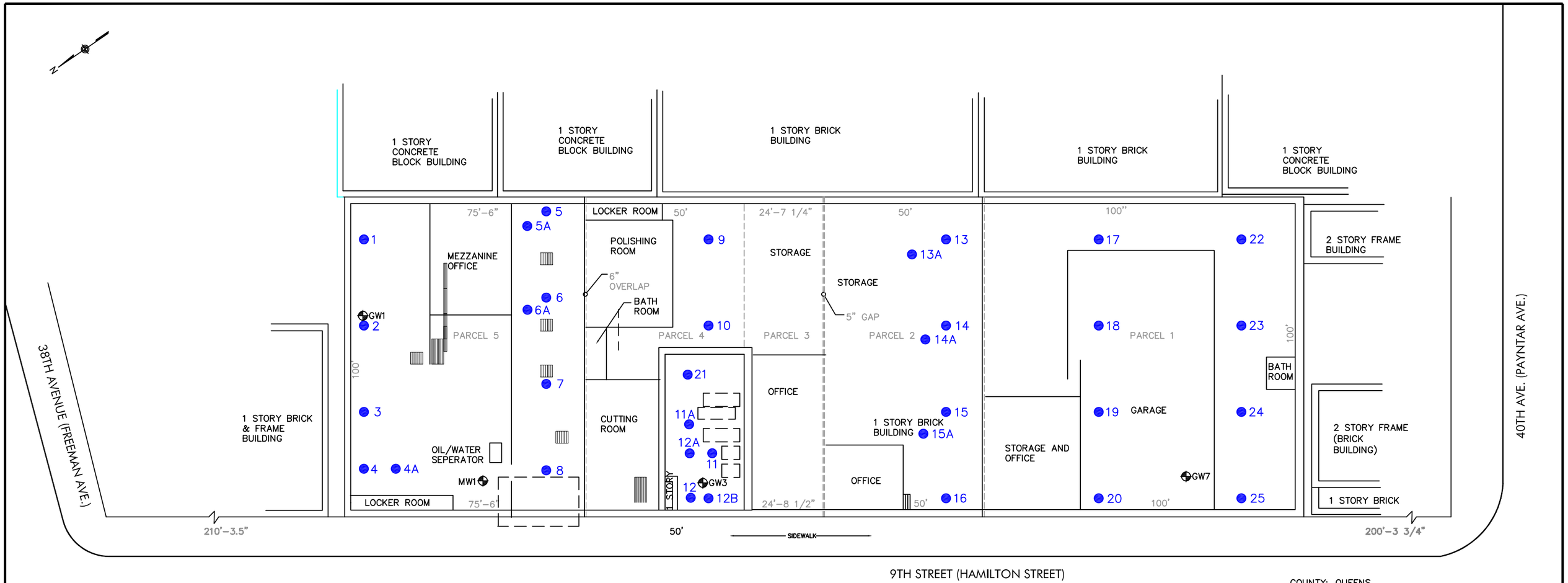
Attachments

Attachment A – Common Scale Membrane Interface Probe Logs
Attachment B – Individual Scale Membrane Interface Probe Logs
Attachment C – Vapor Pin™ Standard Operating Procedures

CORE Environmental Consultants, Inc.

Alyssa Cruikshank
Geologist

FIGURES



COUNTY: QUEENS

TAX BLOCK: 475

TAX LOT: 19

LAND BLOCK NO.

STANDARD L.I.C.

LEGEND:

- PARCEL BOUNDARY LINE
- UNDERGROUND STORAGE TANK
- FLOOR DRAIN
- AES MONITORING WELL
- 1 M.I.P. LOCATION NUMBER 1

SOURCES:
1. U.S. HYDROGEOLOGIC INC. (PRELIMINARY SUB-SURFACE INVESTIGATION 1996)
2. ENVIRO-CORP CONSULTANTS INC. (ECC), SUB-SURFACE INVESTIGATION REPORT 2001
3. AMERICAN ENVIRONMENTAL SOLUTIONS (AES), REMEDIAL INVESTIGATION REPORT 2006
4. AMERICAN ENVIRONMENTAL SOLUTIONS (AES), SOIL VAPOR-EXTRACTION PILOT STUDY 2007
5. AMERICAN ENVIRONMENTAL SOLUTIONS (AES), LIMITED OFF-SITE INVESTIGATION 2008
6. INFORMATION TAKEN FROM MONTROSE SURVEY CO. LLP, TITLE SURVEY 7-15-03.

WARNING

IT IS A VIOLATION OF SECTION 7209, SUBDIVISION 2, OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, OTHER THAN THOSE WHOSE SEAL APPEARS ON THIS DRAWING, TO ALTER IN ANY WAY AN ITEM ON THIS DRAWING. IF AN ITEM IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

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REVISIONS

JOB TITLE AND LOCATION:

FORMER NATIONAL RUBBER ADHESIVES
38-25 9th STREET
LONG ISLAND CITY, NEW YORK

DRAWING TITLE:

MEMBRANE INTERFACE PROBE LOCATION MAP

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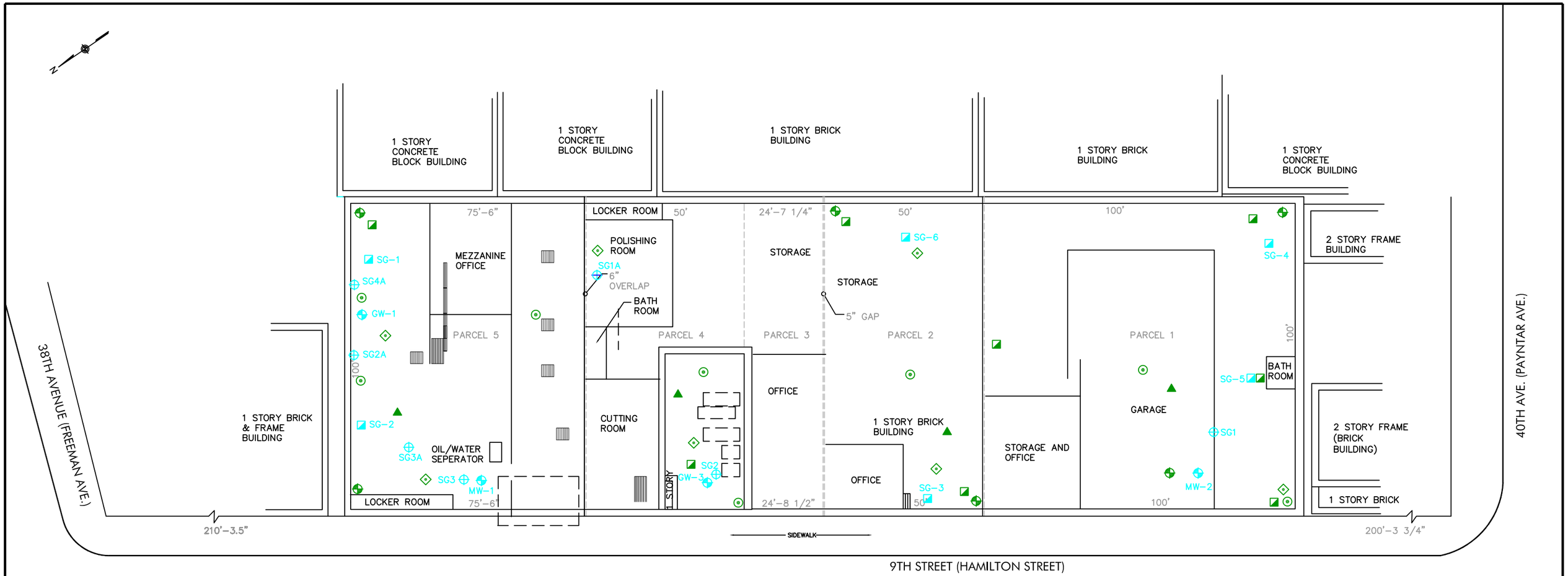

COUNTY: QUEENS

TAX BLOCK: 475

TAX LOT: 19

LAND BLOCK NO.

STANDARD L.I.C.

LEGEND:

- PARCEL BOUNDARY LINE
- UNDERGROUND STORAGE TANK
- FLOOR DRAIN
- AES MONITORING WELL
- SOIL GAS SAMPLE LOCATION (AES) 2005
- SOIL GAS SAMPLE LOCATION (AES) 2007
- PROPOSED SOIL BORING LOCATION
- PROPOSED SOIL BORING/MONITORING WELL LOCATION
- PROPOSED INDOOR AIR QUALITY SAMPLE LOCATION
- PROPOSED SUB-SLAB VAPOR SAMPLE LOCATION
- PROPOSED SOIL GAS SAMPLING LOCATION

SOURCES:

1. U.S. HYDROGEOLOGIC INC. (PRELIMINARY SUB-SURFACE INVESTIGATION 1996)
2. ENVIRO-CORP CONSULTANTS INC. (ECC), SUB-SURFACE INVESTIGATION REPORT 2001
3. AMERICAN ENVIRONMENTAL SOLUTIONS (AES), REMEDIAL INVESTIGATION REPORT 2006
4. AMERICAN ENVIRONMENTAL SOLUTIONS (AES), SOIL VAPOR-EXTRACTION PILOT STUDY 2007
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REVISIONS

JOB TITLE AND LOCATION:

FORMER NATIONAL RUBBER ADHESIVES
38-25 9th STREET
LONG ISLAND CITY, NEW YORK

DRAWING TITLE:

PROPOSED SAMPLE POINT LOCATION MAP

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DATE: 10/15/2013		JOB NO.:	FIGURE NO.
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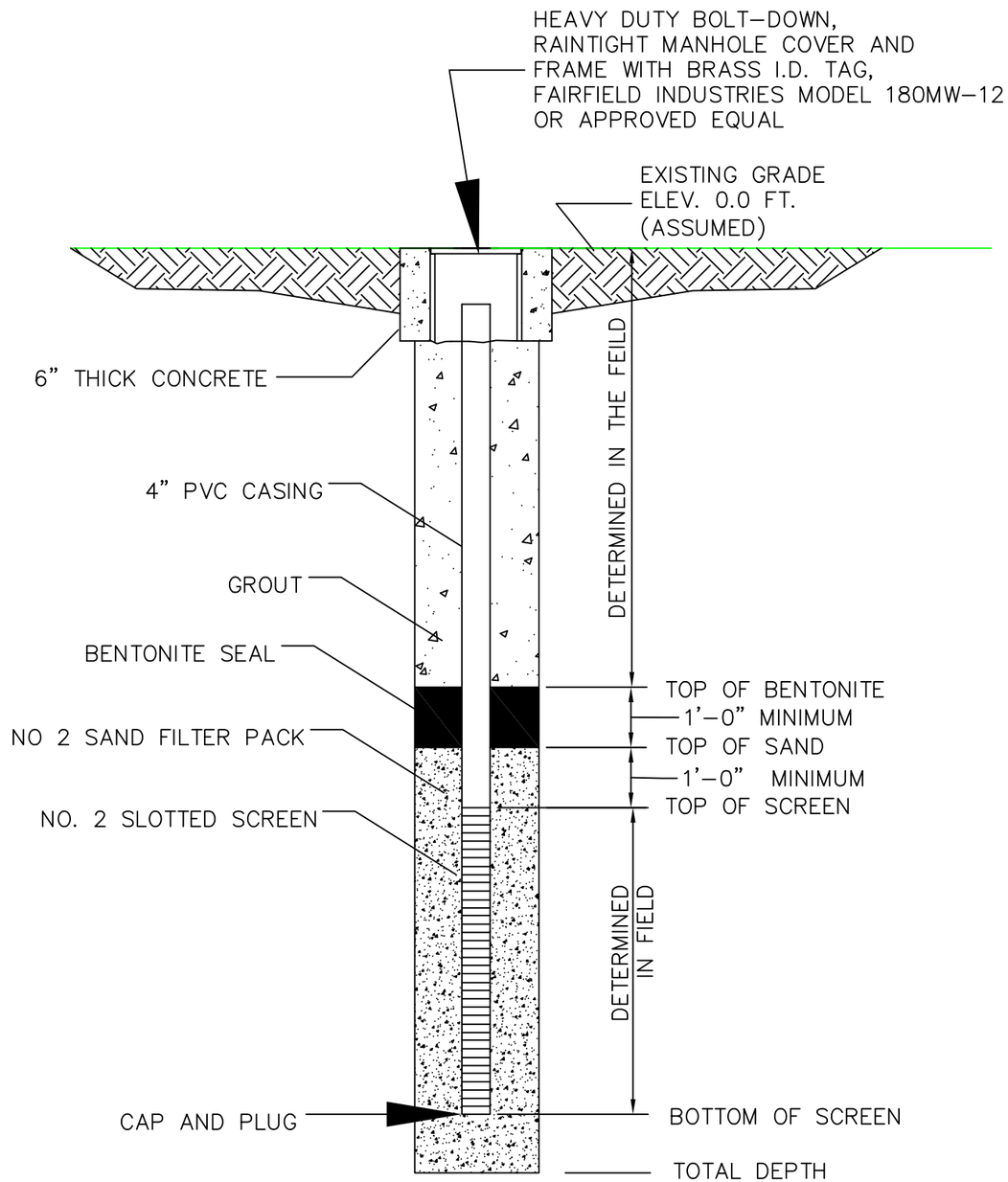

NO.	DATE	DESCRIPTION

REVISIONS

JOB TITLE AND LOCATION:

FORMER NATIONAL RUBBER ADHESIVES
38-25 9th STREET
LONG ISLAND CITY, NEW YORK

DRAWING TITLE:

MONITORING WELL CONSTRUCTION PLAN

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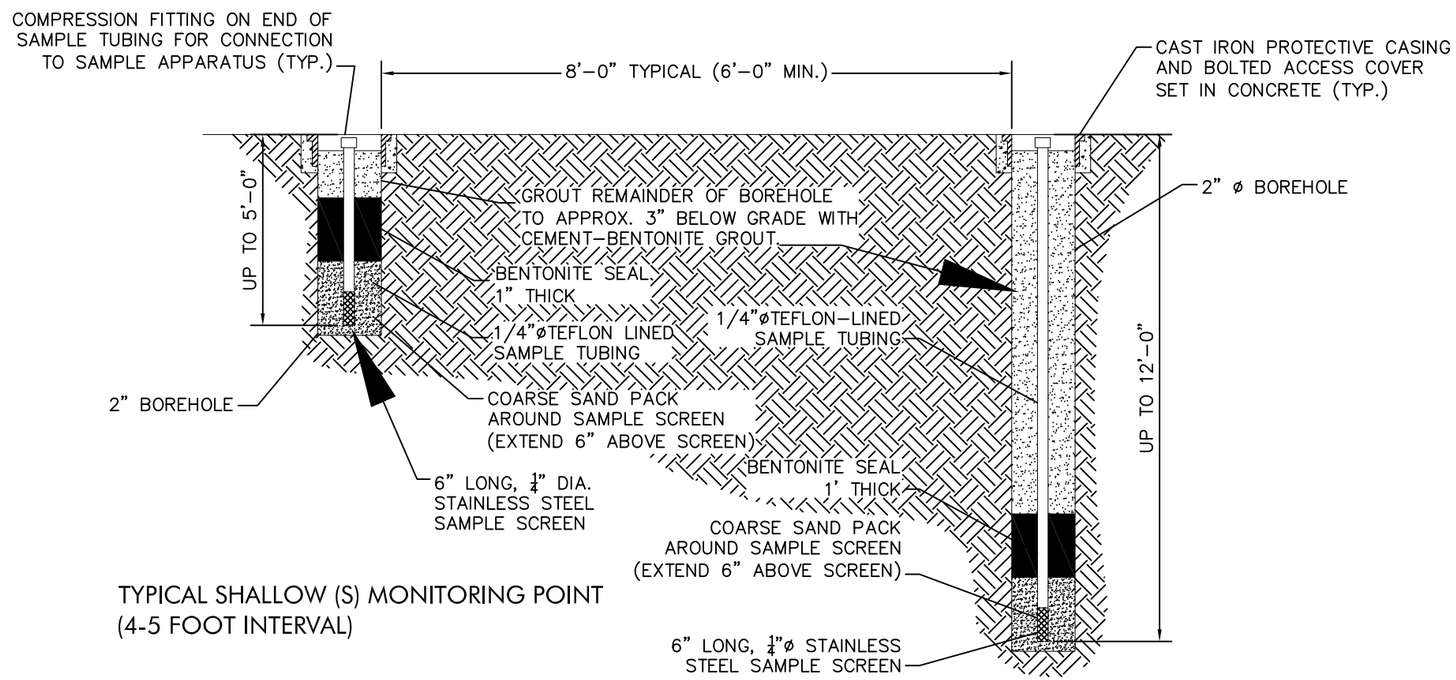

TYPICAL SHALLOW (S) MONITORING POINT
(4-5 FOOT INTERVAL)

TYPICAL DEEP (D) MONITORING POINT
(6-12 FOOT INTERVAL)

NO.	DATE	DESCRIPTION

REVISIONS

JOB TITLE AND LOCATION:

FORMER NATIONAL RUBBER ADHESIVES
38-25 9th STREET
LONG ISLAND CITY, NEW YORK

DRAWING TITLE:

VAPOR MONITORING POINT
CONSTRUCTION PLAN

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TABLES

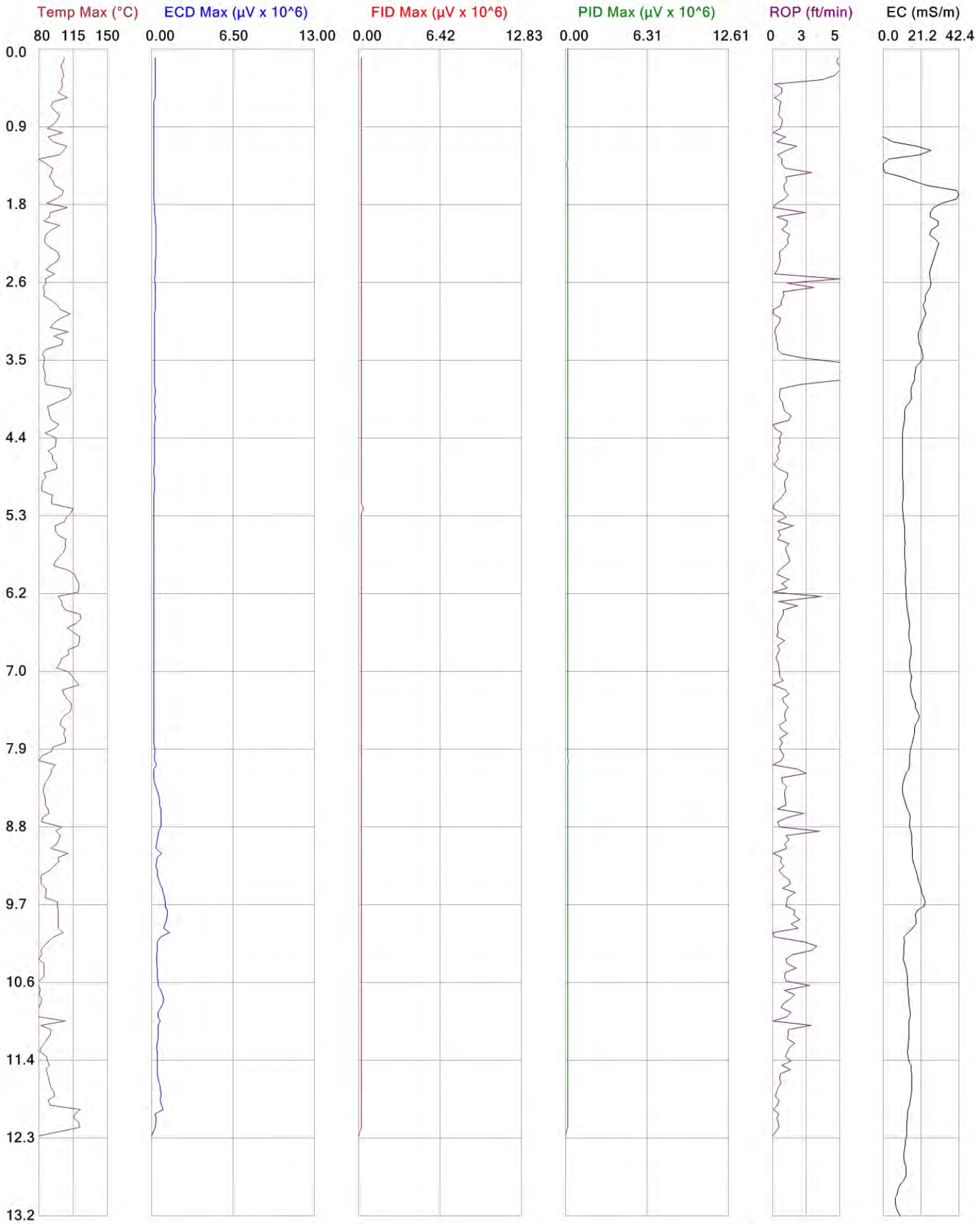
Table 1
Analytical Program Summary
Former National Rubber Adhesives, Inc. Site
Long Island City, New York

Sample Media	Number of Samples				
	Field Samples	Duplicates	MS/MSD	Trip Blank	Analyses
Subsurface Soil/Fill	13[1]	1	1/1	1[2]	TCL VOCs [3] TCL SVOCs [4] TCL Pesticides/Aroclors TAL Metals and Cyanide[5]
Groundwater	54	4	4/4	1[2]	
Indoor Air Quality	5[6]	1	0	0	TO-15 VOCs [7]
Sub-slab Vapor	10	1	0	0	
Soil Gas	12	1	0	0	

Notes:
(1) Additional samples to be collected as necessary
(2) 1 Trip Blank per cooler containing samples for VOC analysis
(3) Target compound list volatile organic compounds
(4) Target compound list semi-volatile organic compounds
(5) Target analyte list metals
(6) Includes 1 outdoor ambient sample
(7) Analytical method for VOCs in air

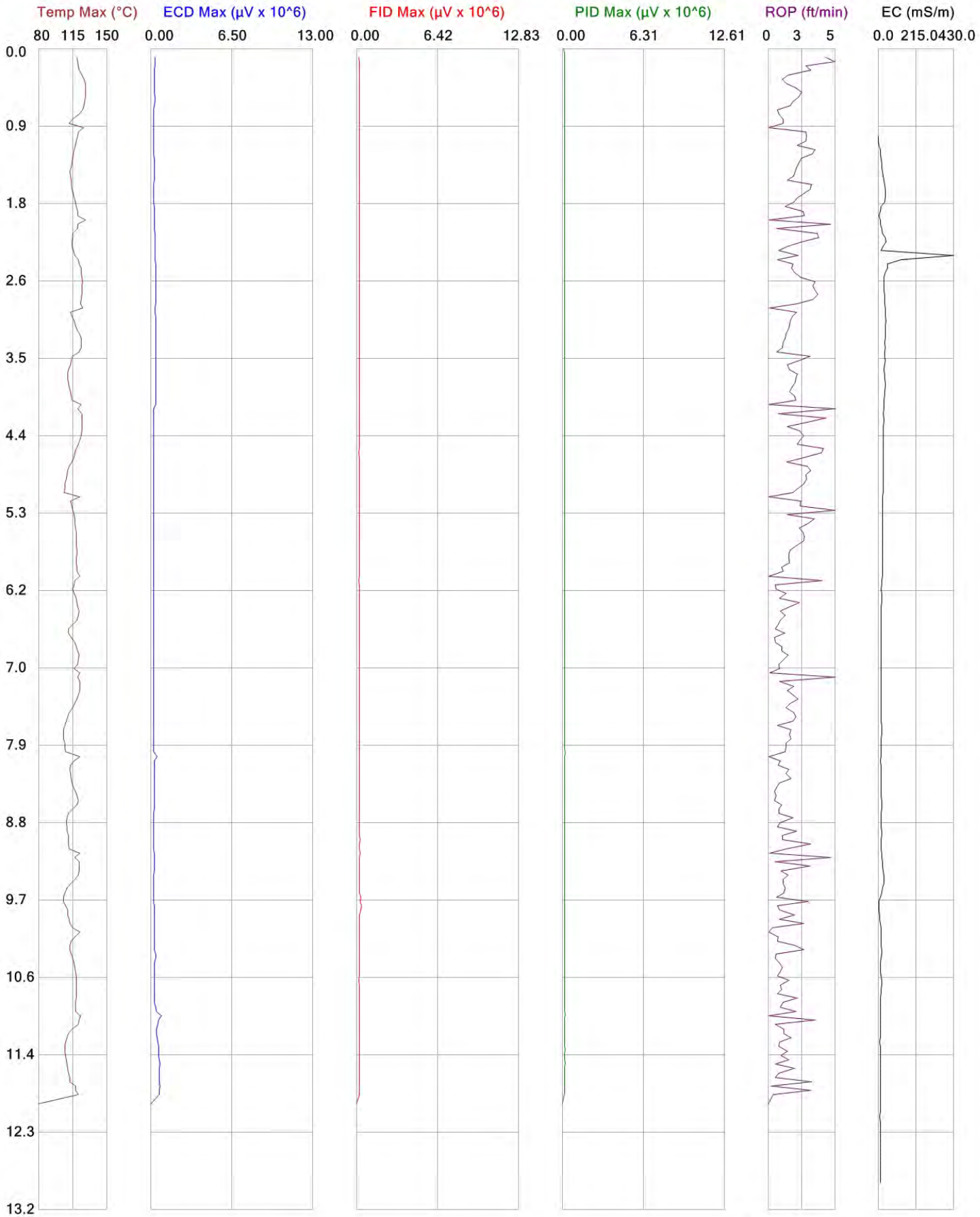
ATTACHMENT A

Common Scale Membrane Interface Probe Logs



	File: MIP01
Client: Core Environmental	Date: 9/30/2013
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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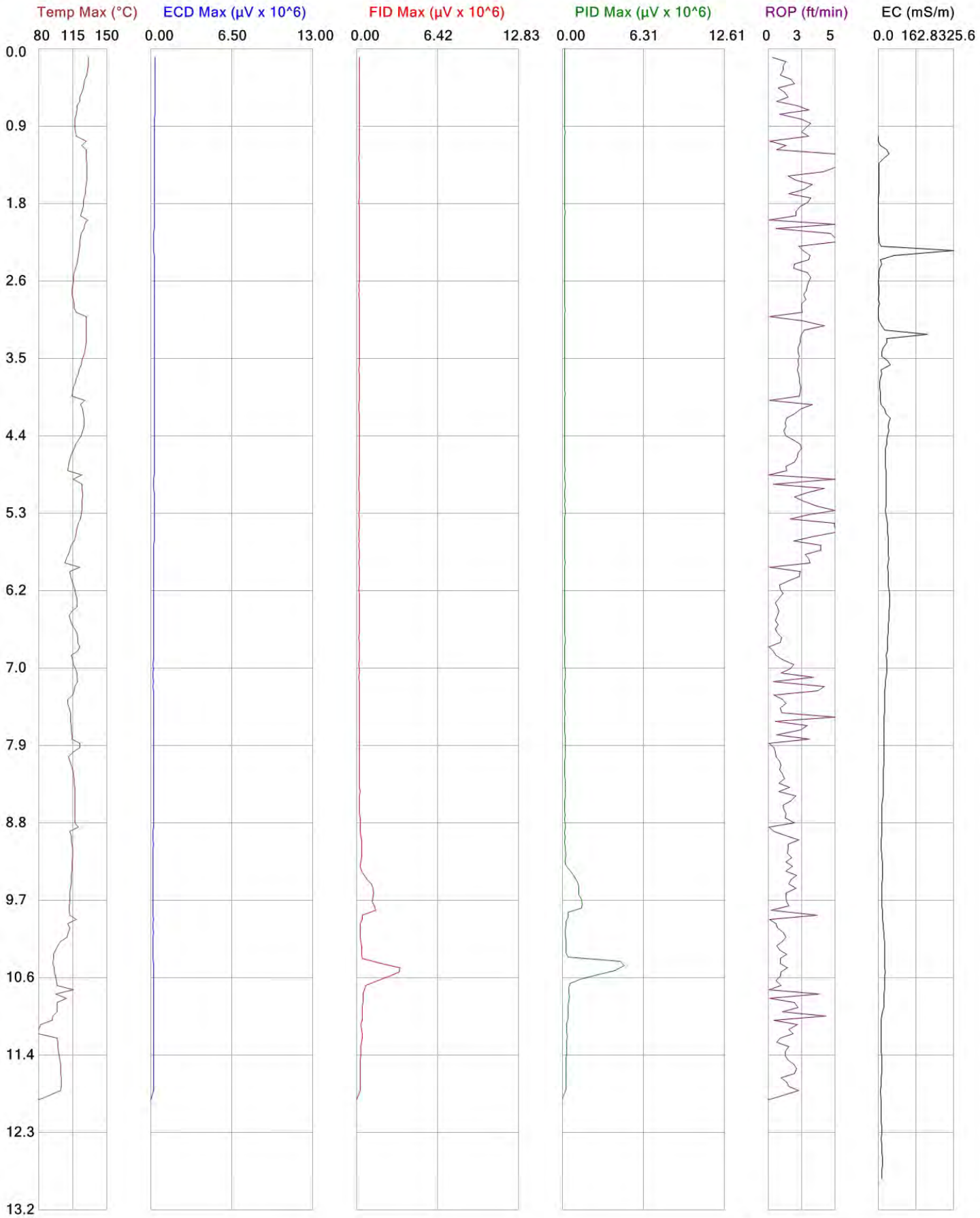
Client: Core Environmental	Date: 9/30/2013
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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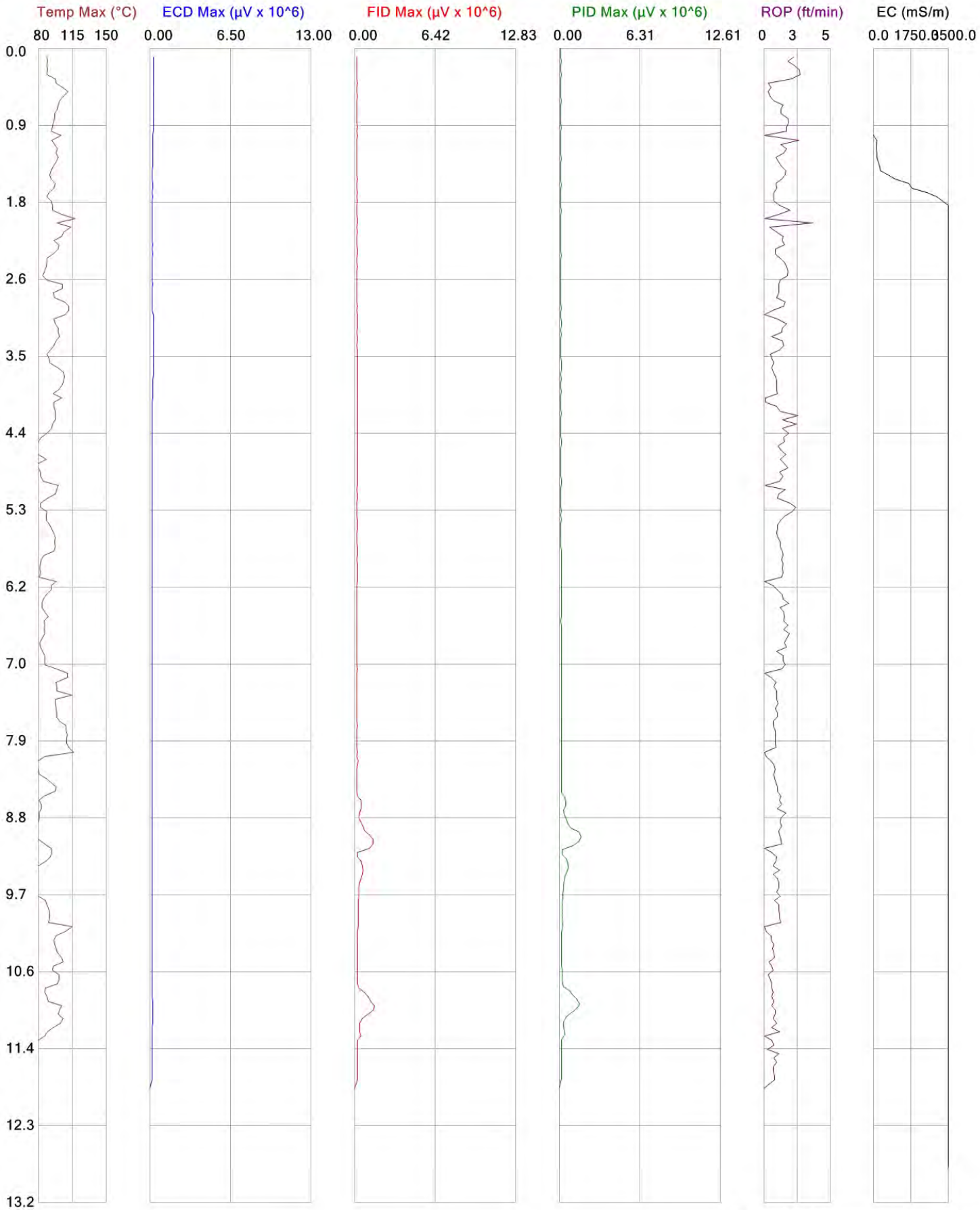
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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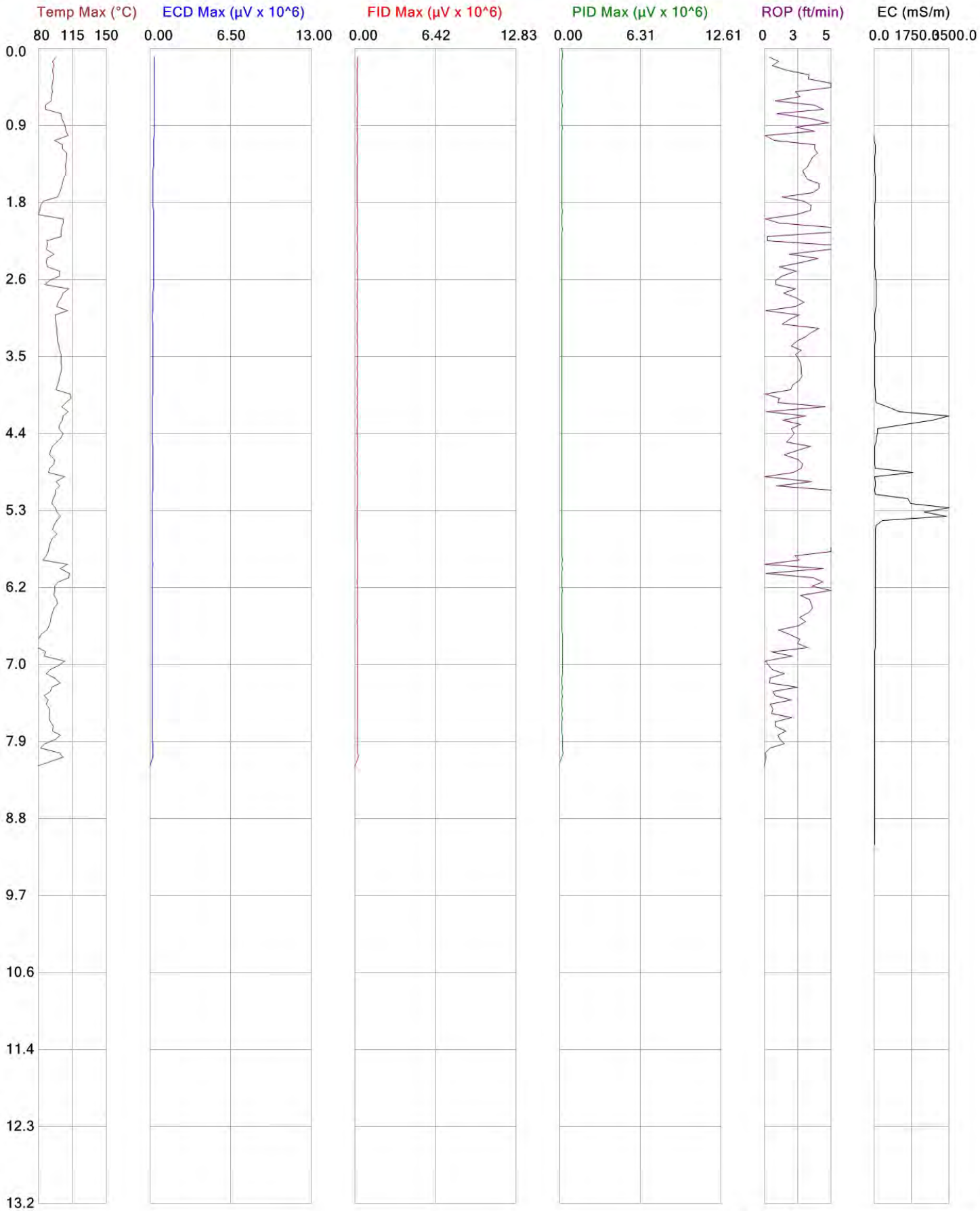
Client: Core Environmental	Date: 10/3/2013
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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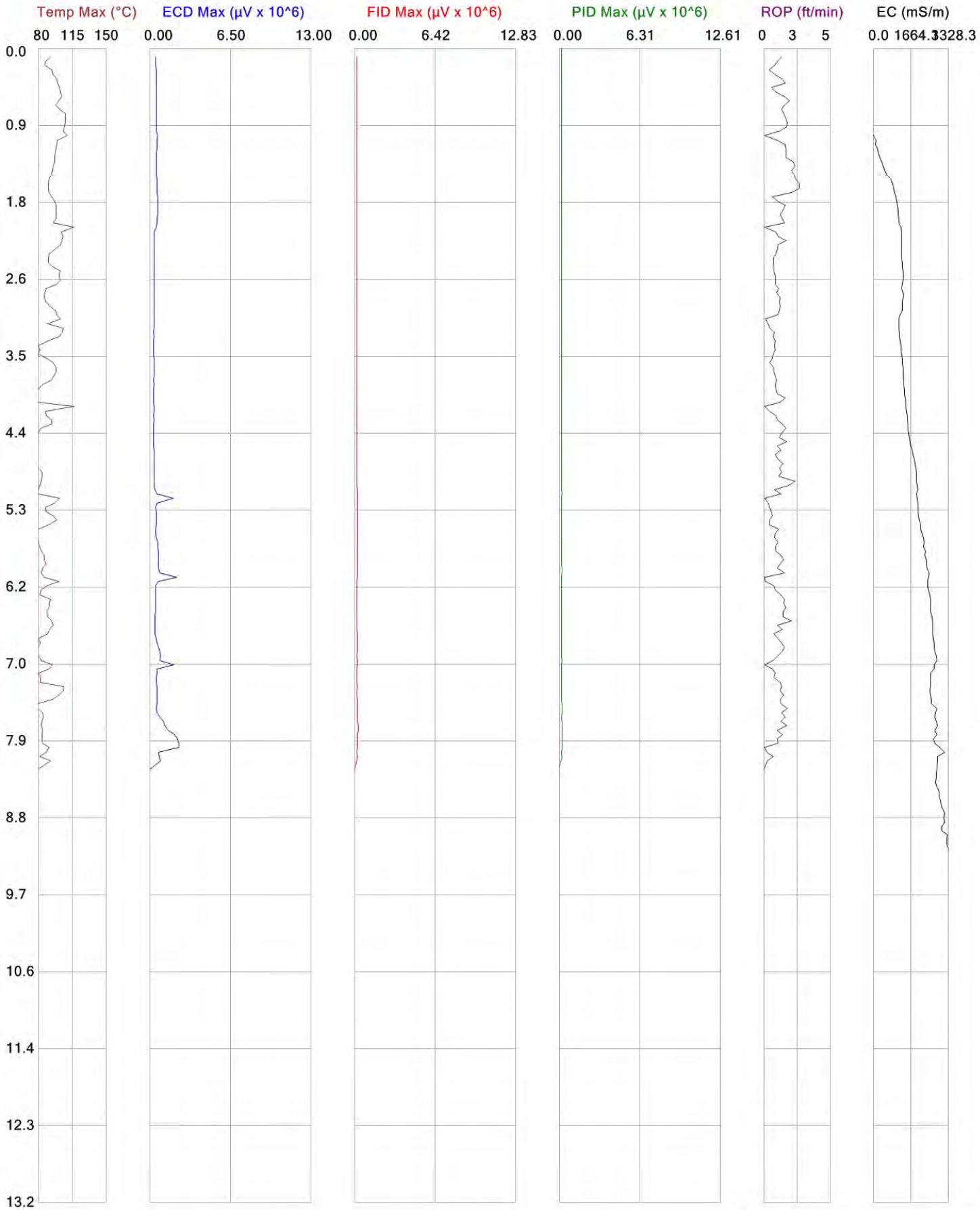
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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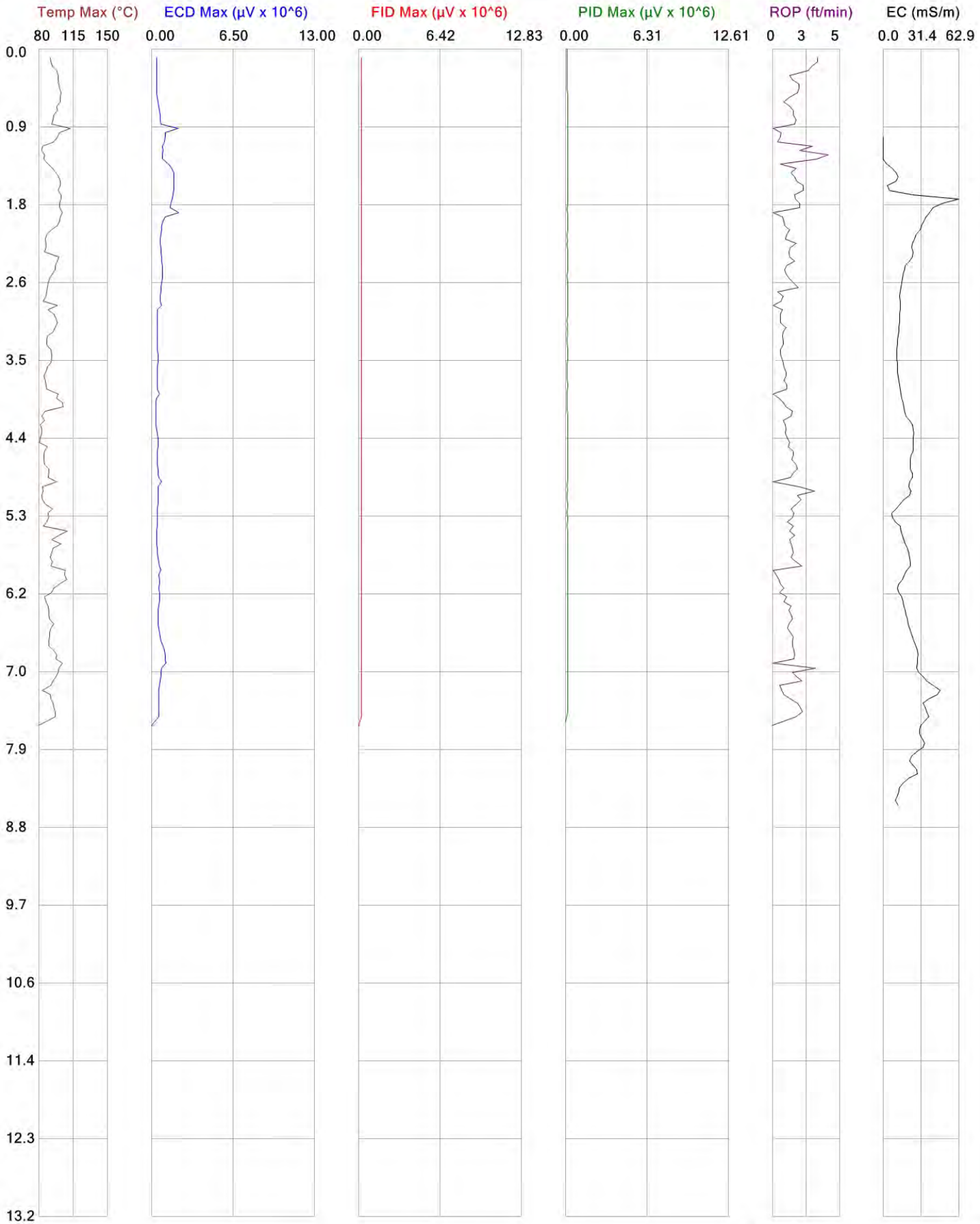
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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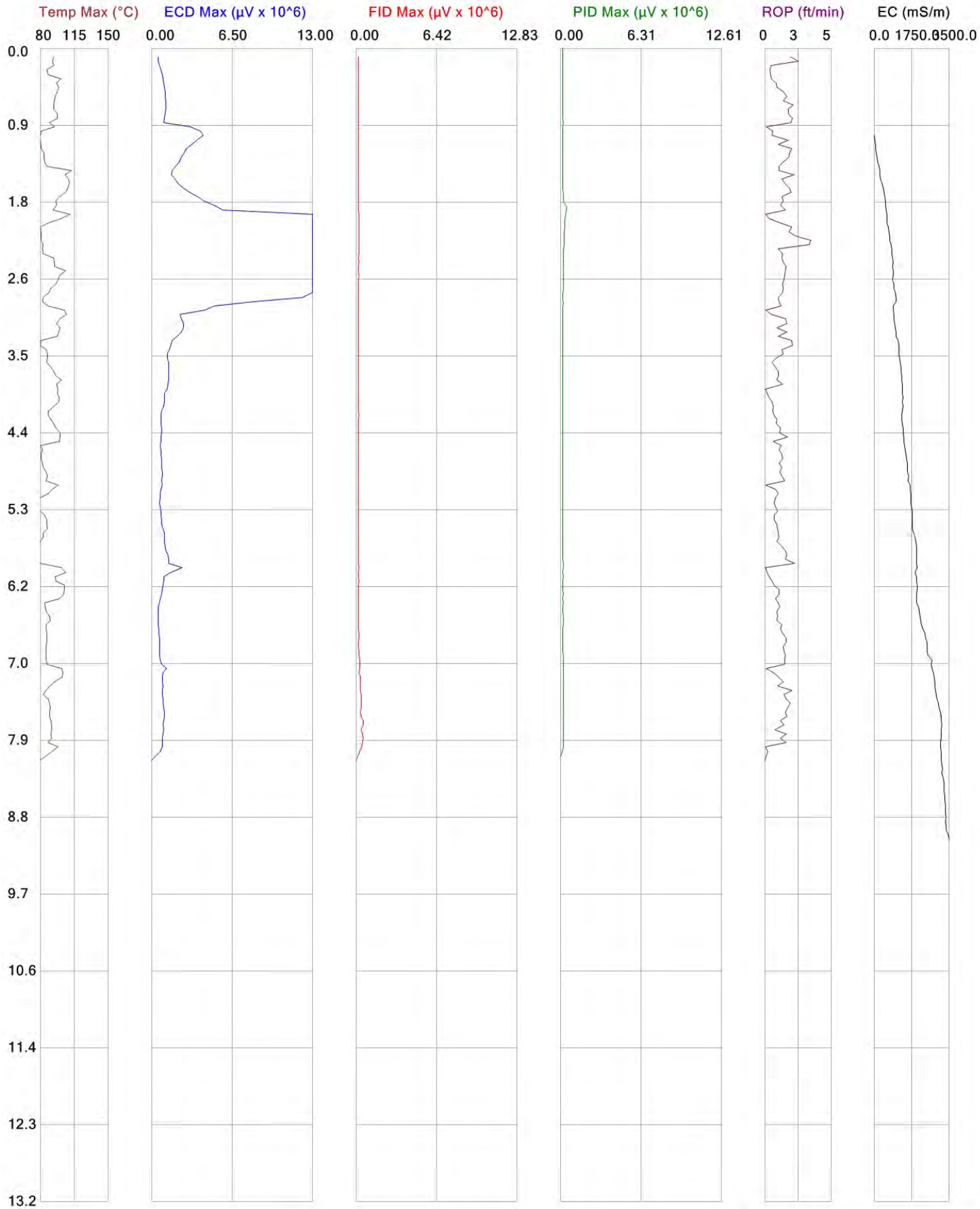
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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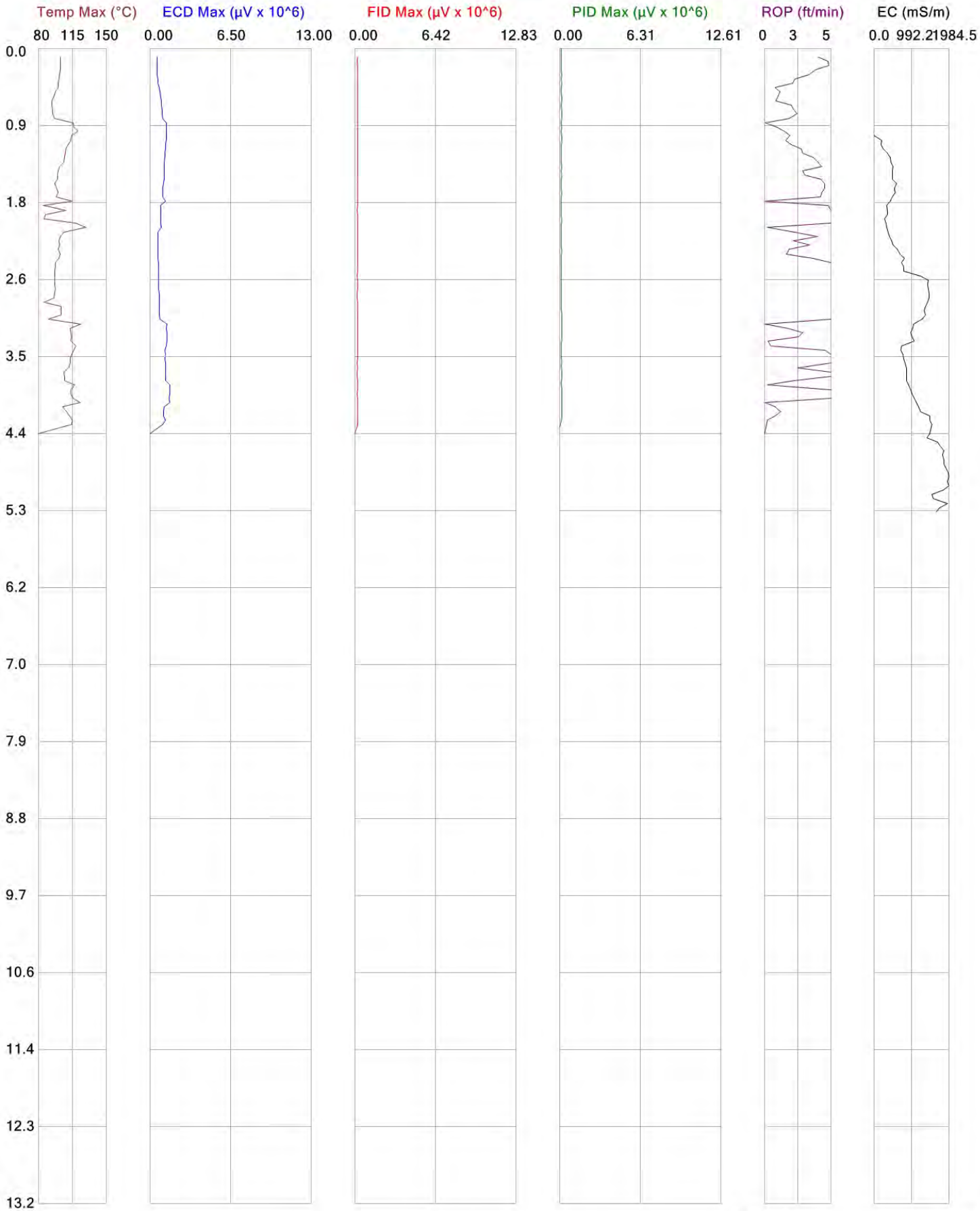
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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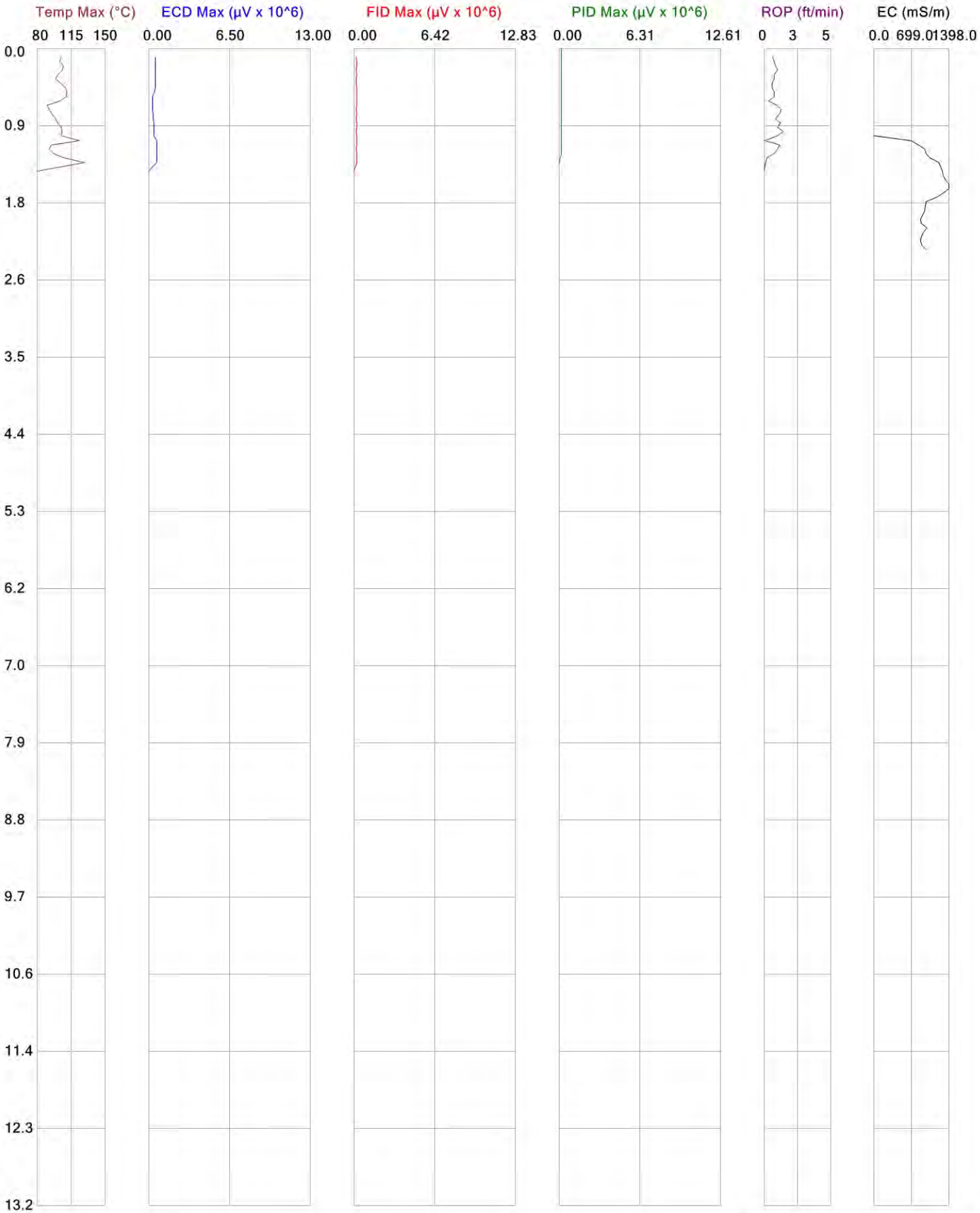
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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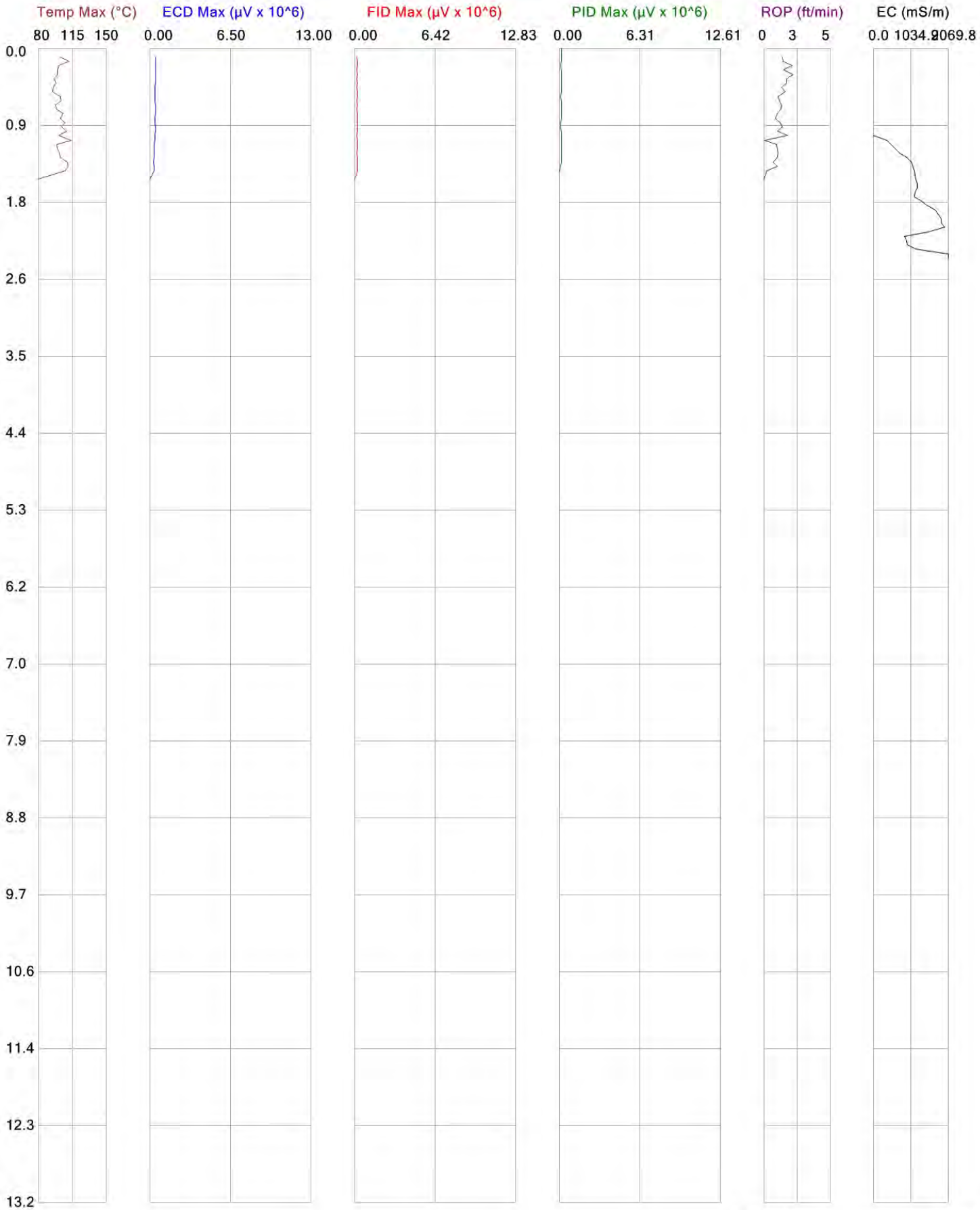
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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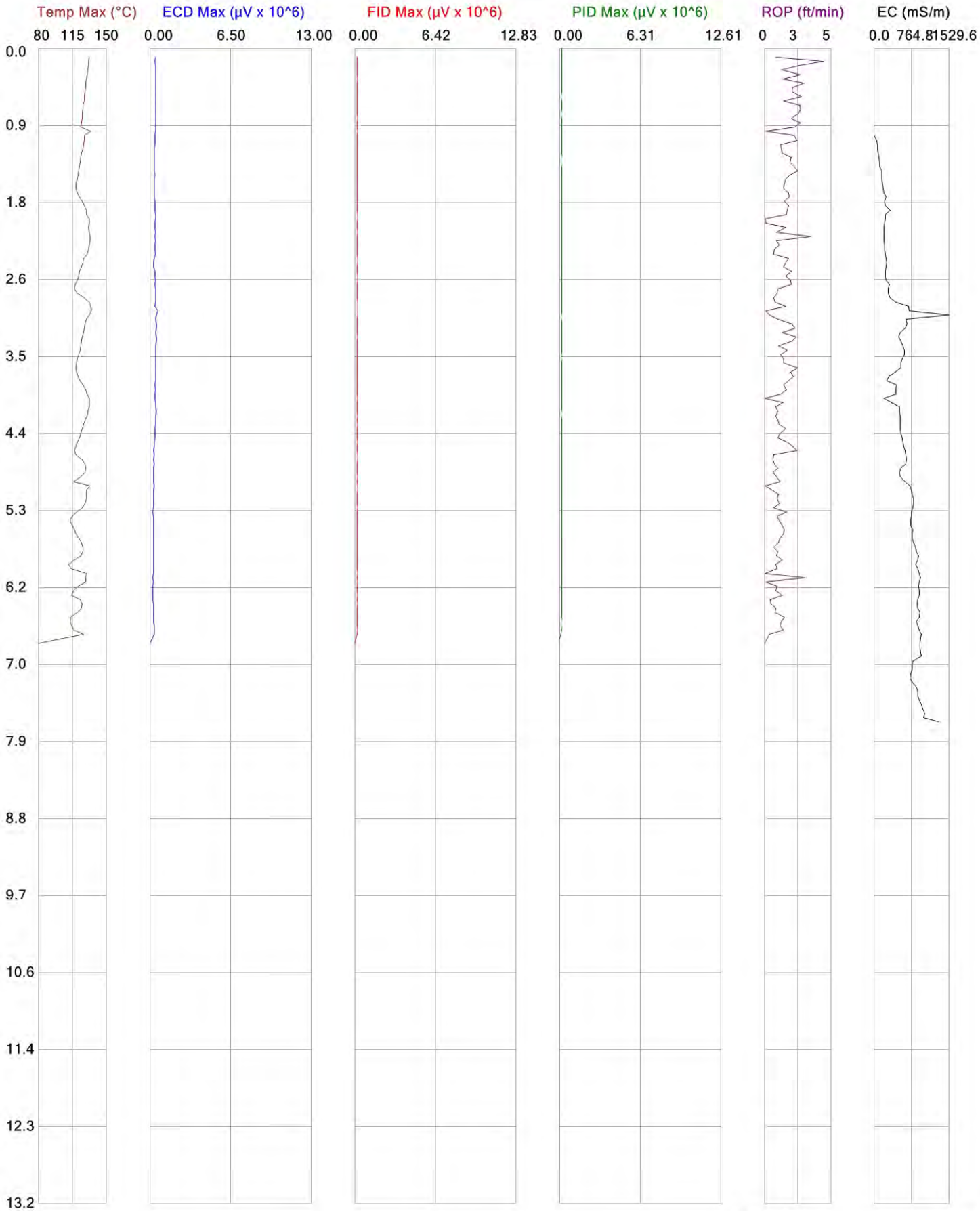
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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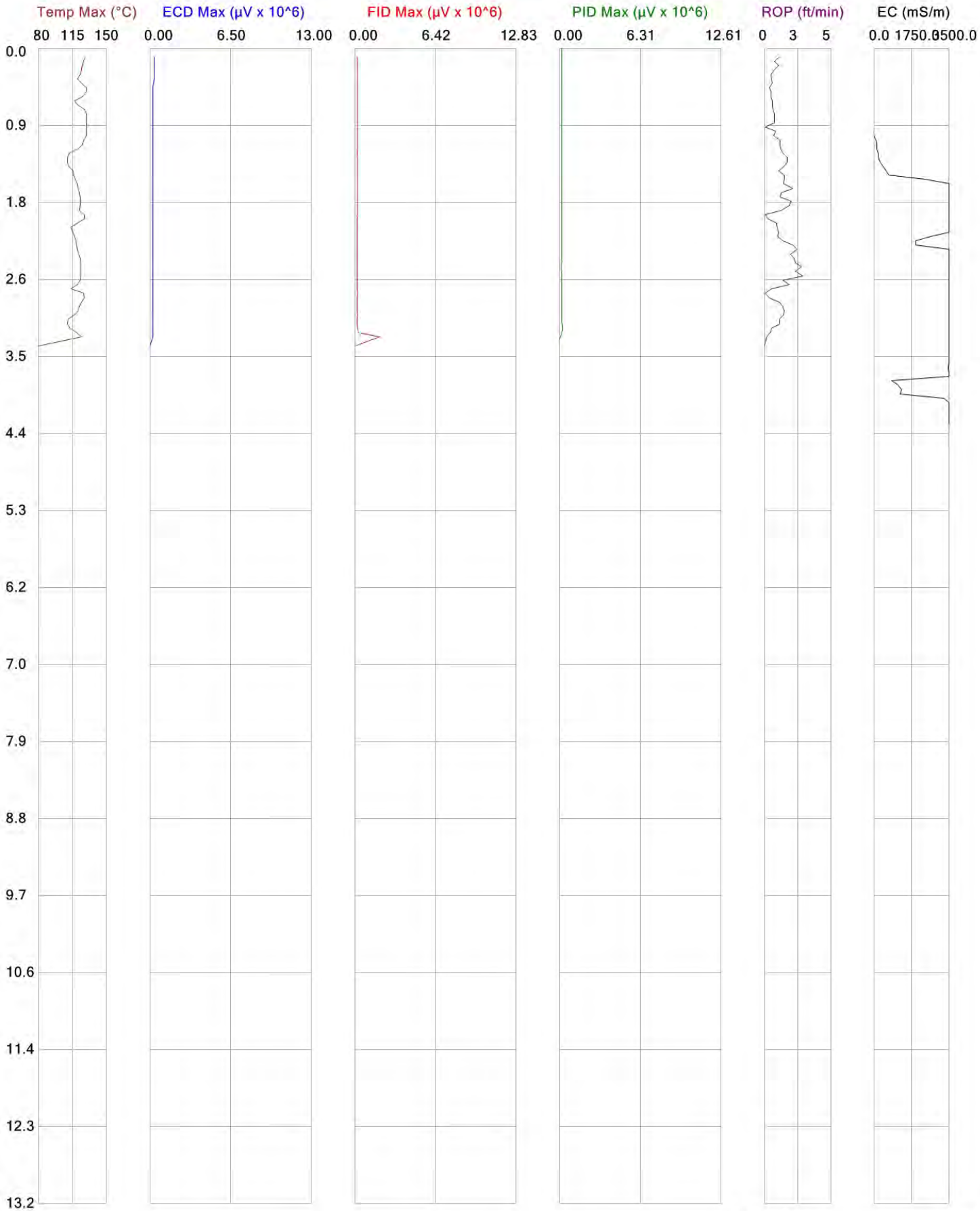
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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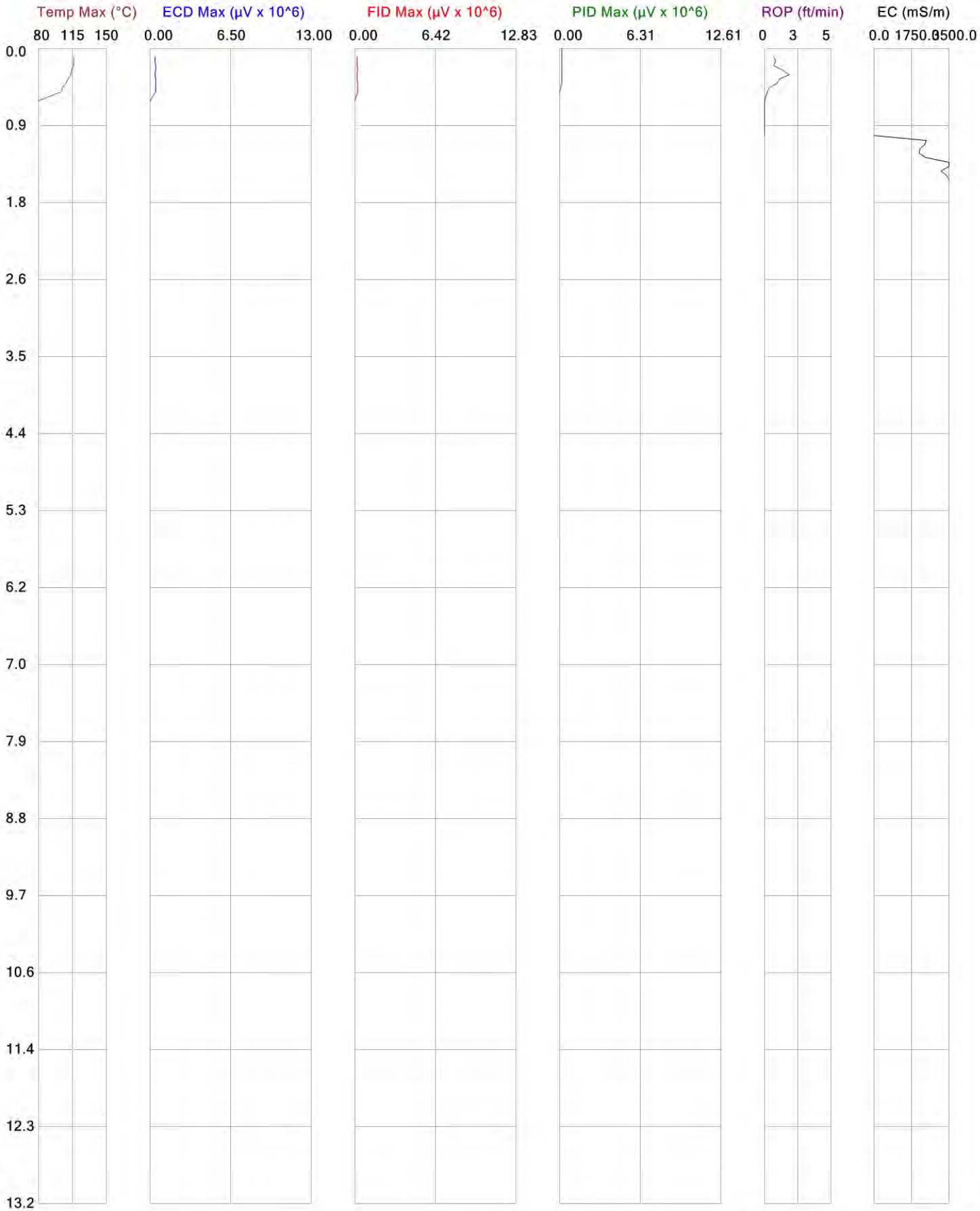
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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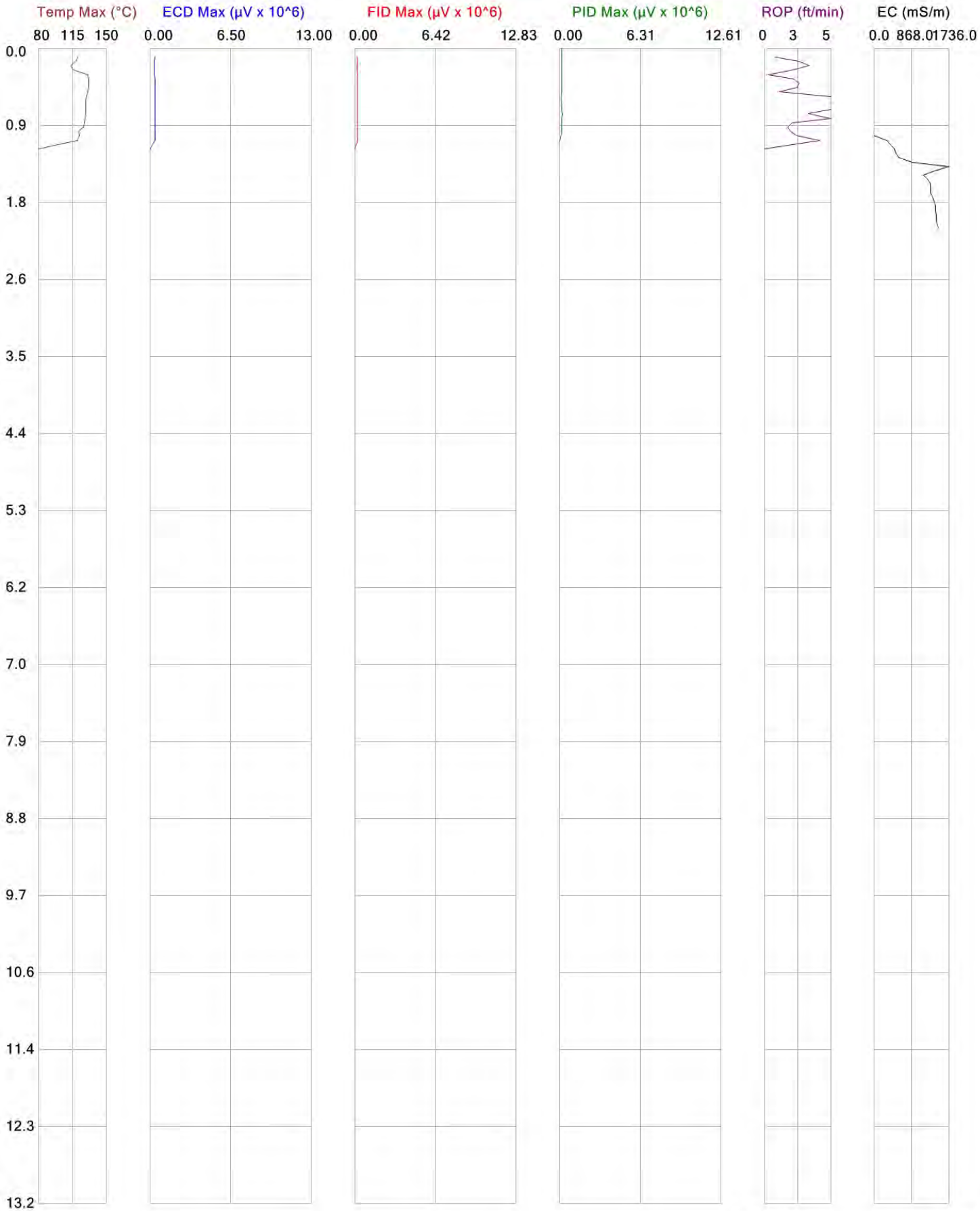
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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Project ID: Former National Rubber Adhesives	Location:

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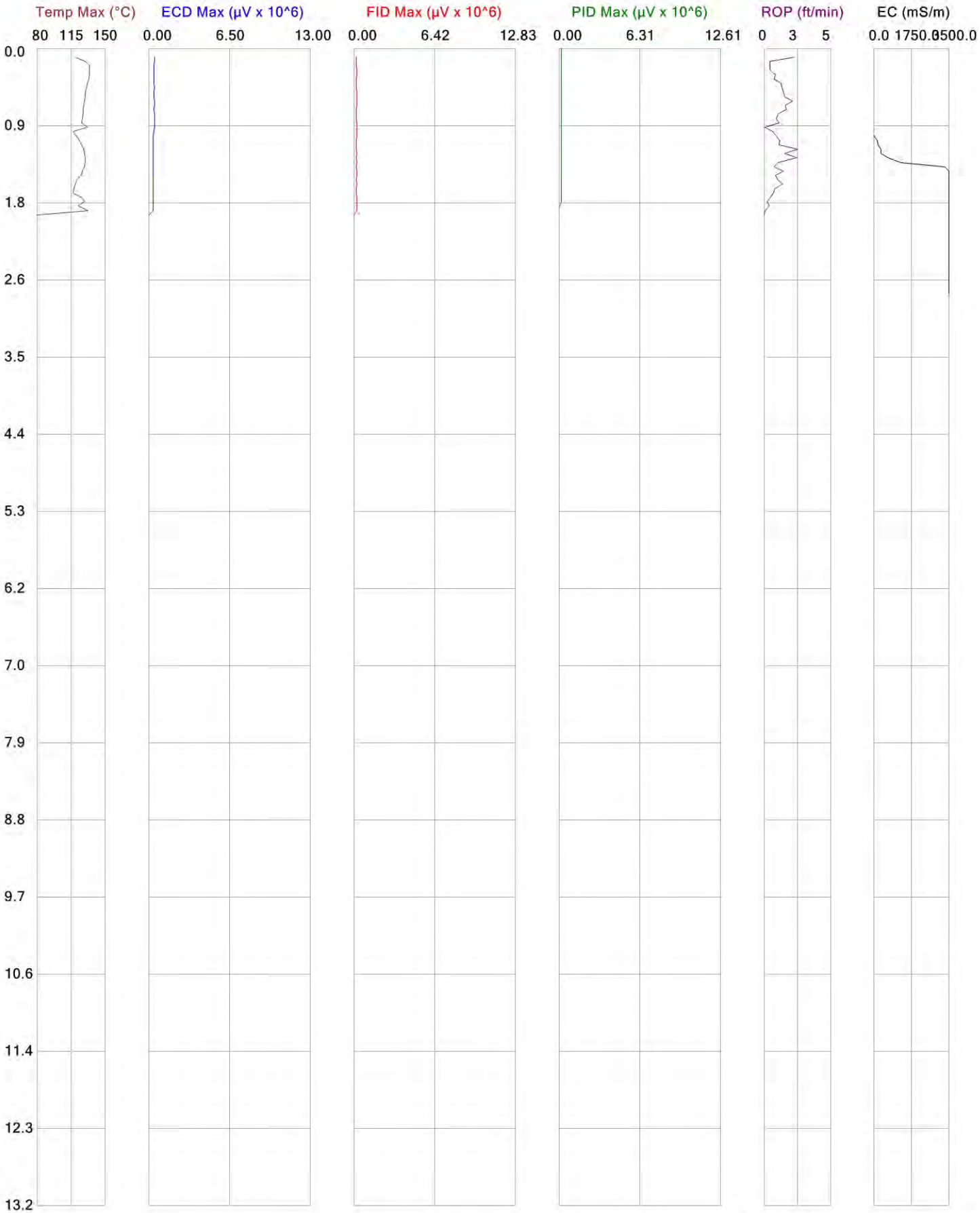

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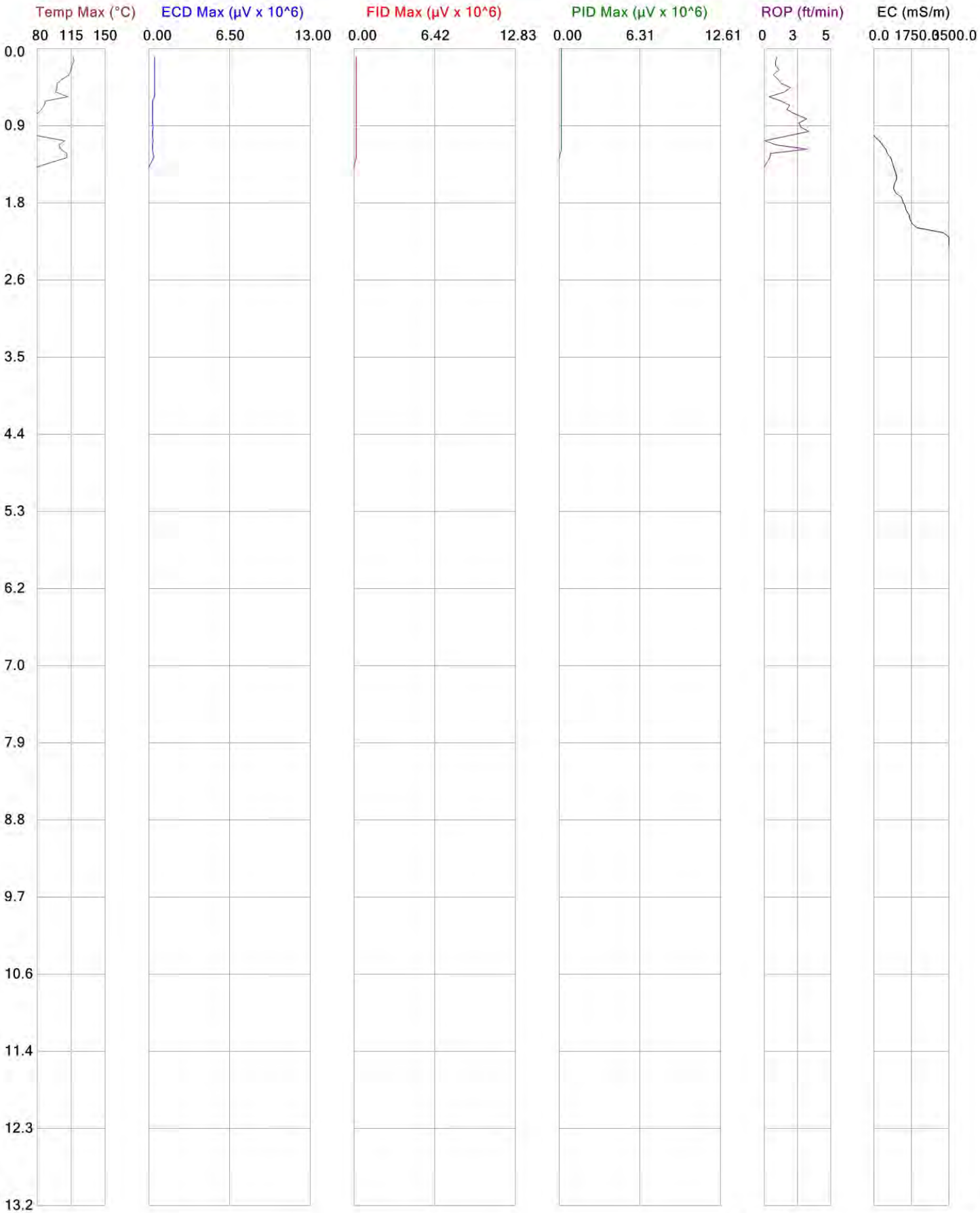
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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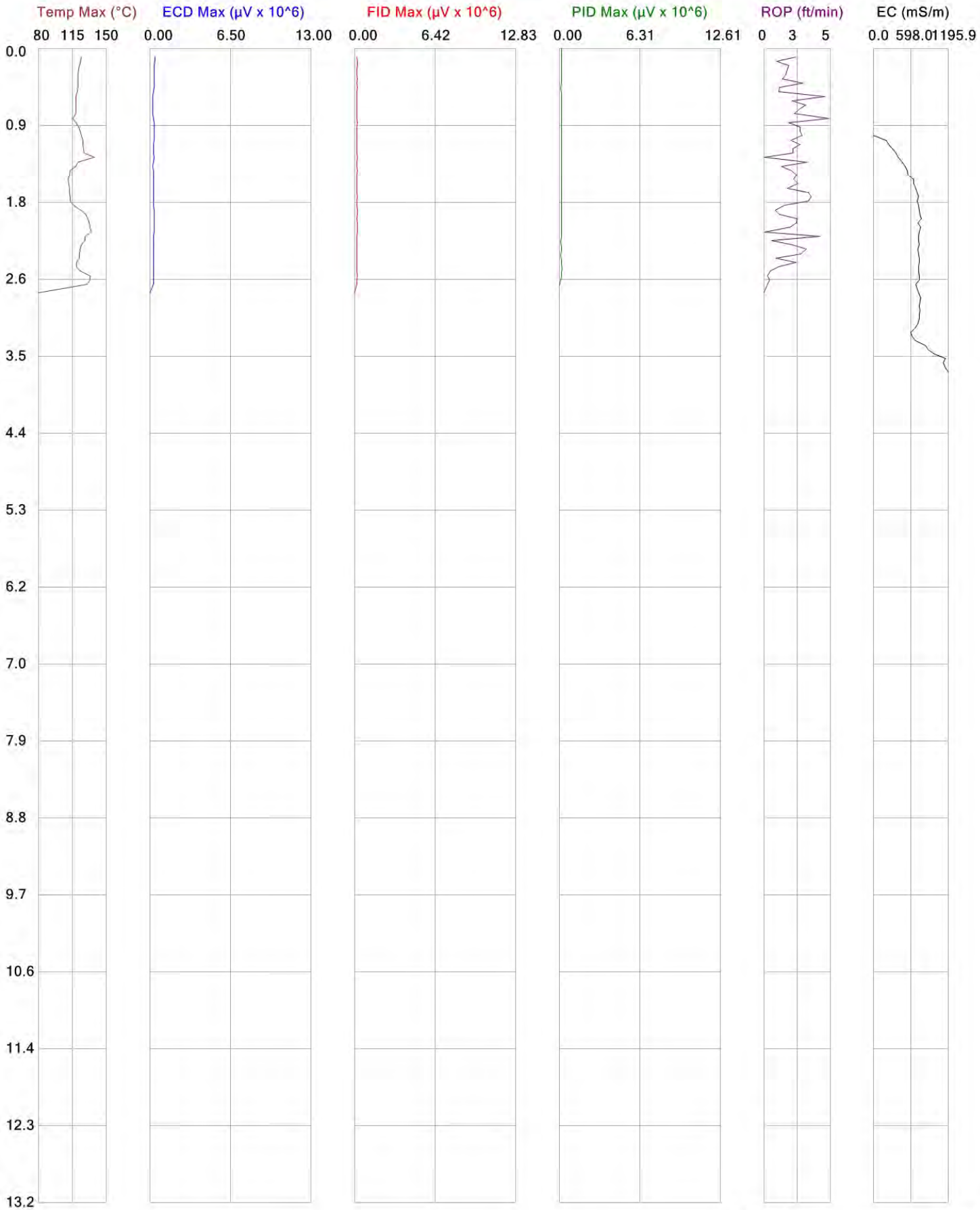
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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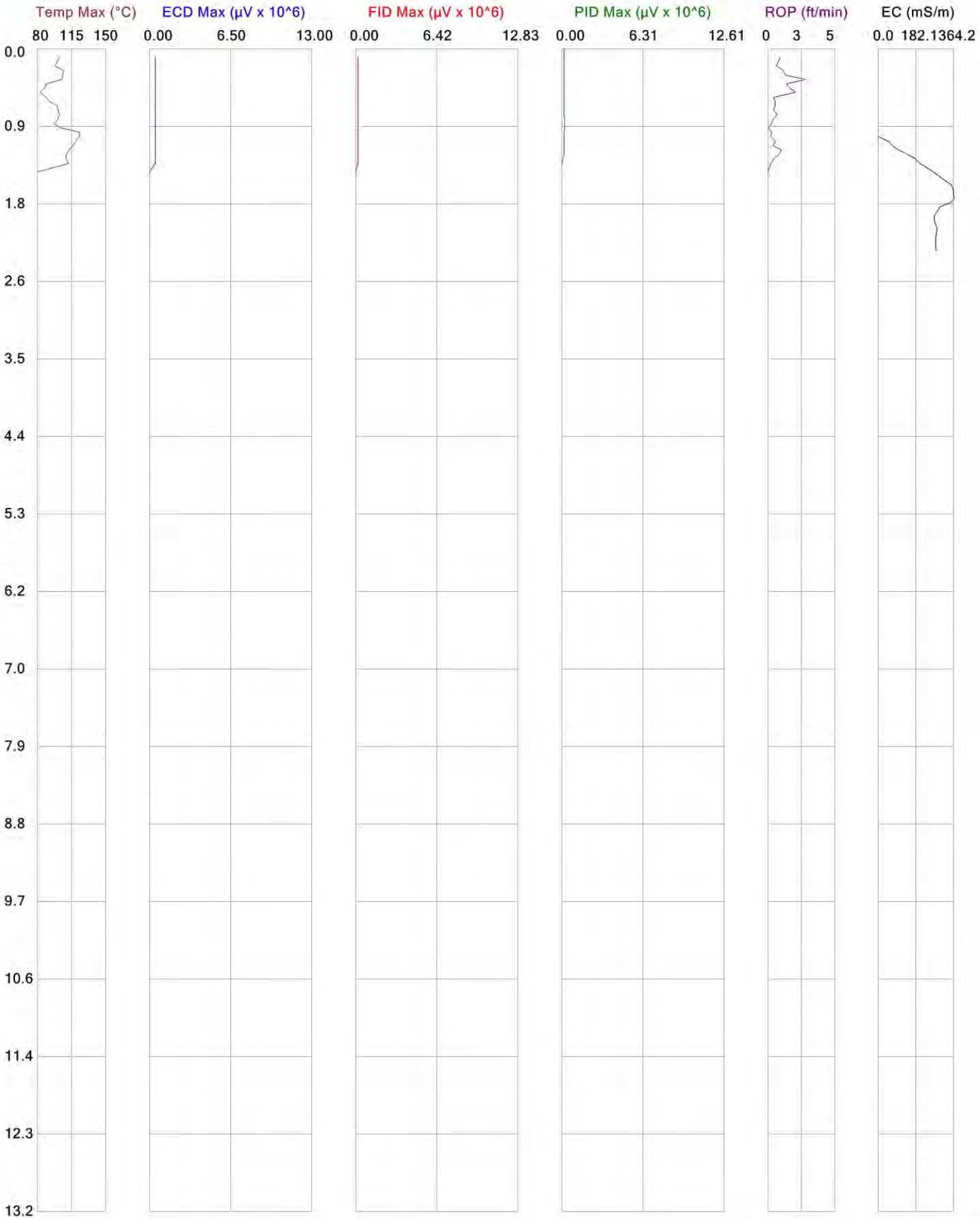

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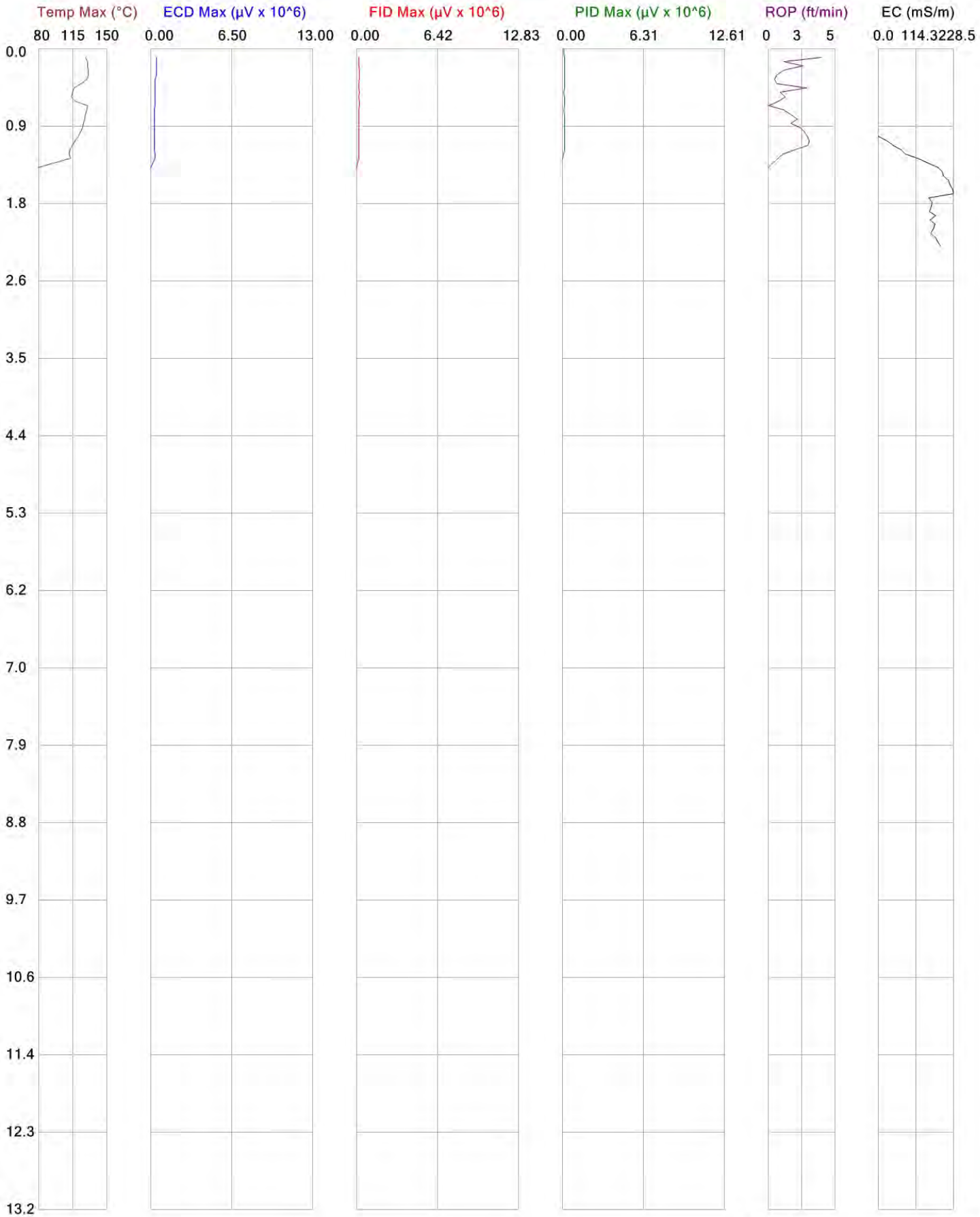
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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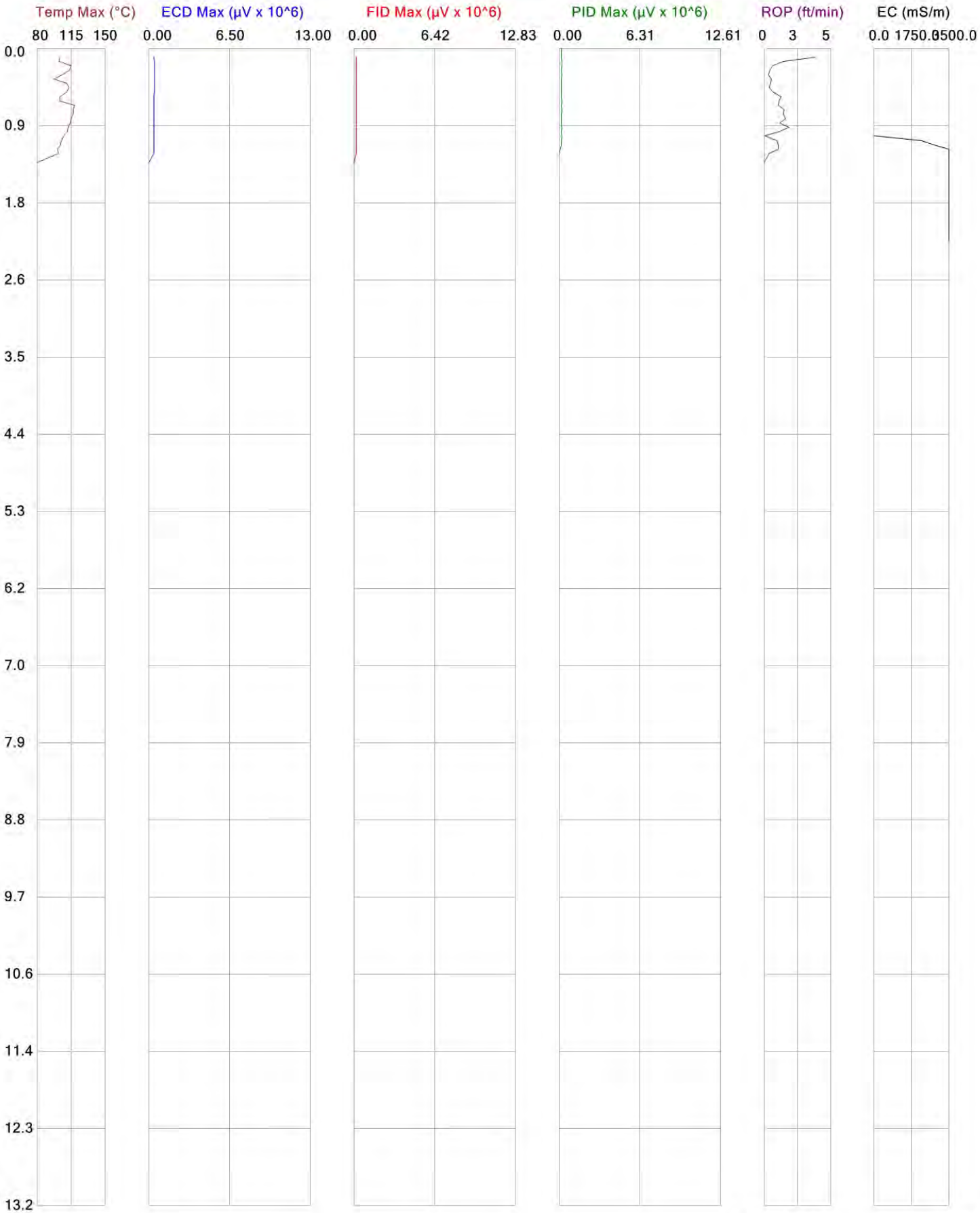

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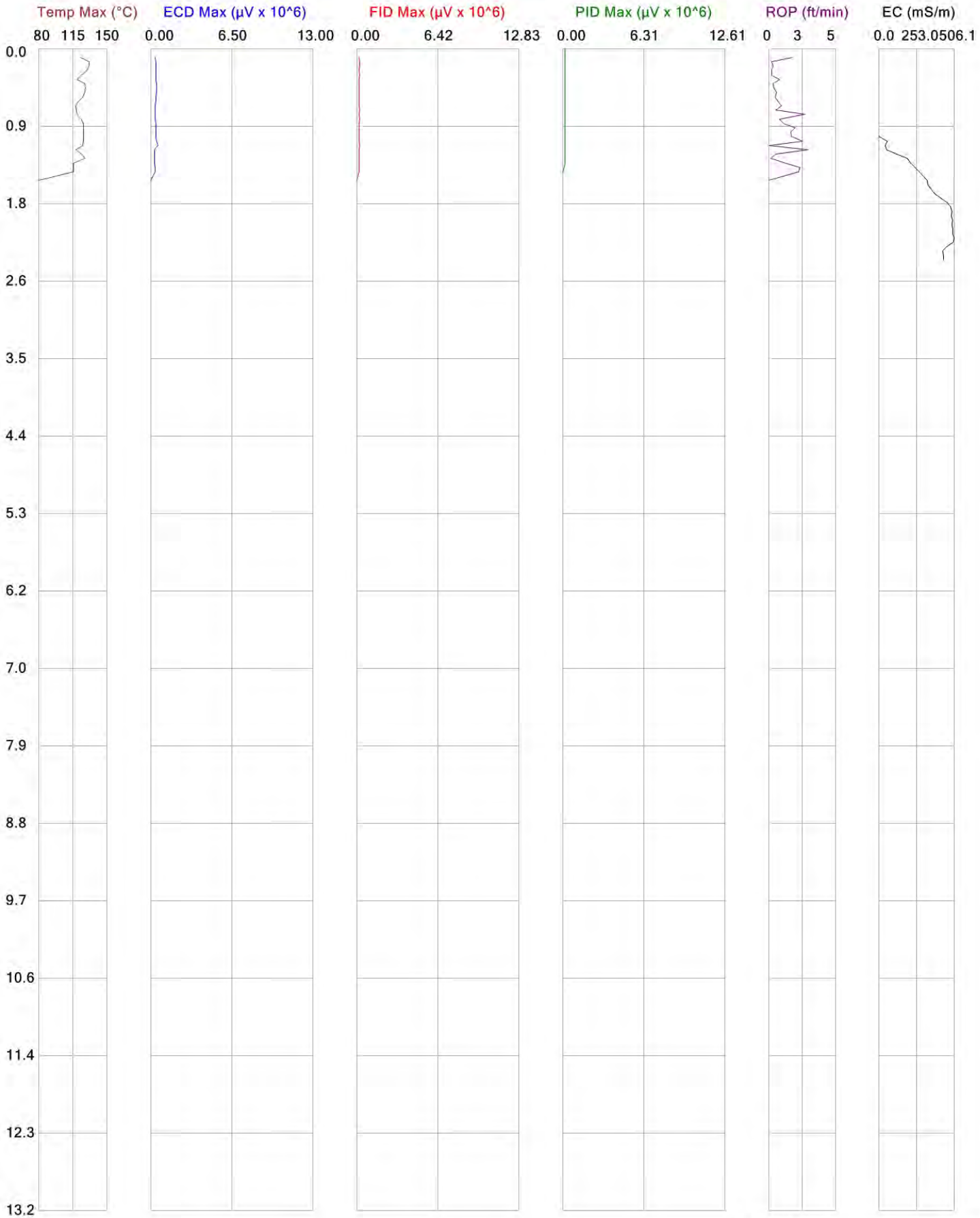
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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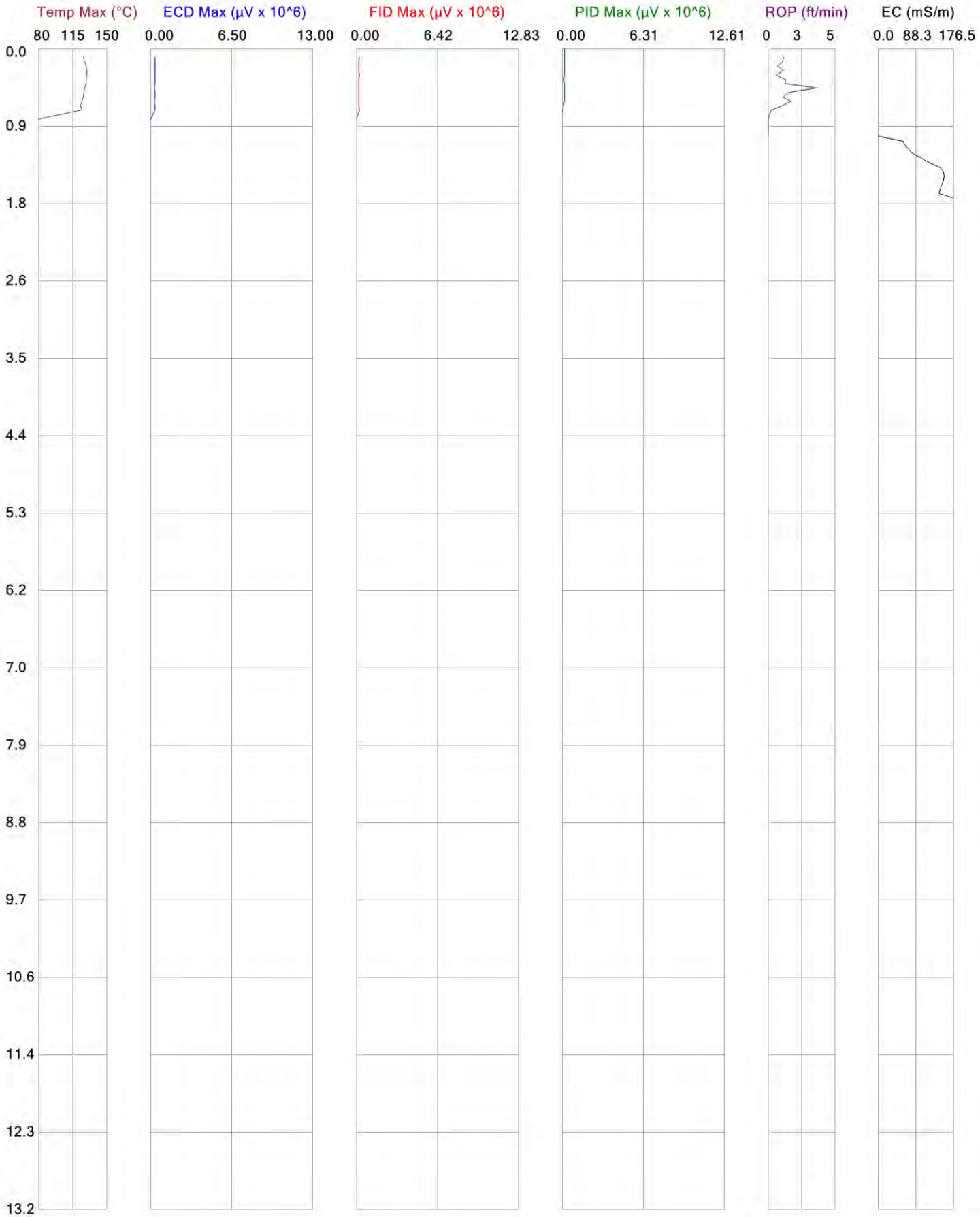
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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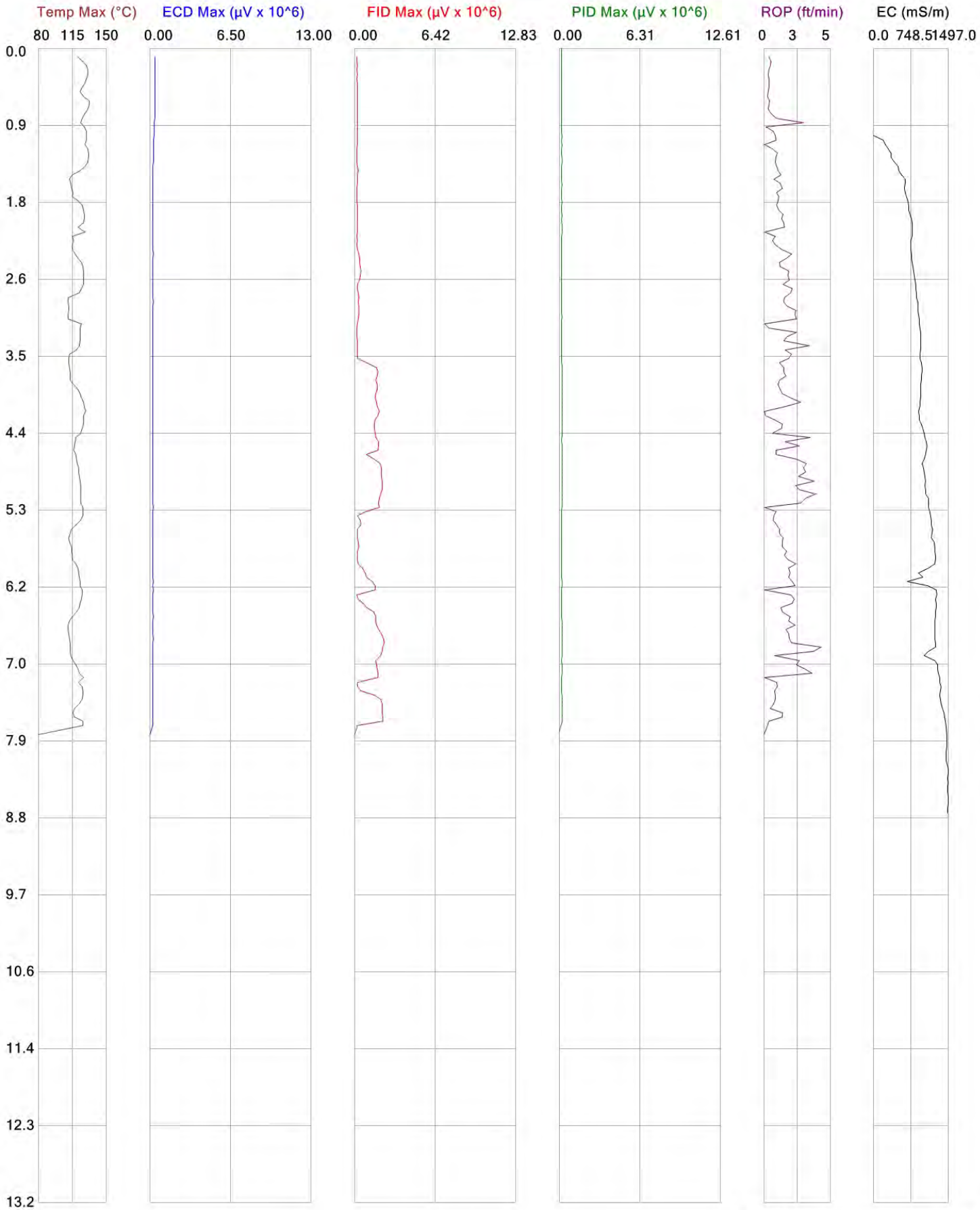
COLUMBIA TECHNOLOGIES



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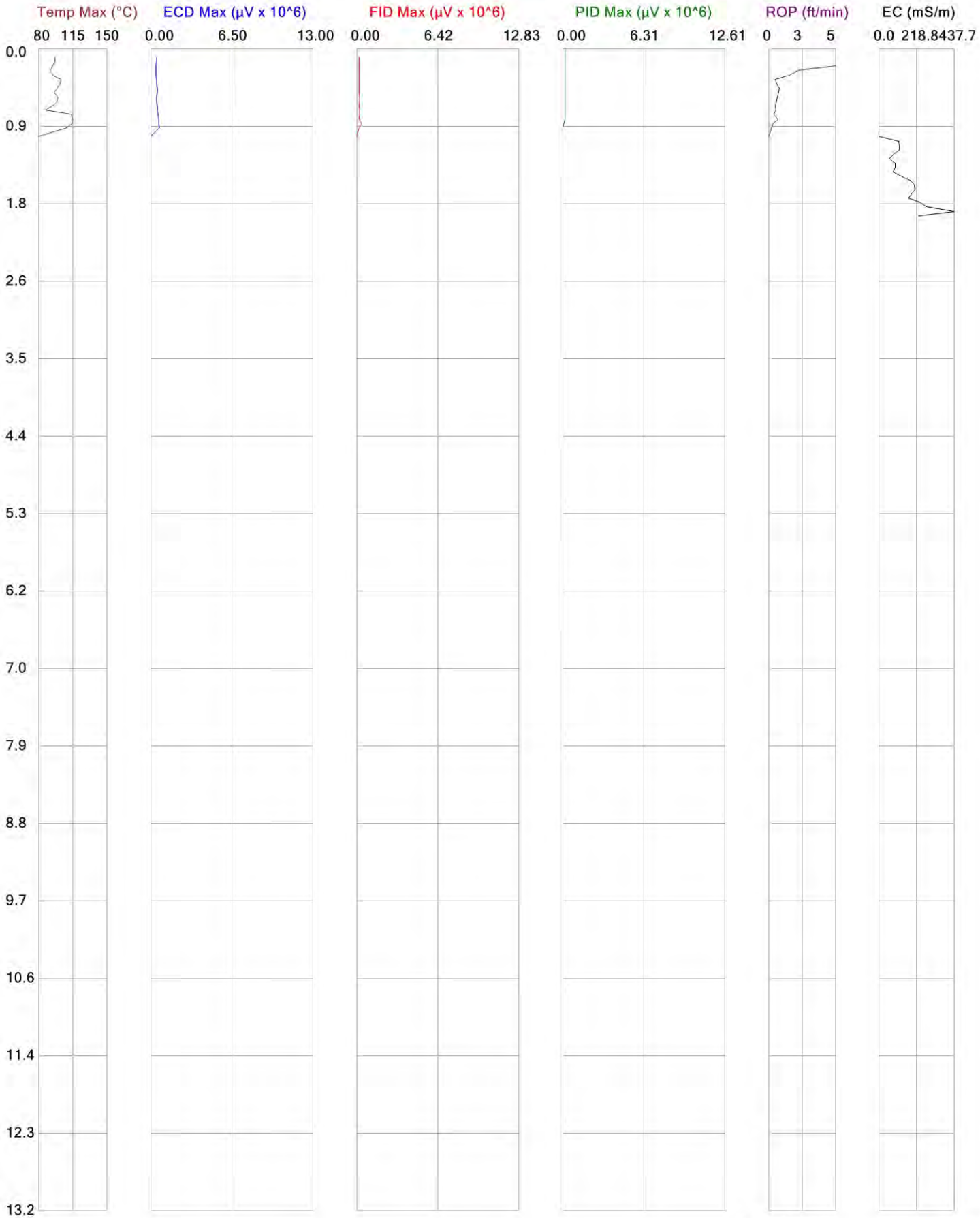
COLUMBIA TECHNOLOGIES



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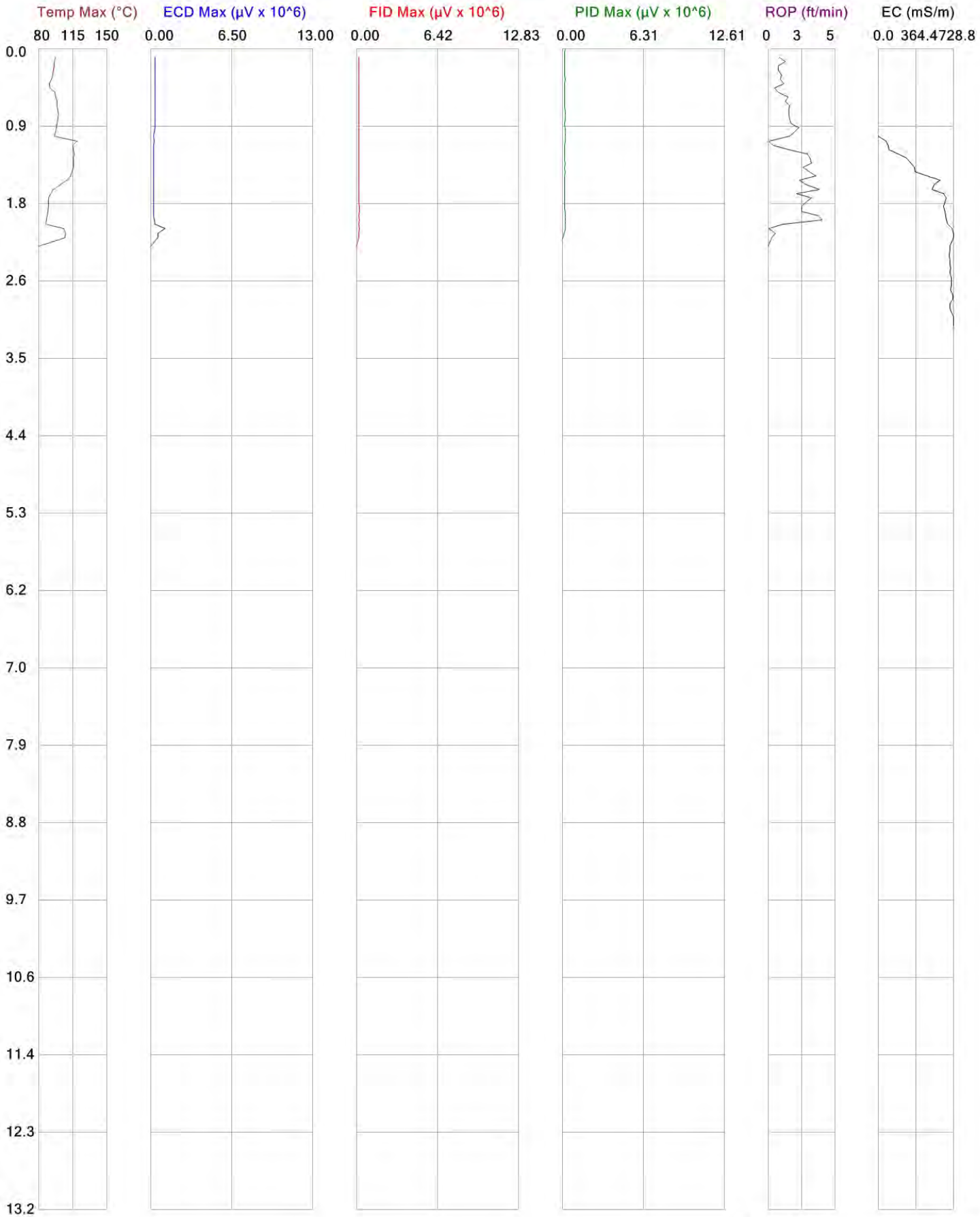
COLUMBIA TECHNOLOGIES



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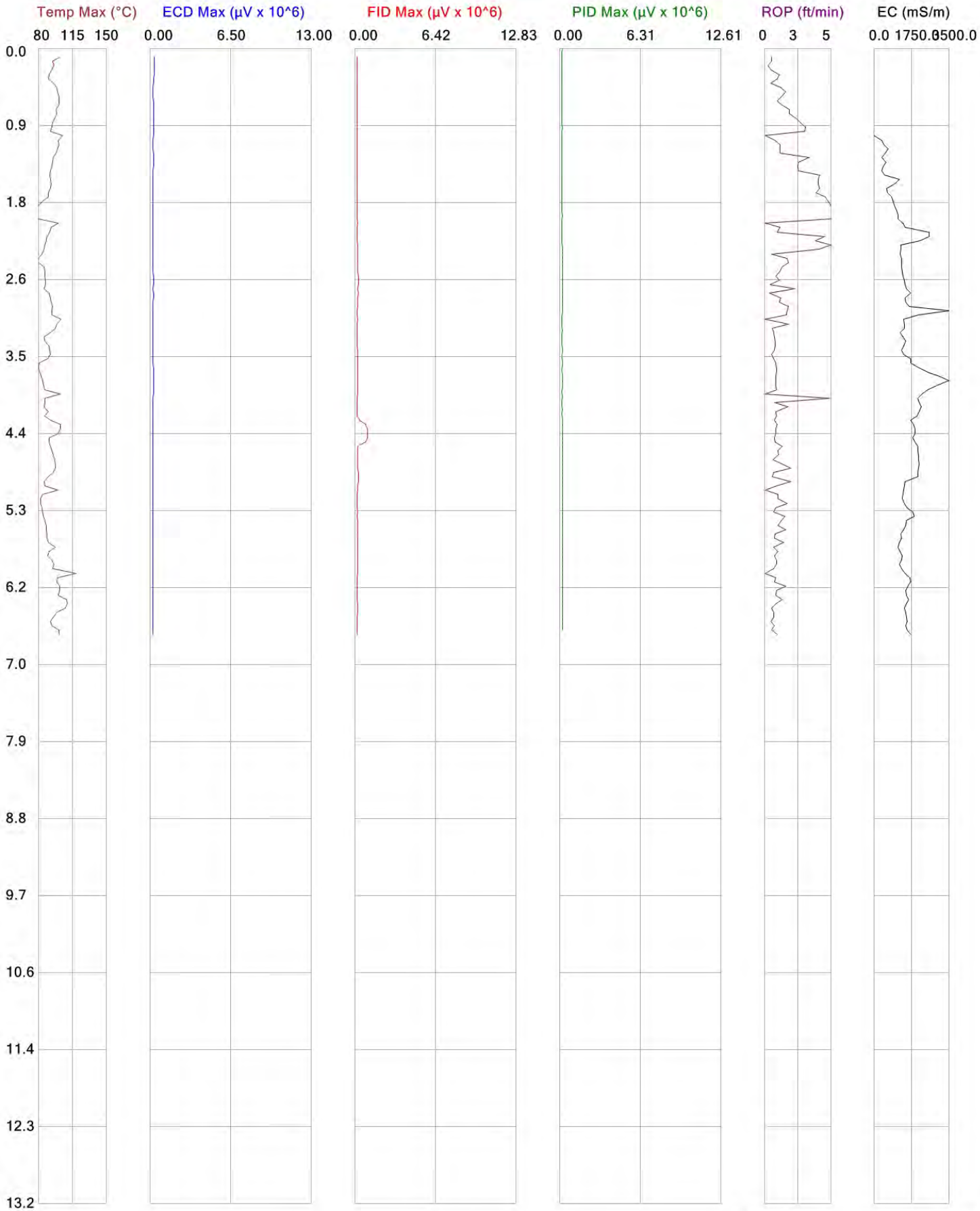
COLUMBIA TECHNOLOGIES



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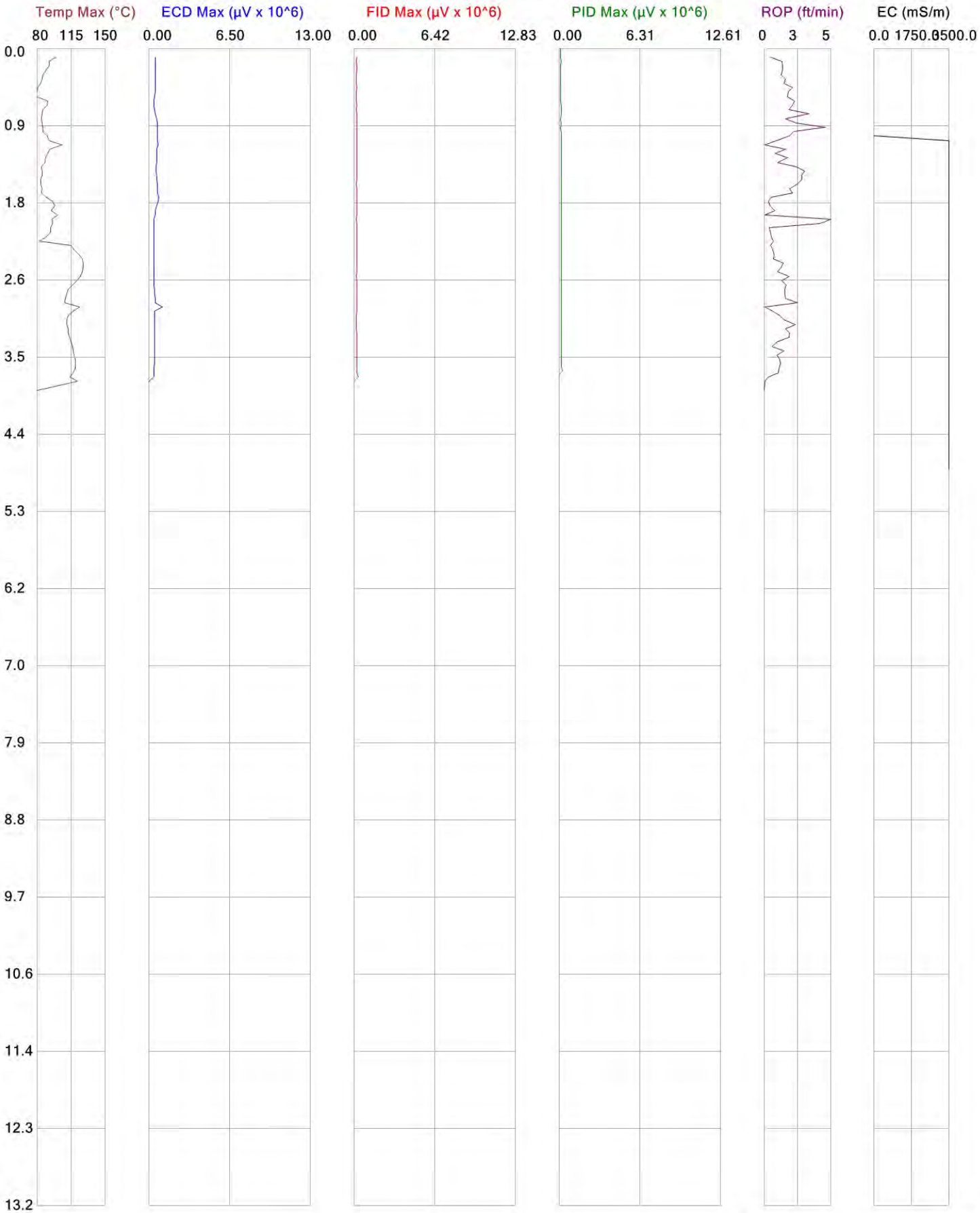
COLUMBIA TECHNOLOGIES



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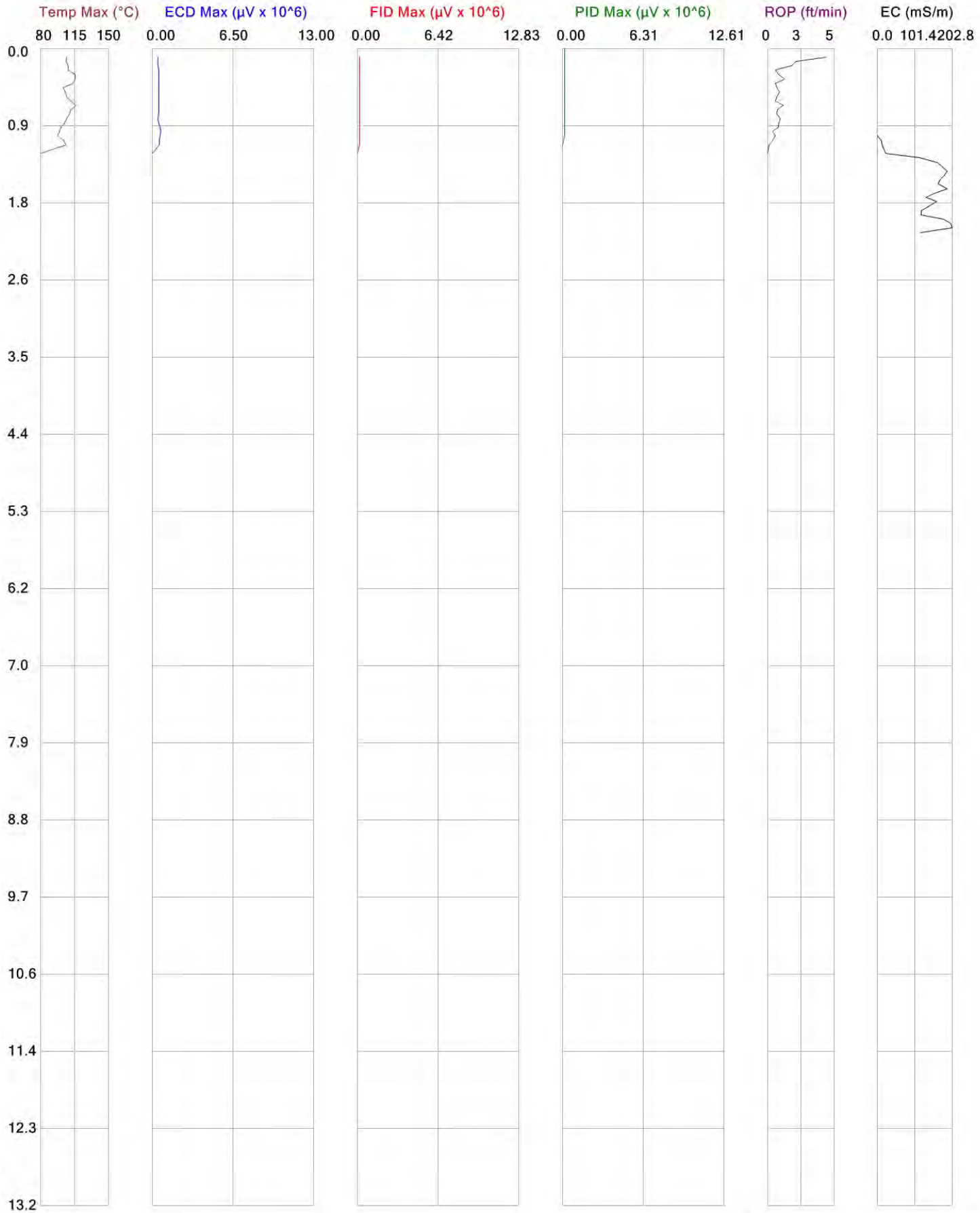
COLUMBIA TECHNOLOGIES



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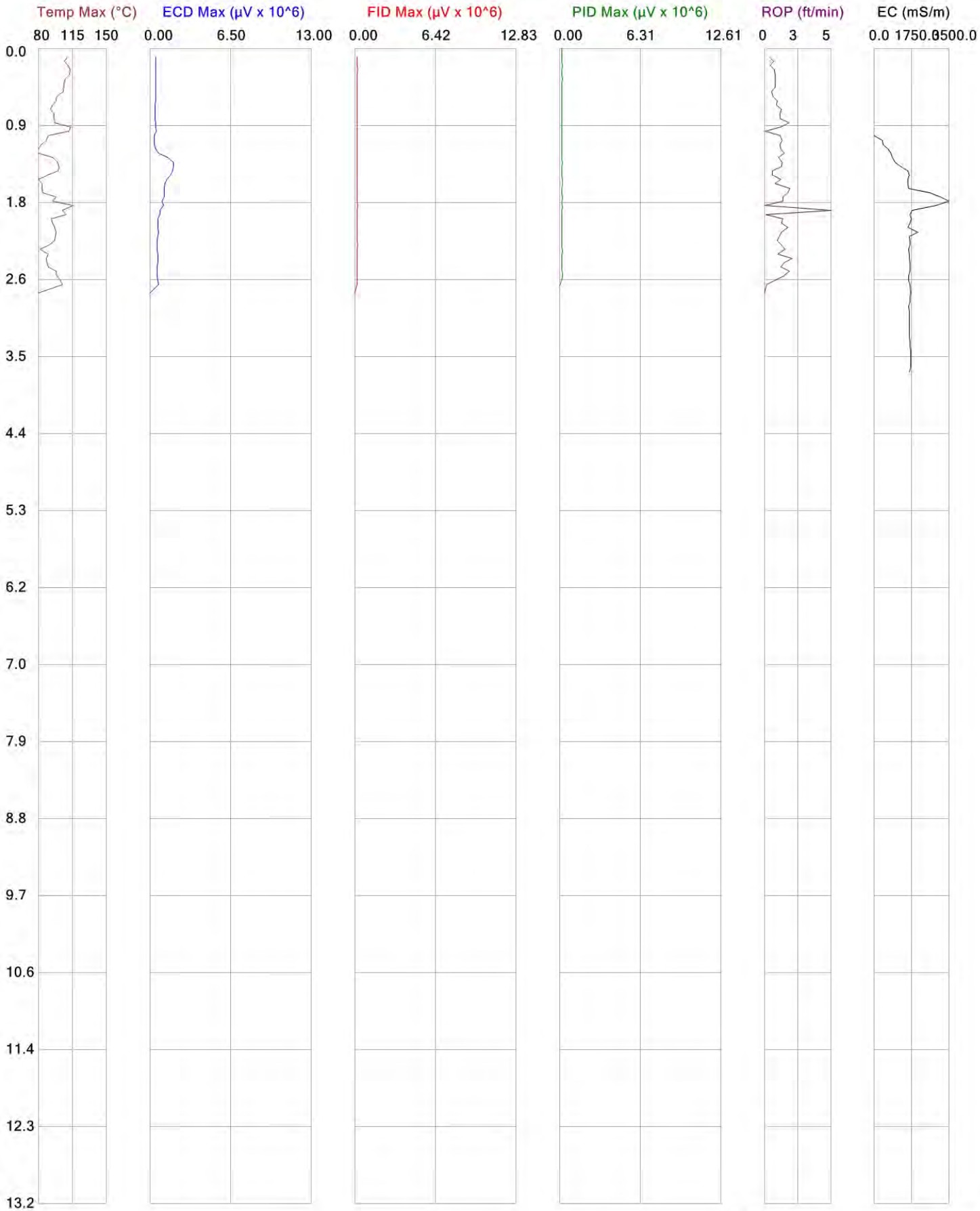
COLUMBIA TECHNOLOGIES



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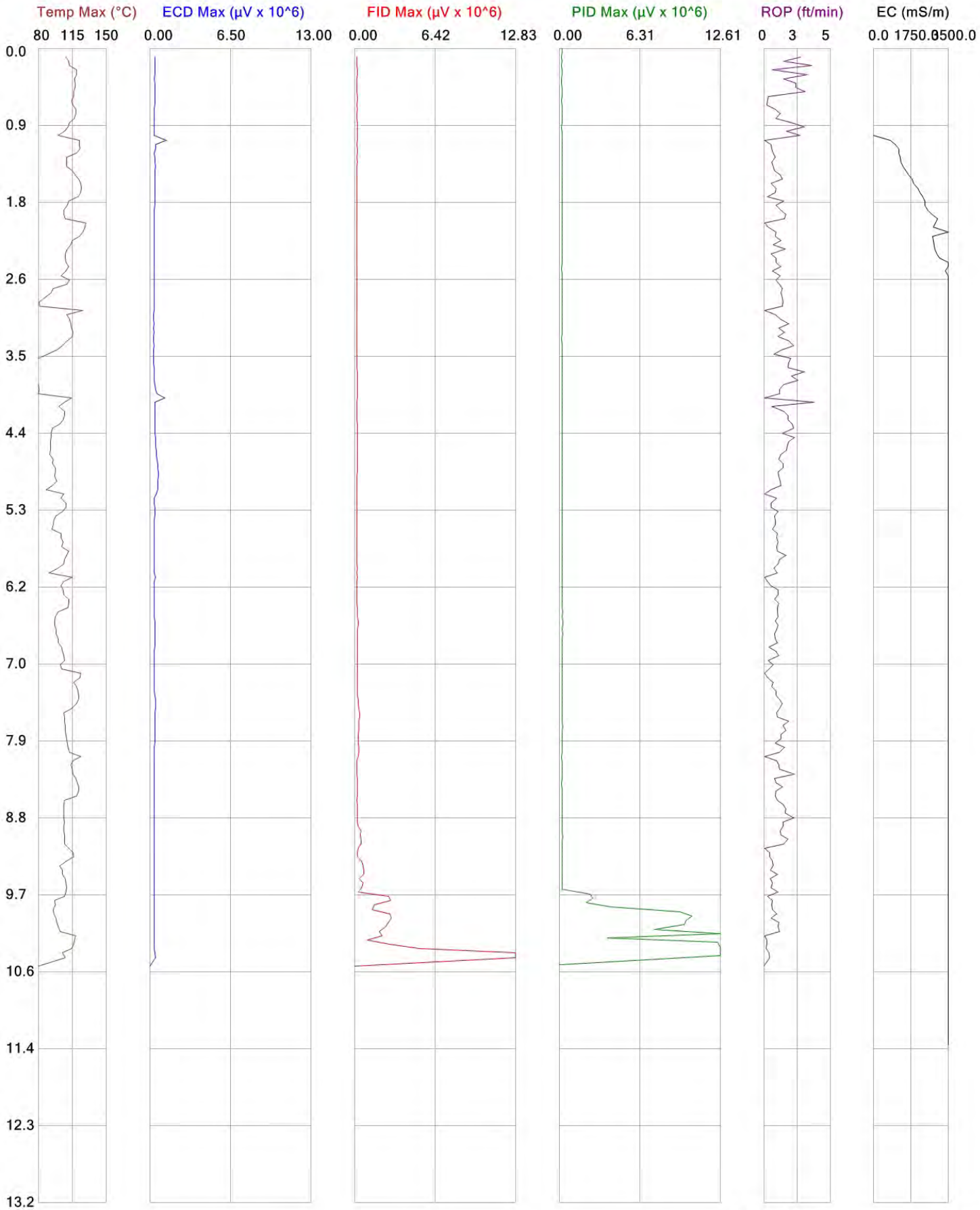
COLUMBIA TECHNOLOGIES



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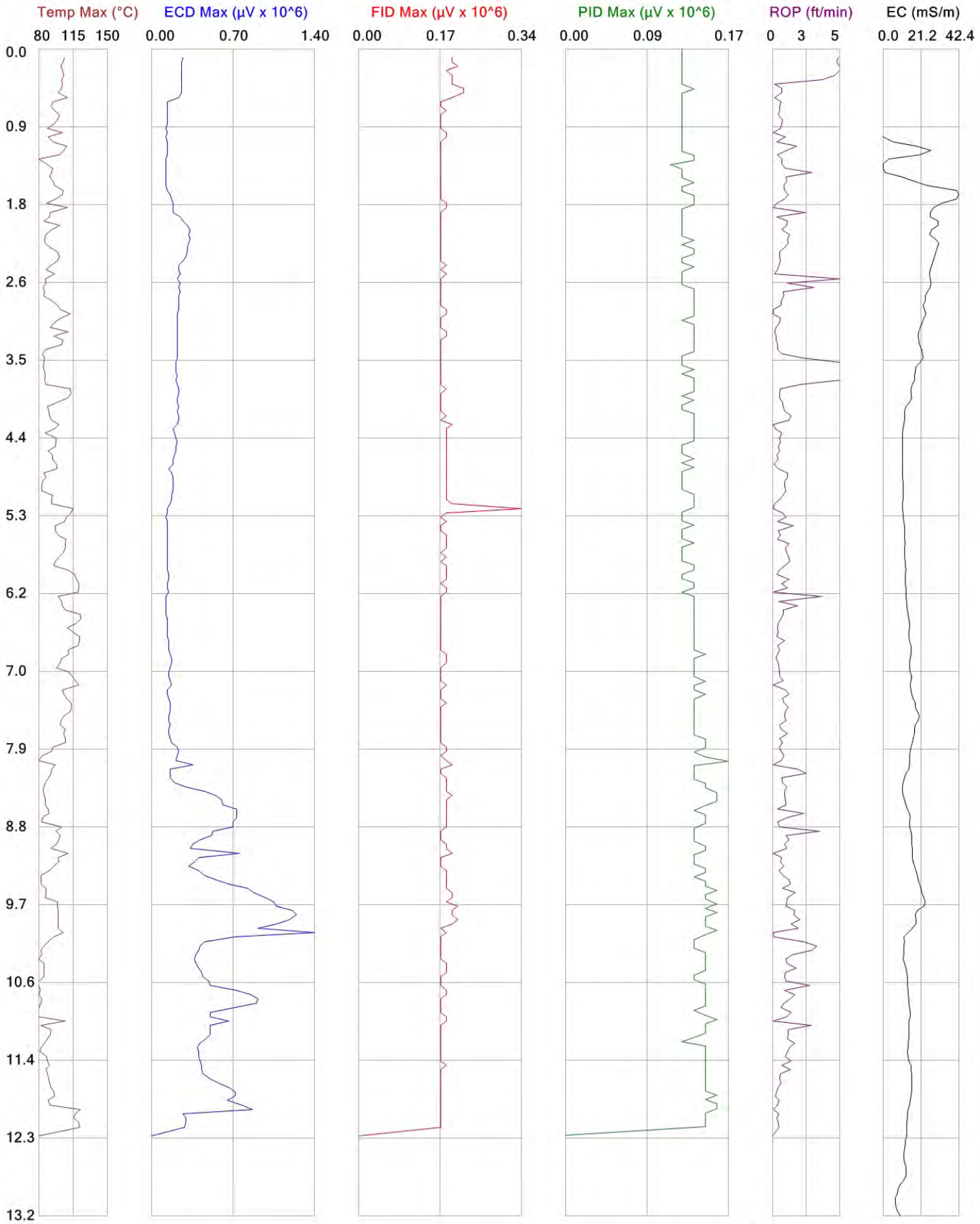
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES

ATTACHMENT B

Individual Scale Membrane Interface Probe Logs



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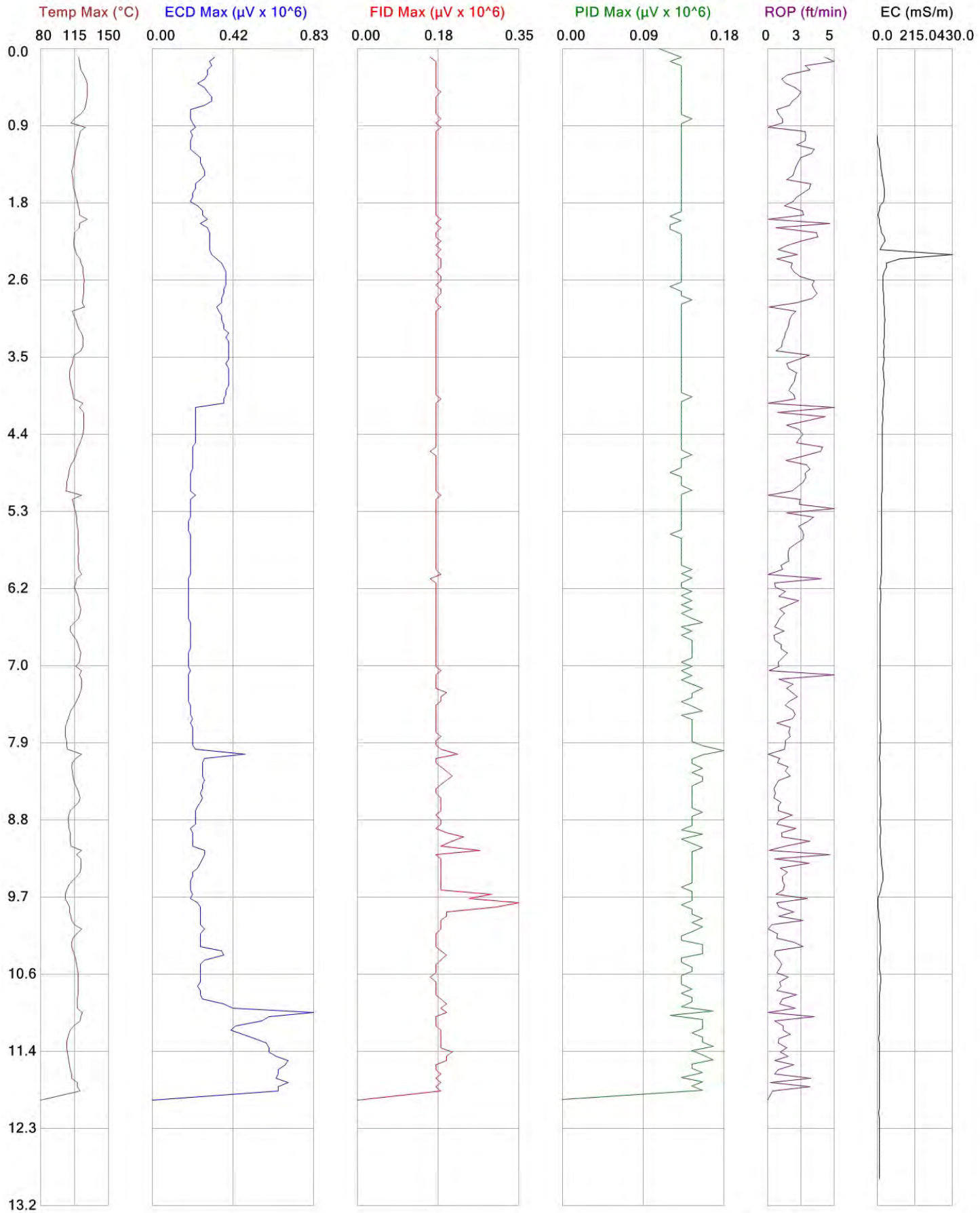
COLUMBIA TECHNOLOGIES



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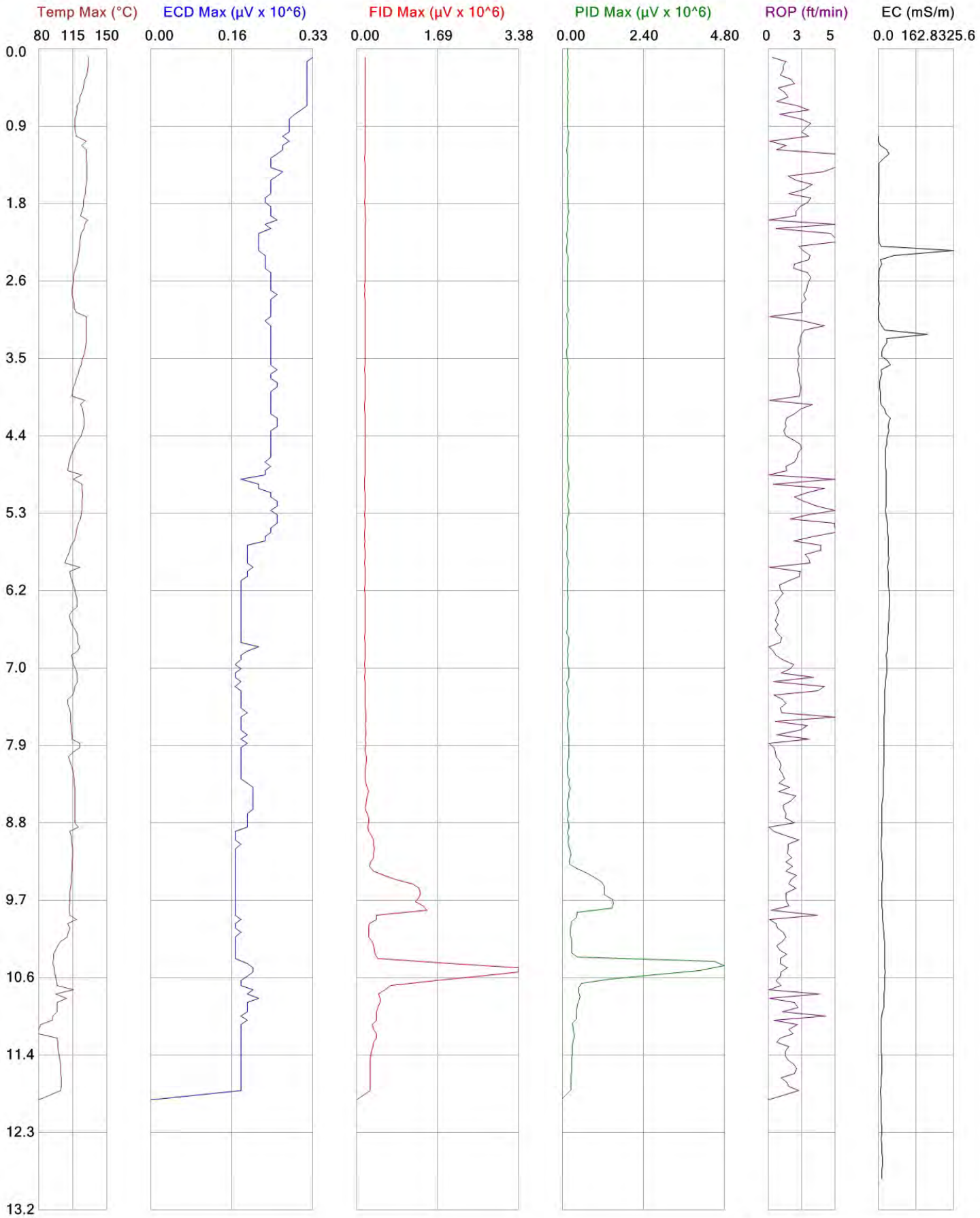
COLUMBIA TECHNOLOGIES



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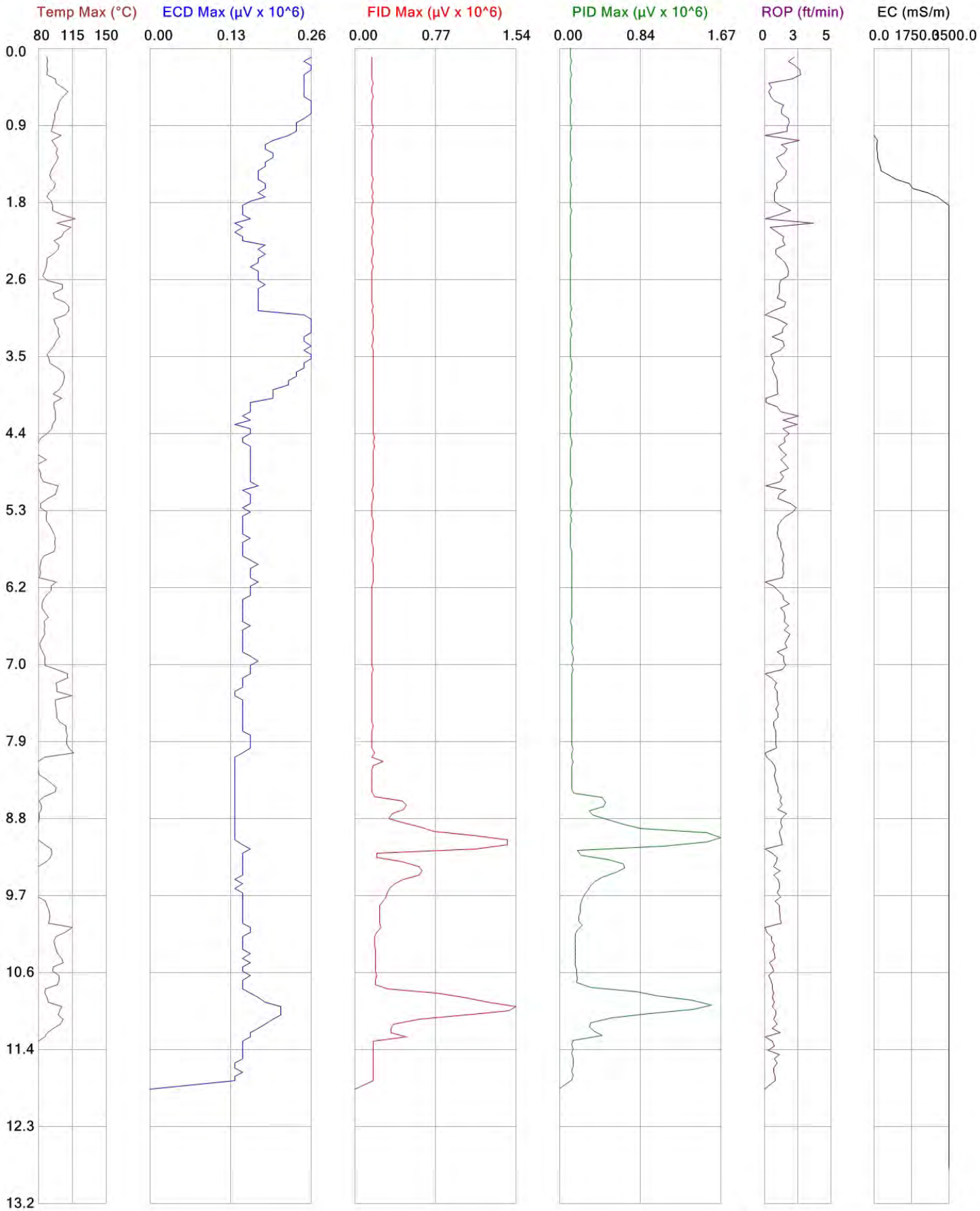
COLUMBIA TECHNOLOGIES



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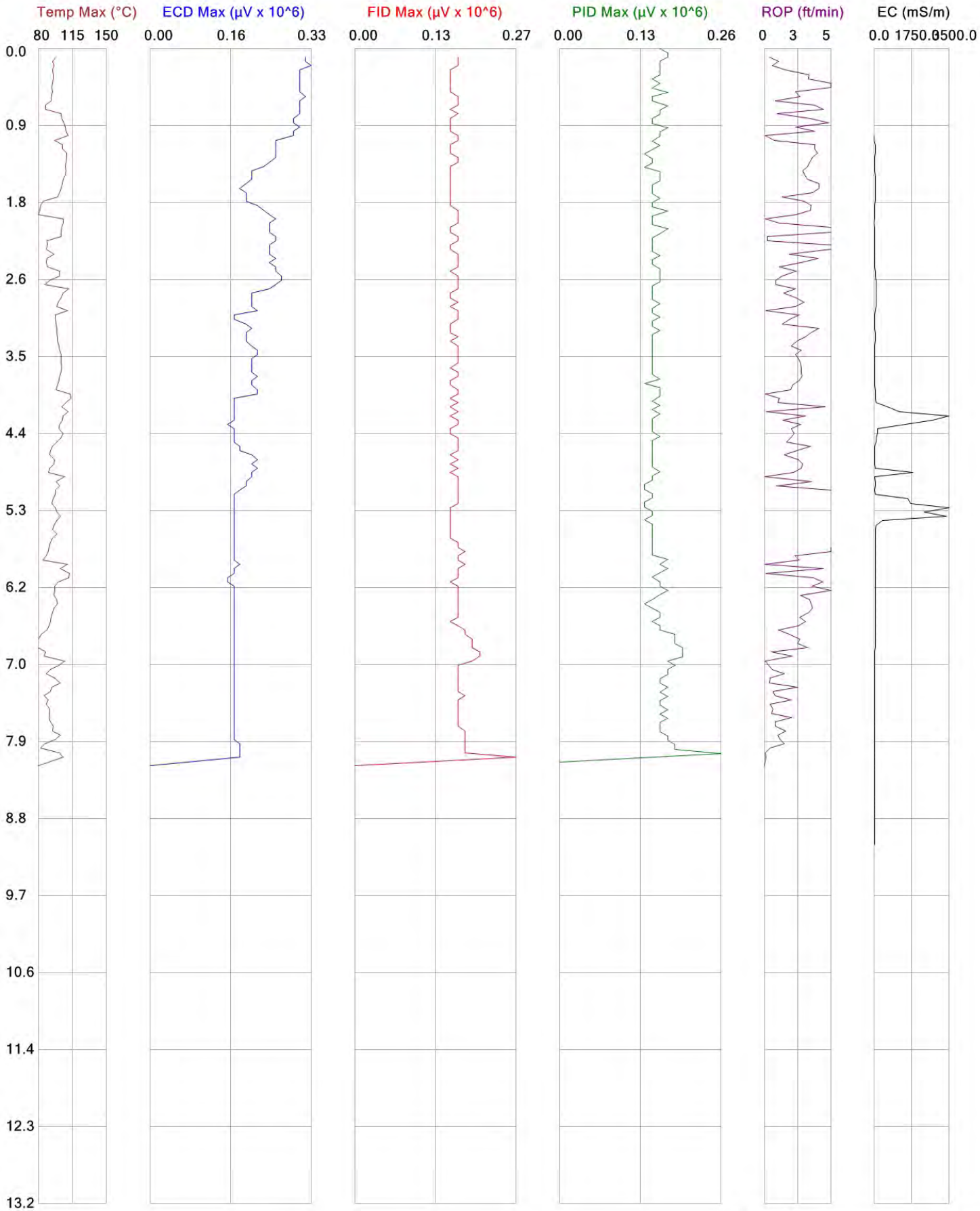
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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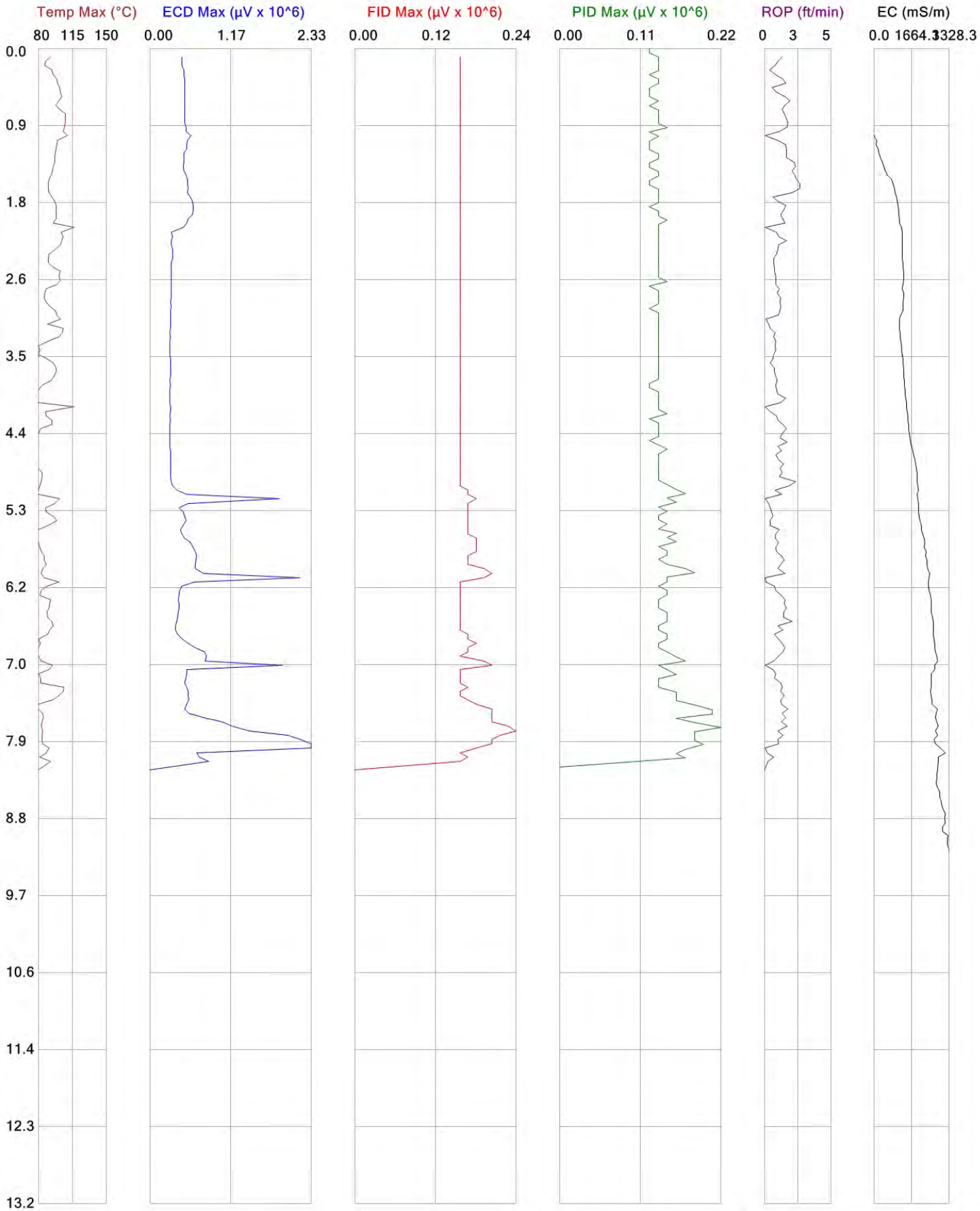

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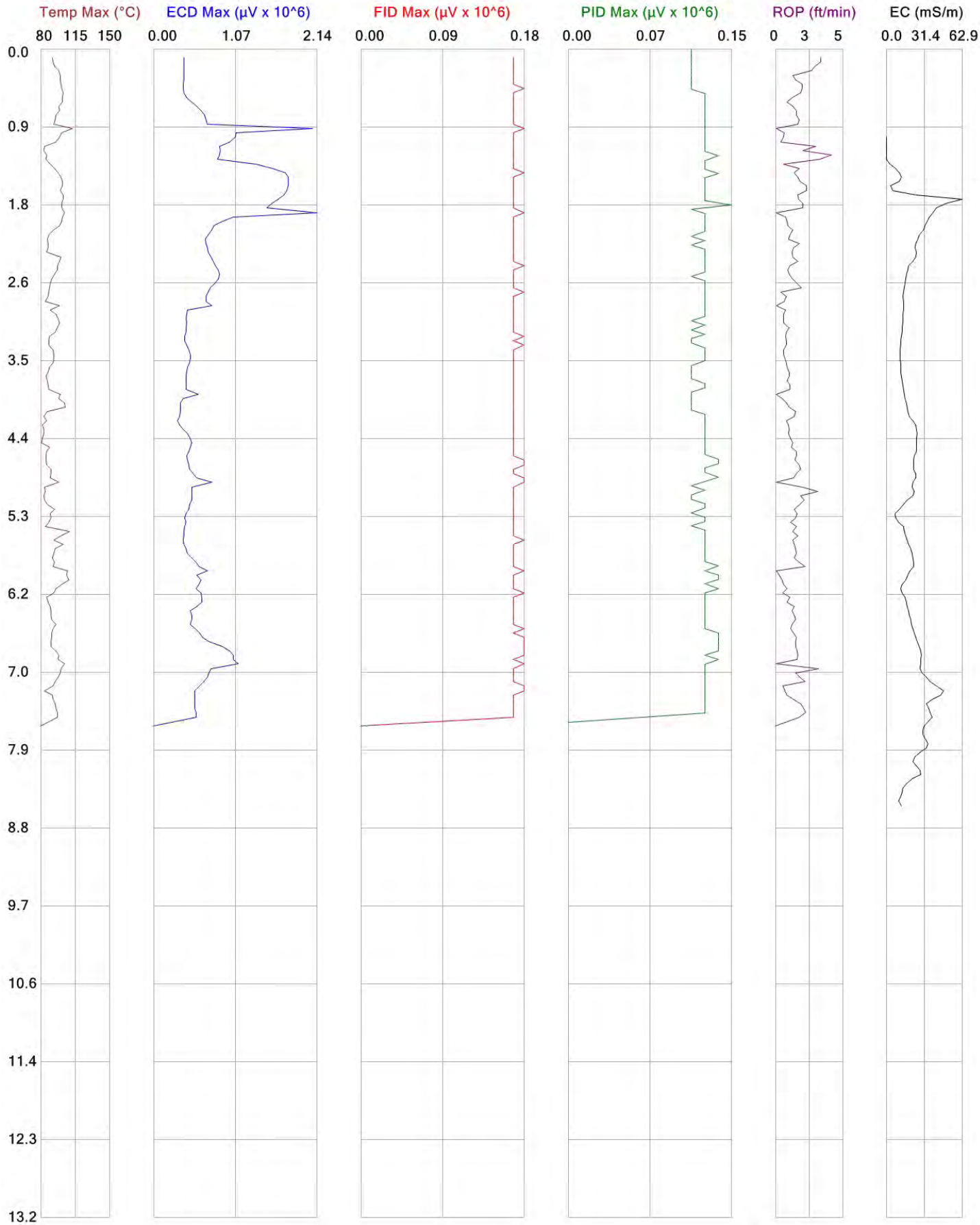

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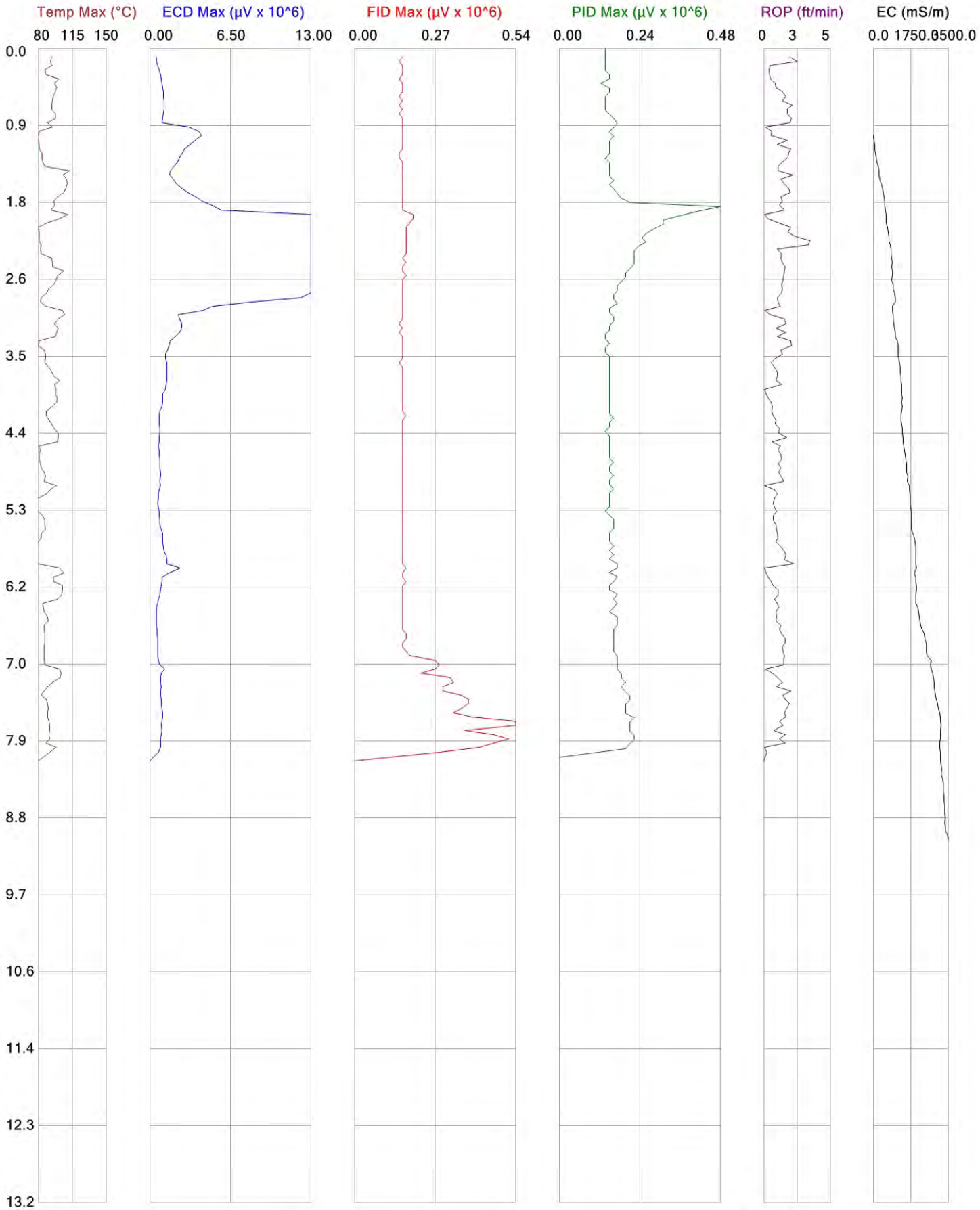
COLUMBIA TECHNOLOGIES



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Project ID: Former National Rubber Adhesives	Location:

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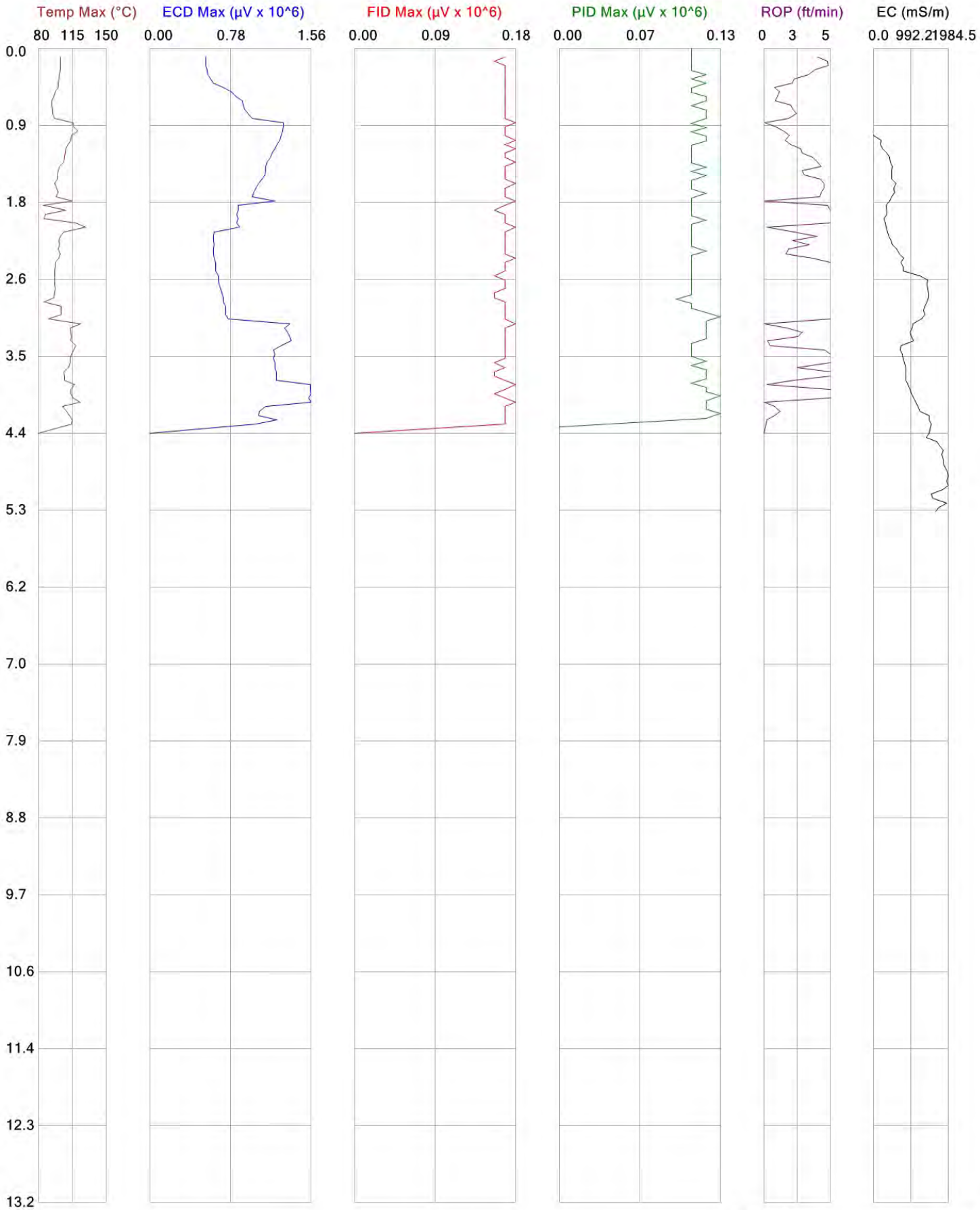

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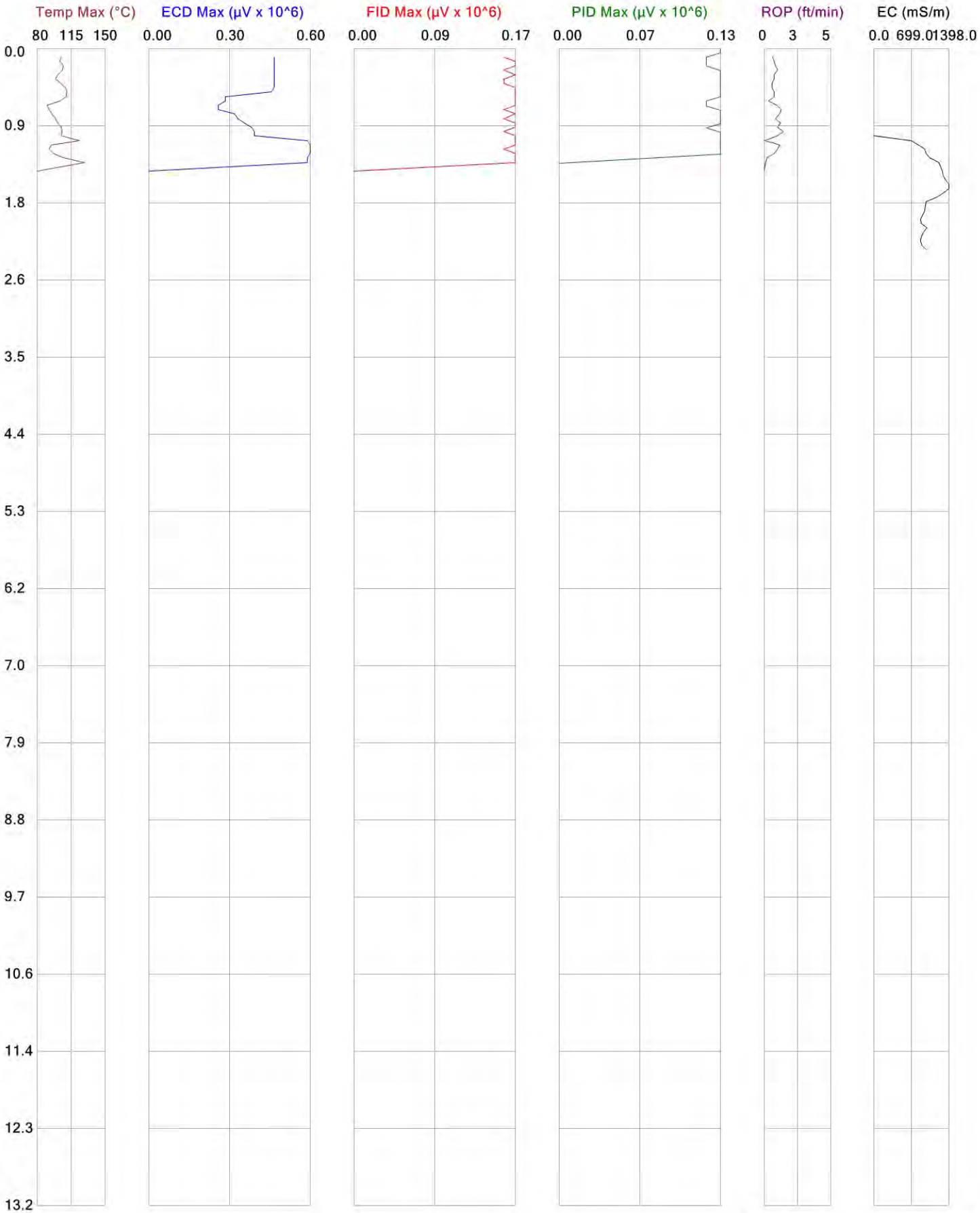
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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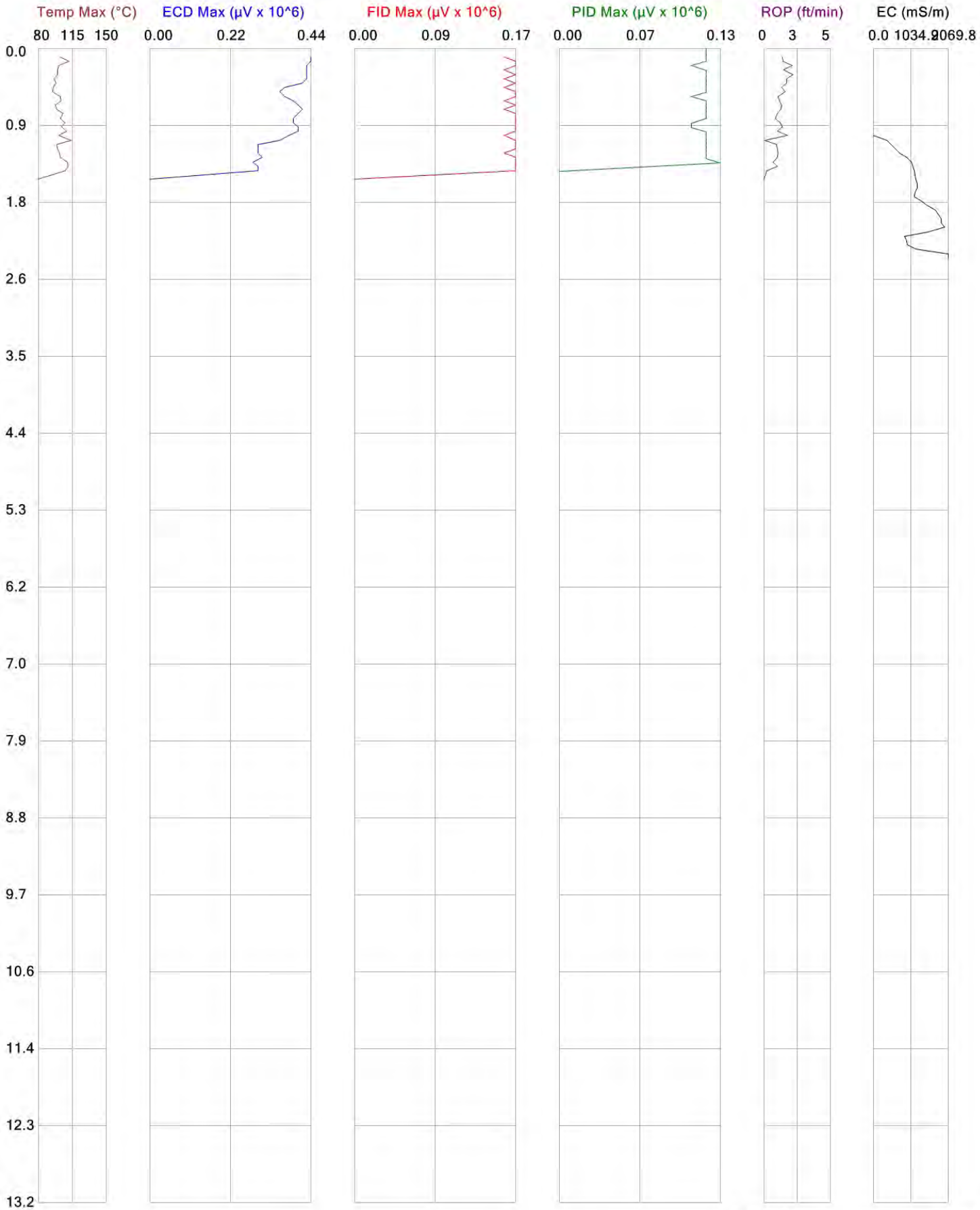
COLUMBIA TECHNOLOGIES



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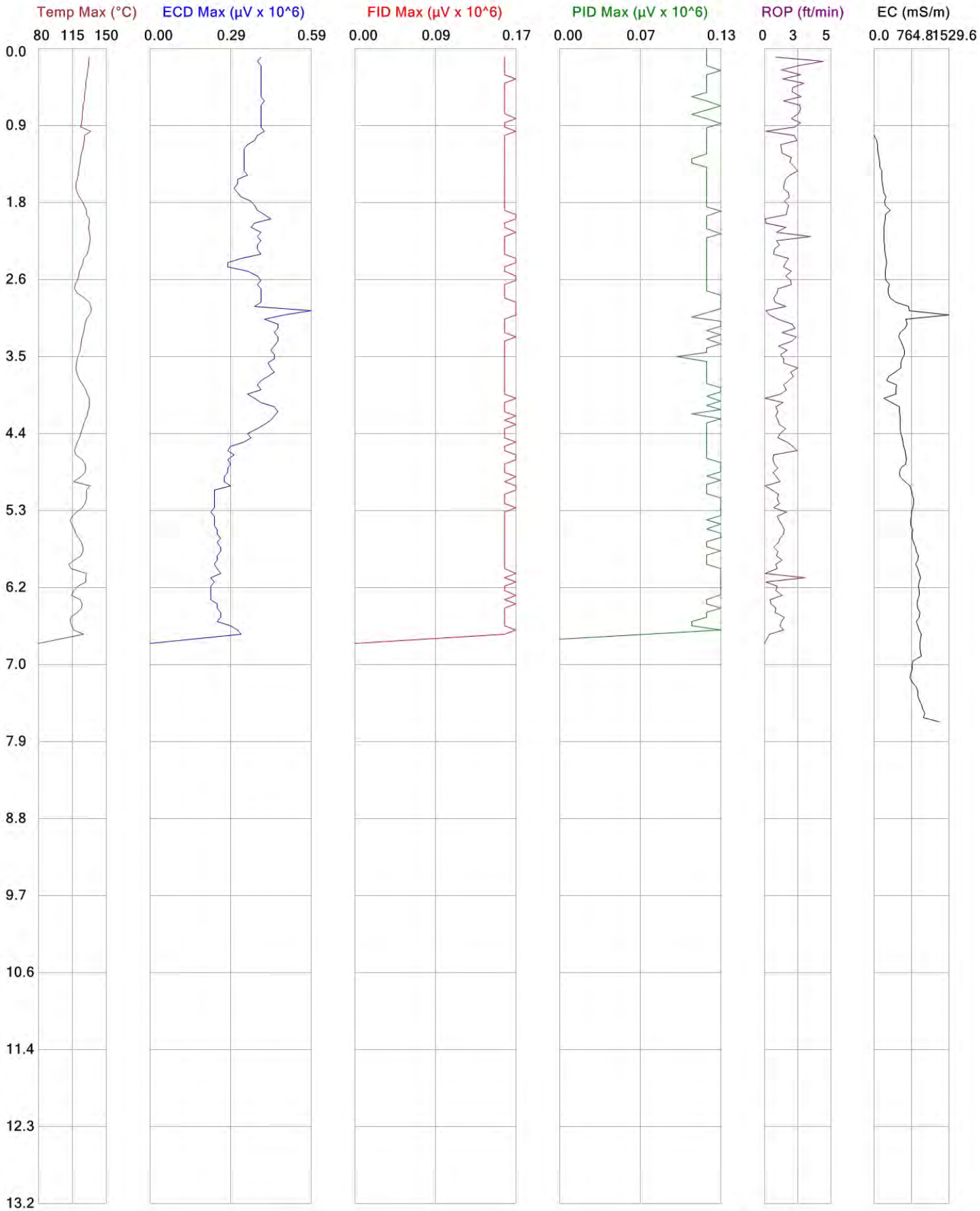
COLUMBIA TECHNOLOGIES



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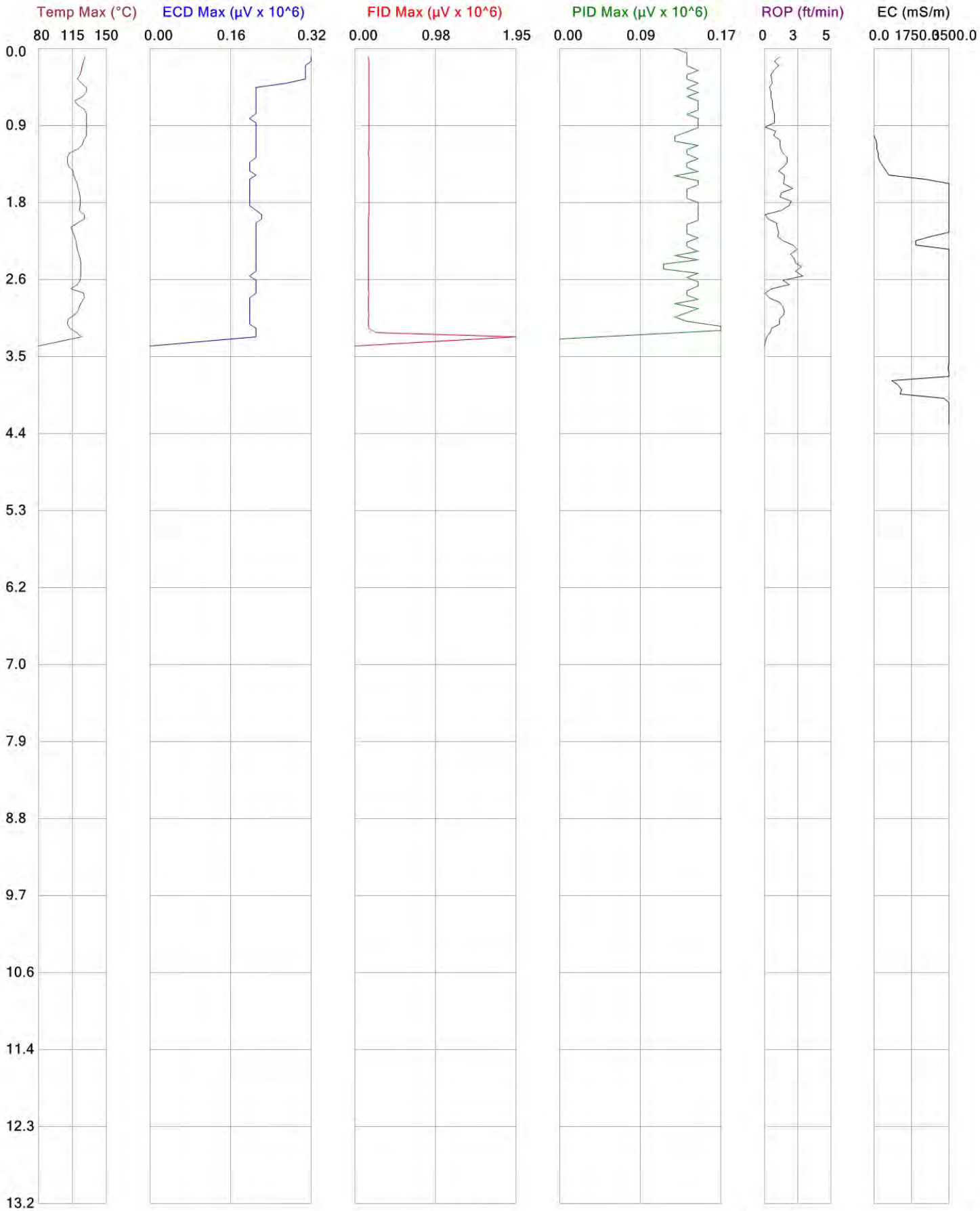
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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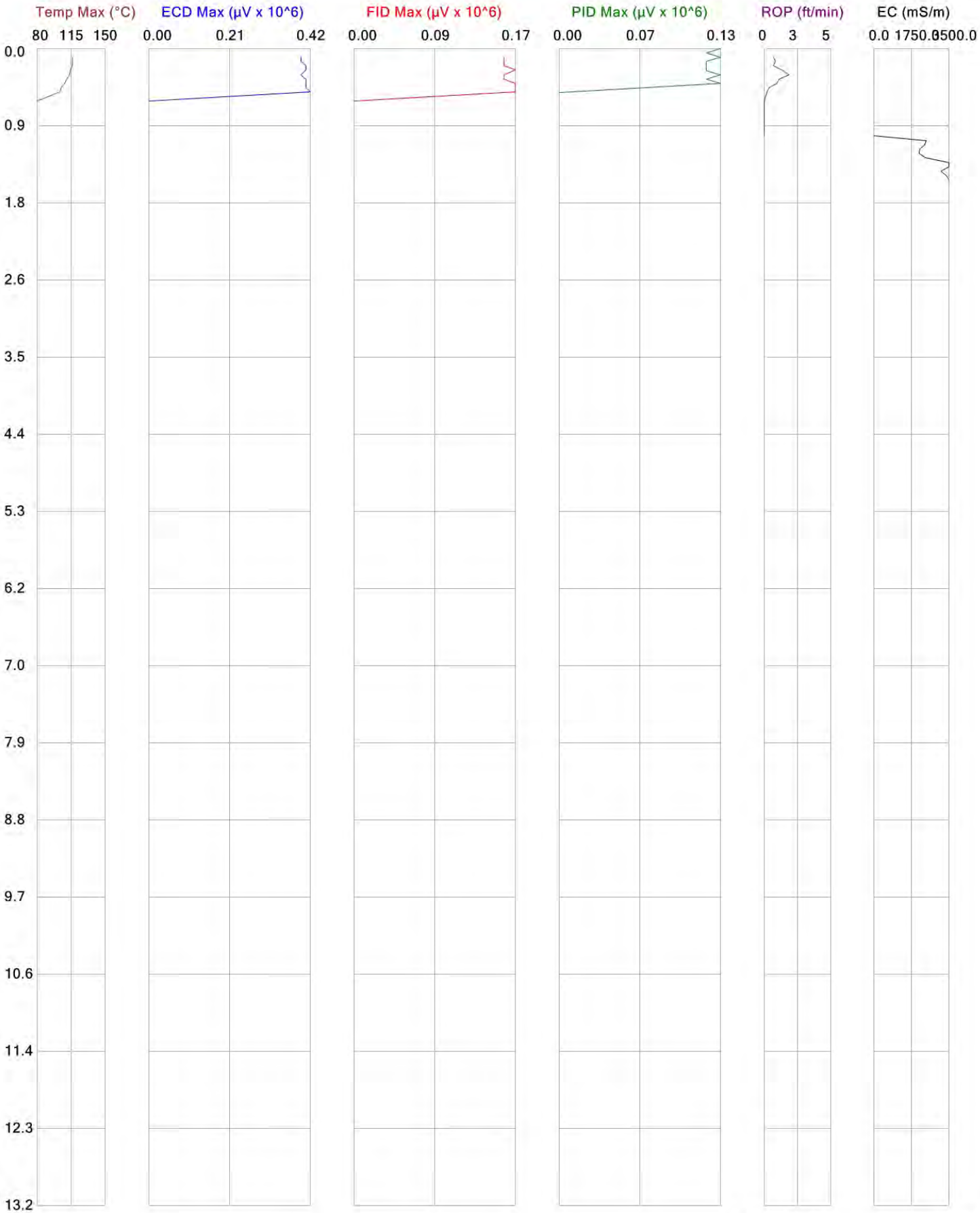

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Project ID: Former National Rubber Adhesives	Location:

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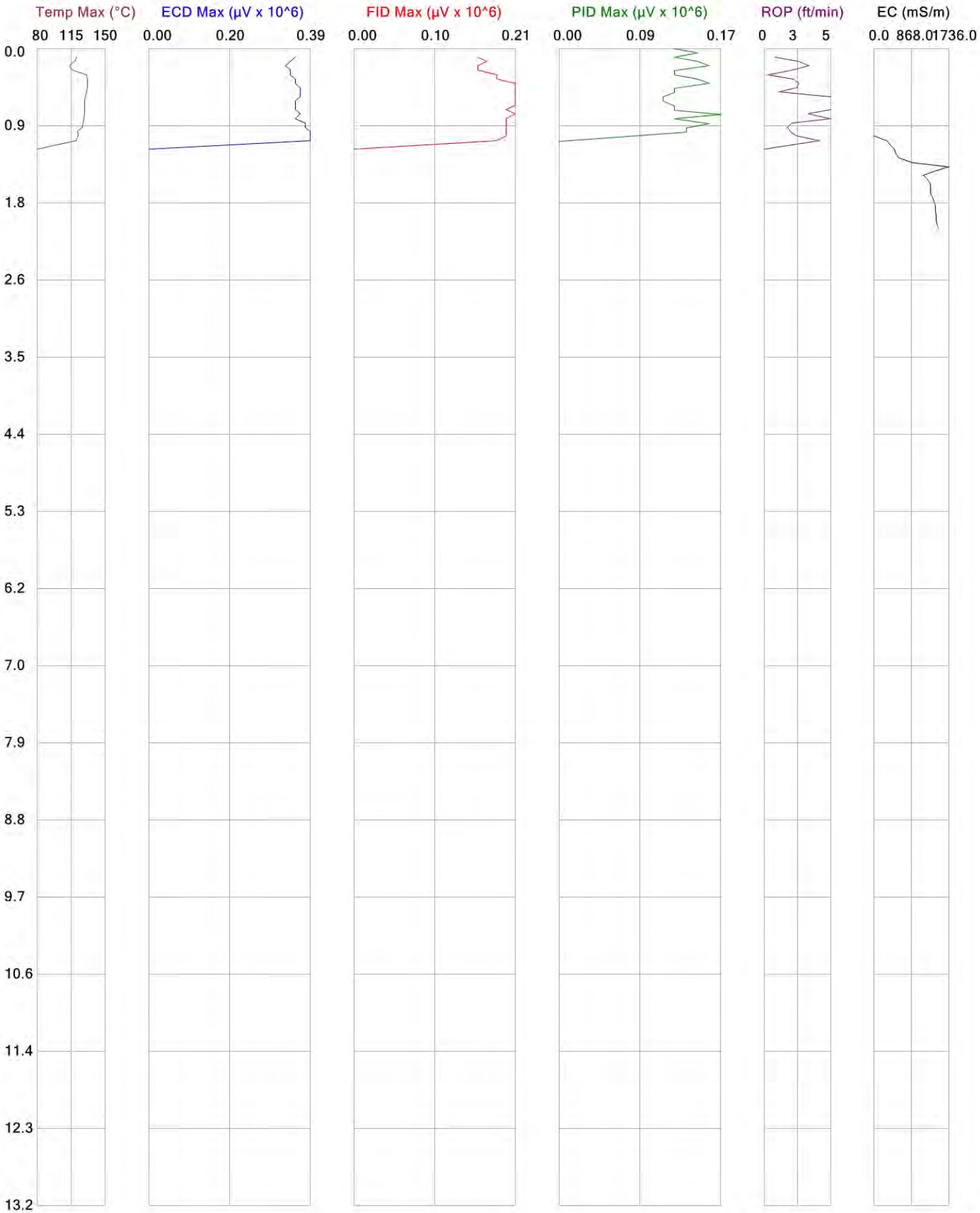

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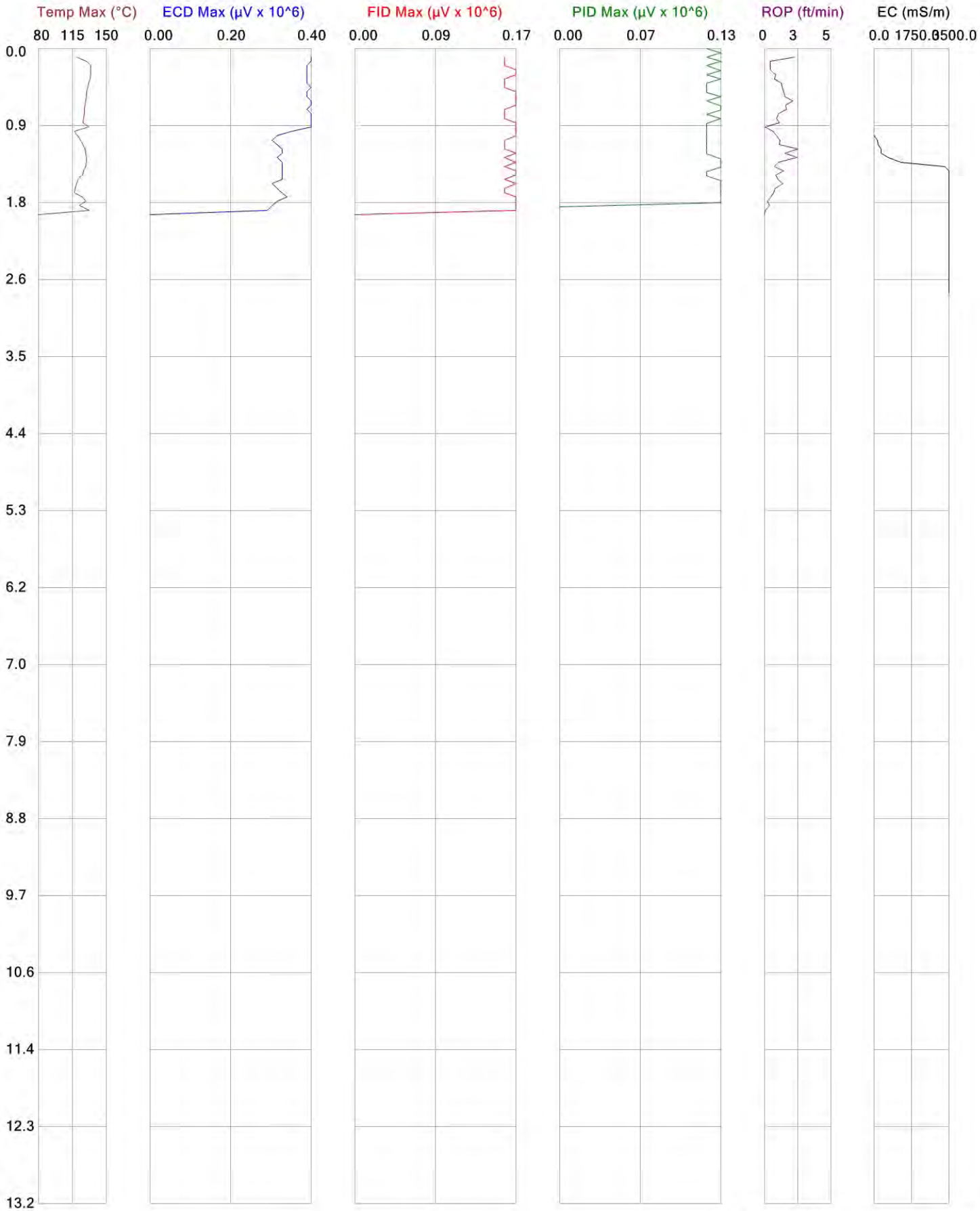

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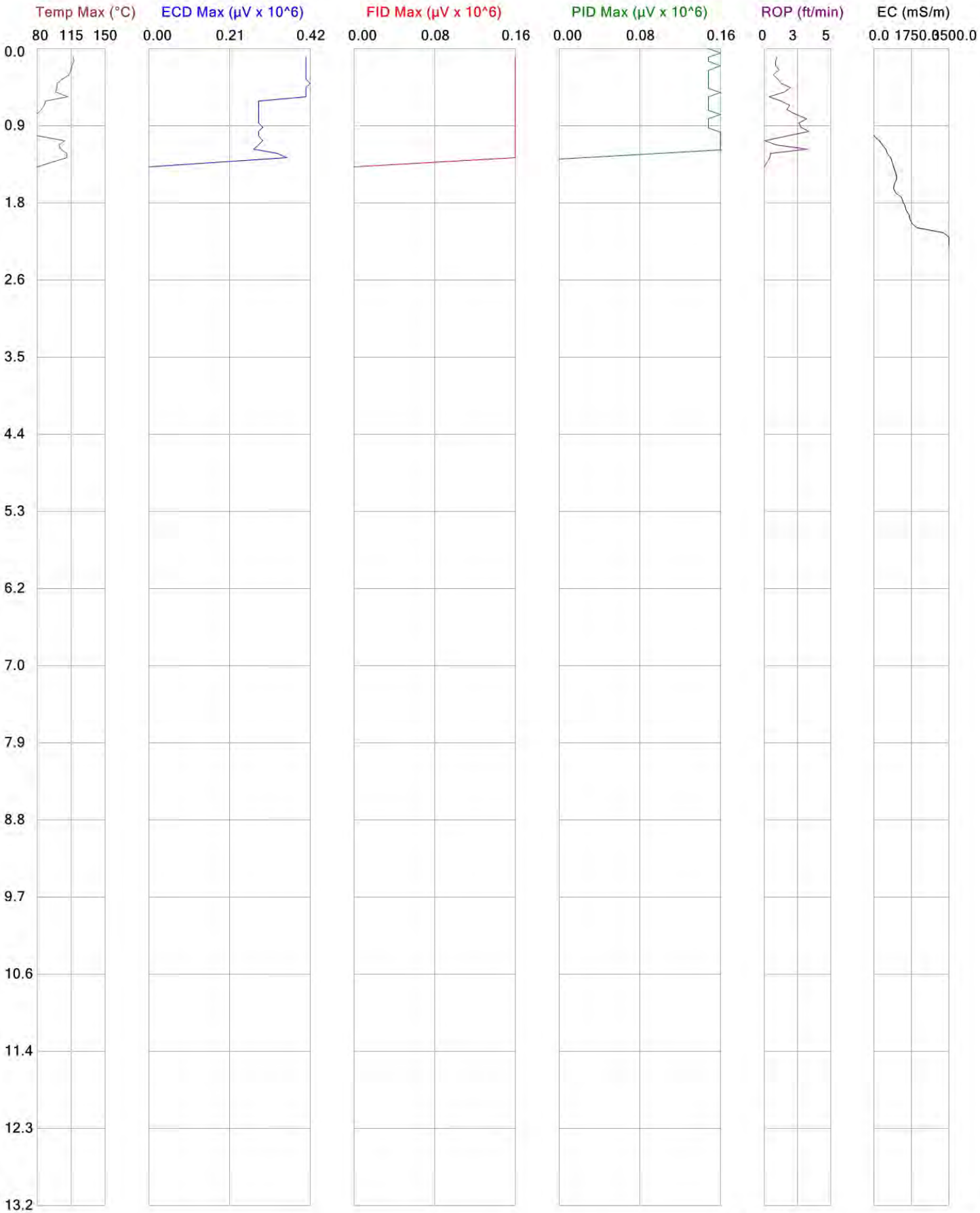
COLUMBIA TECHNOLOGIES



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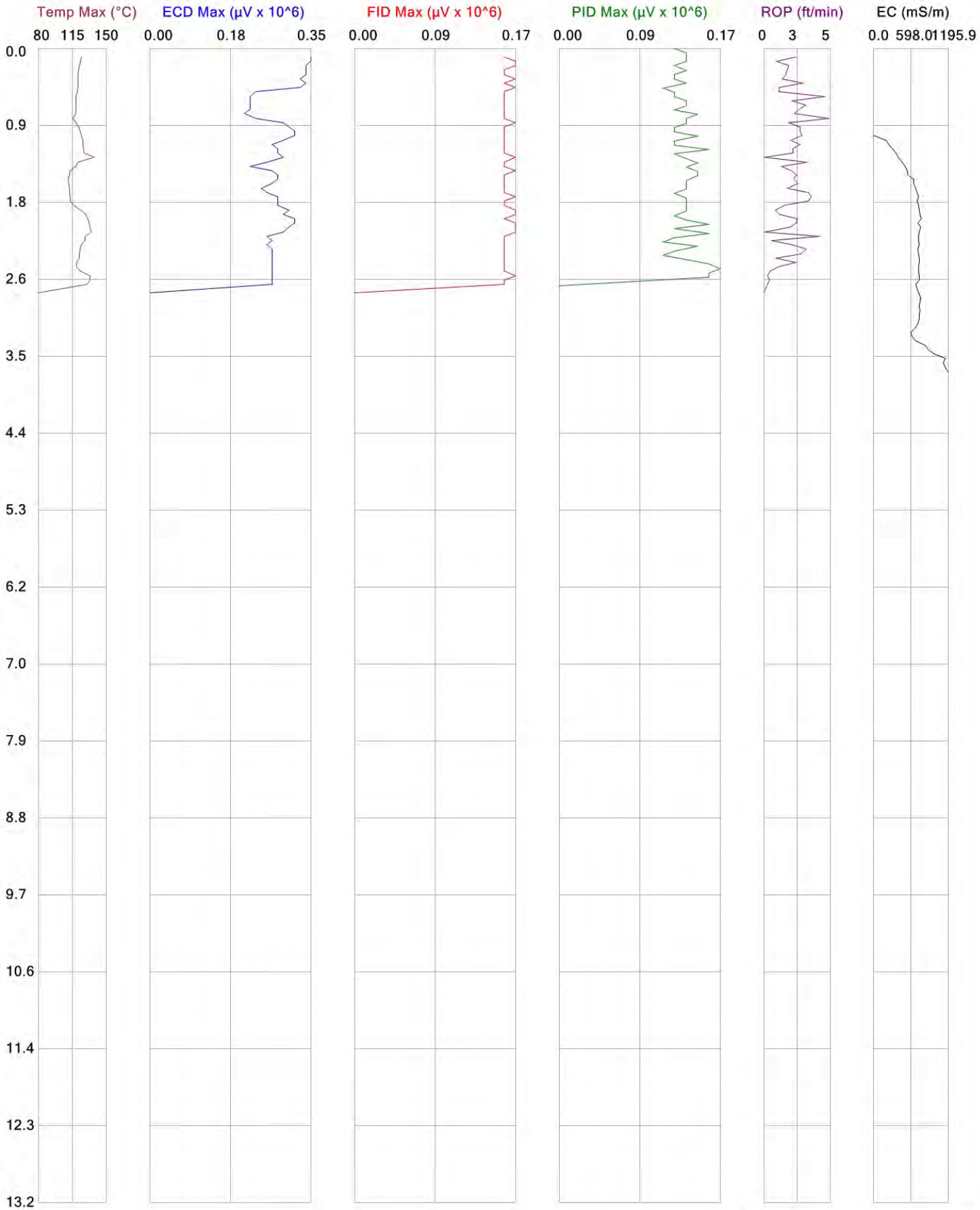
COLUMBIA TECHNOLOGIES



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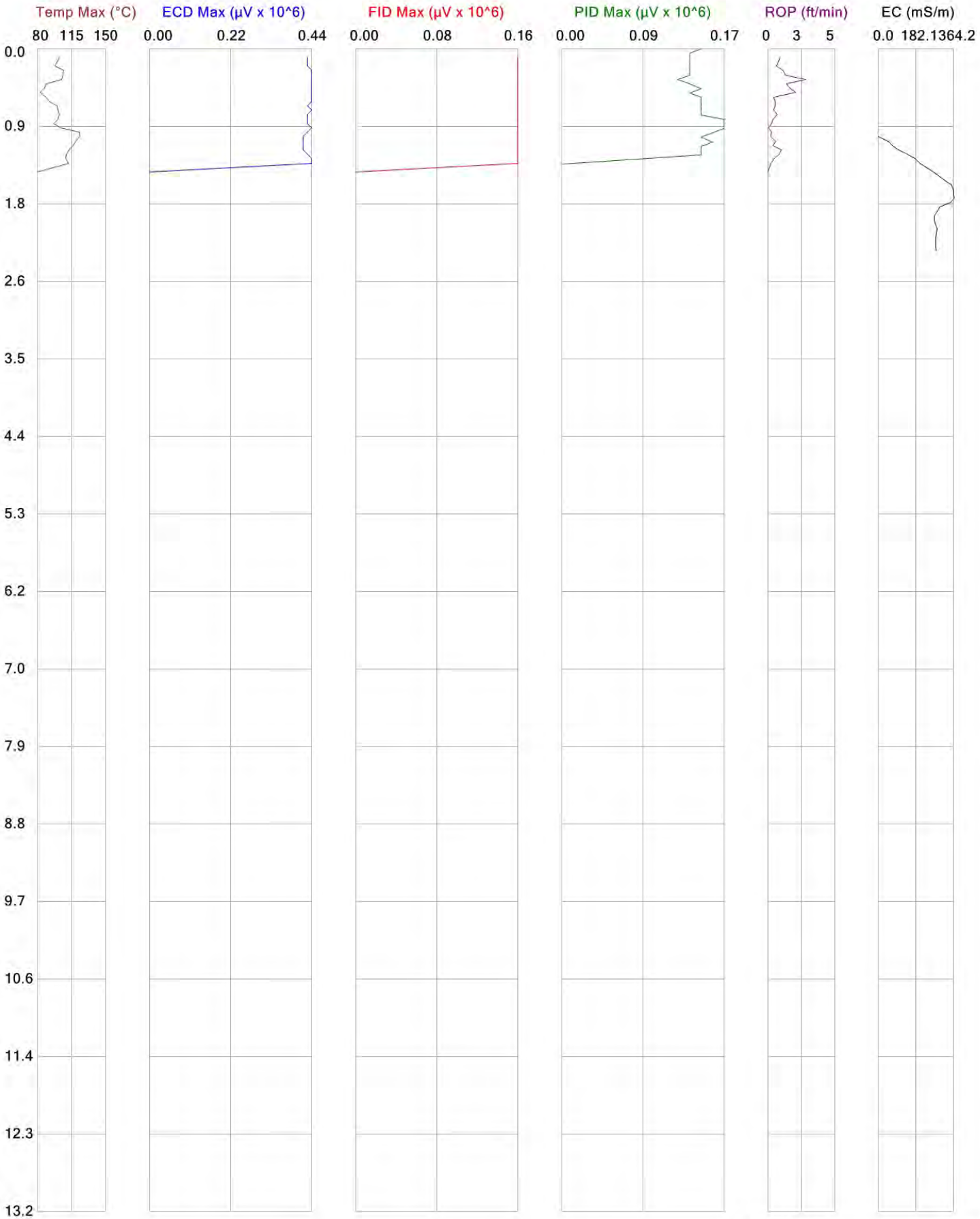

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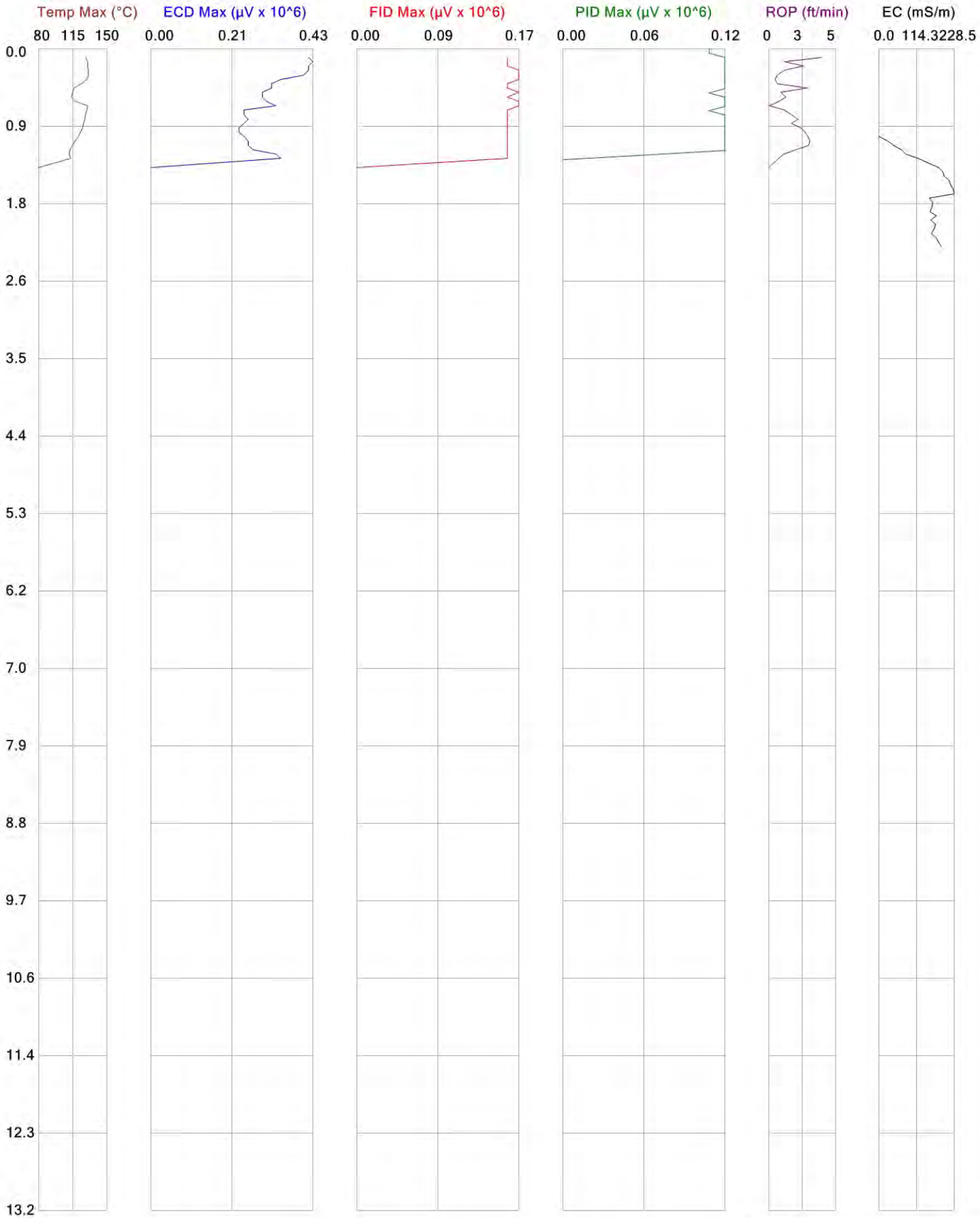
COLUMBIA TECHNOLOGIES



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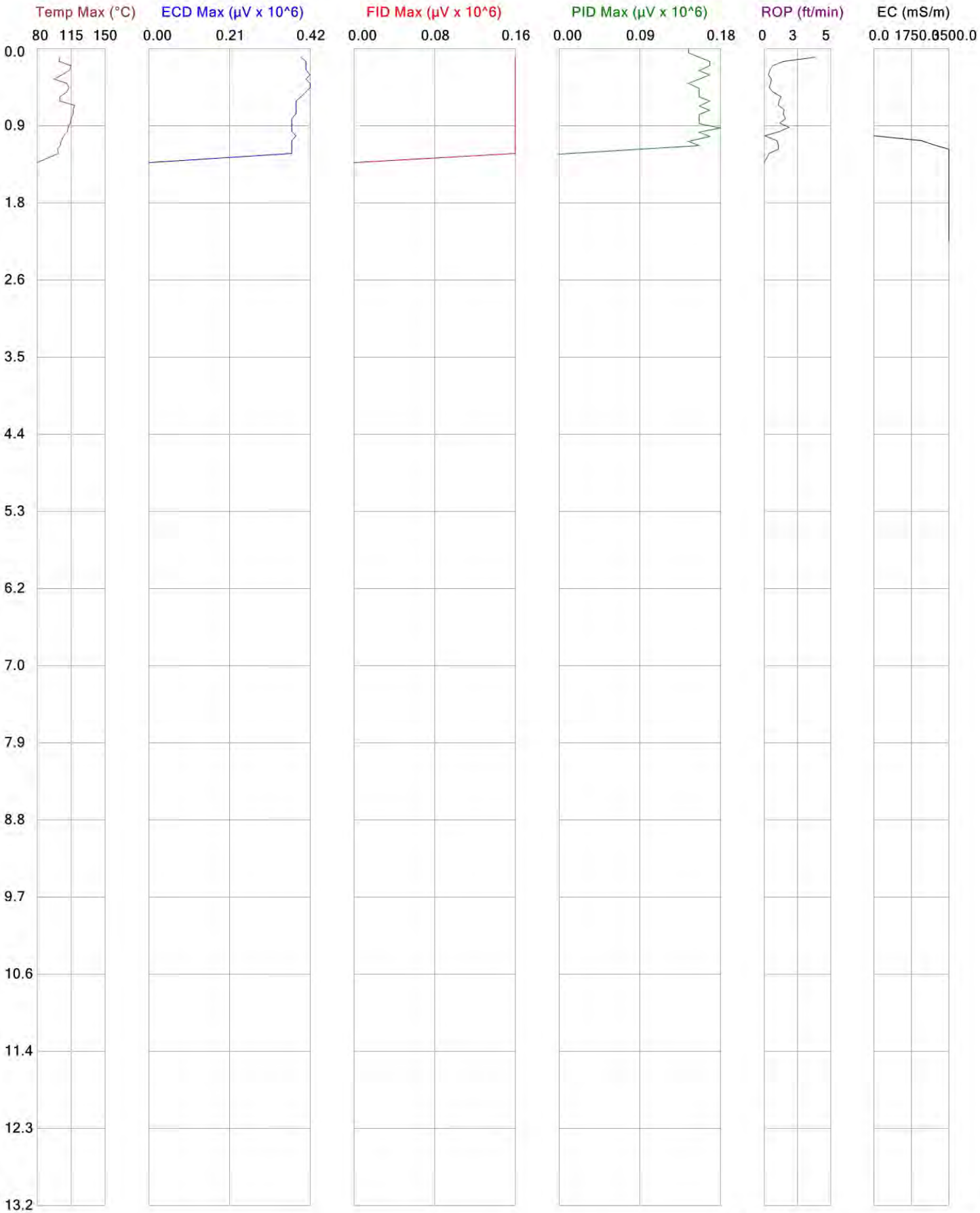
Project ID: Former National Rubber Adhesives	Location:

COLUMBIA TECHNOLOGIES



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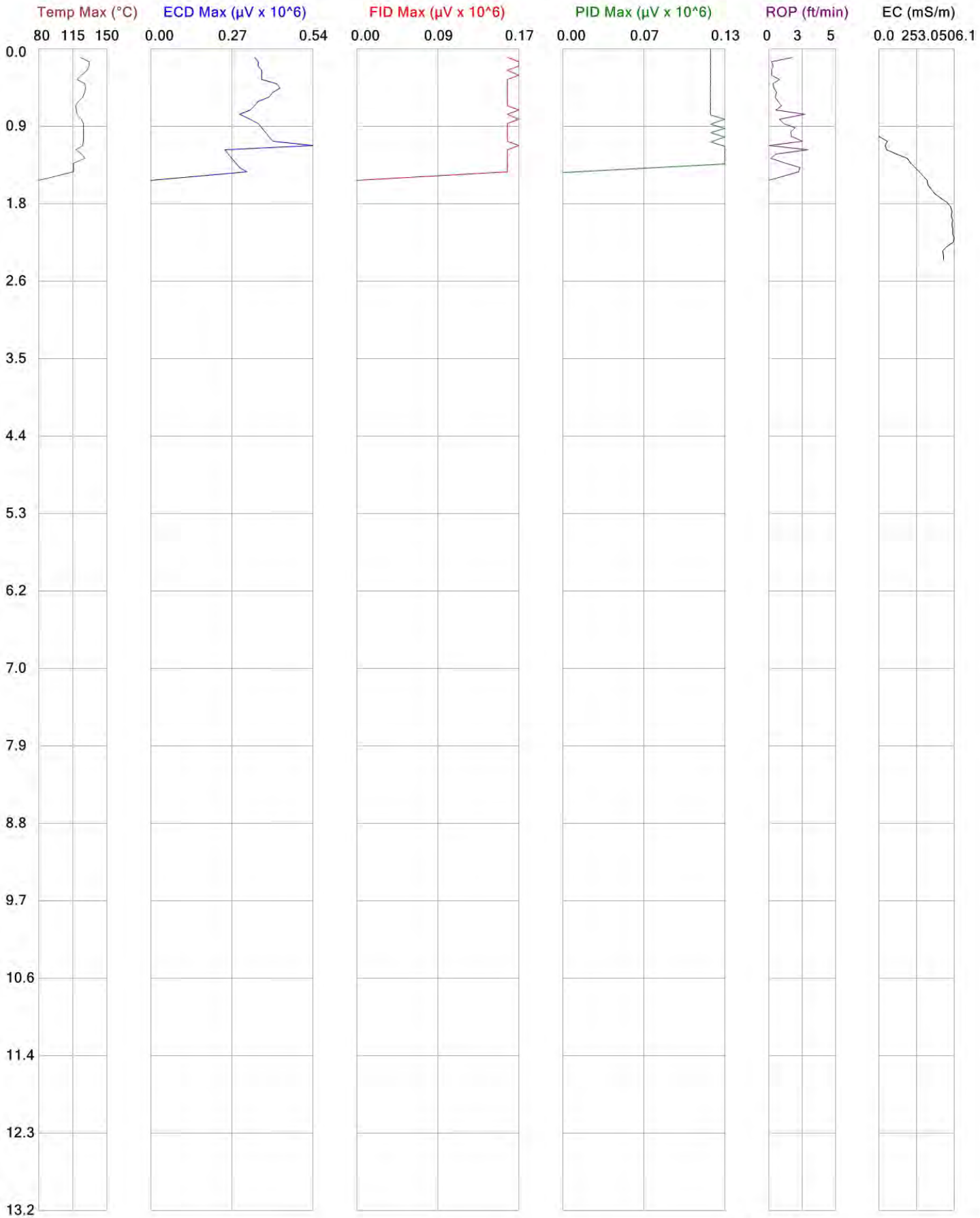
COLUMBIA TECHNOLOGIES



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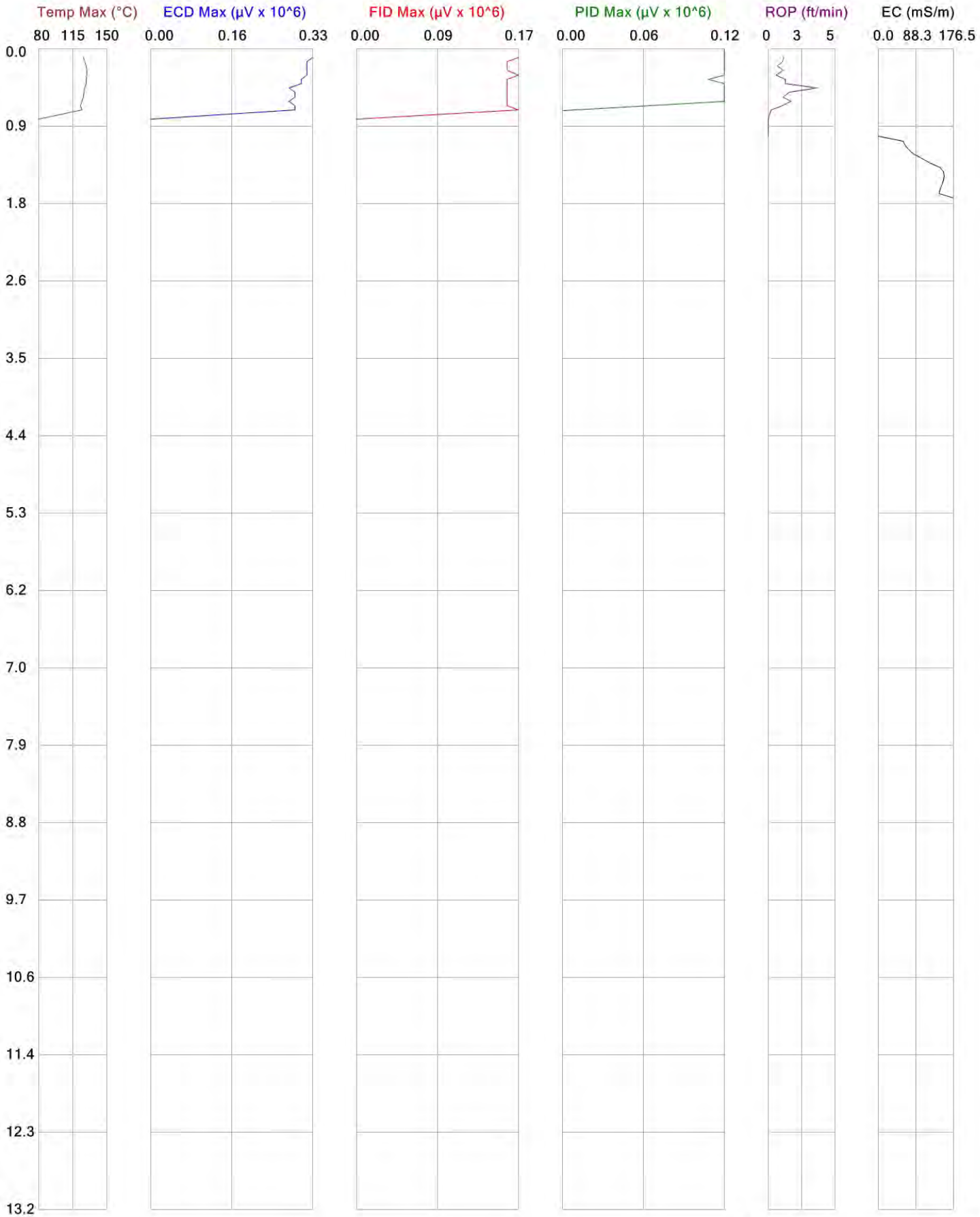

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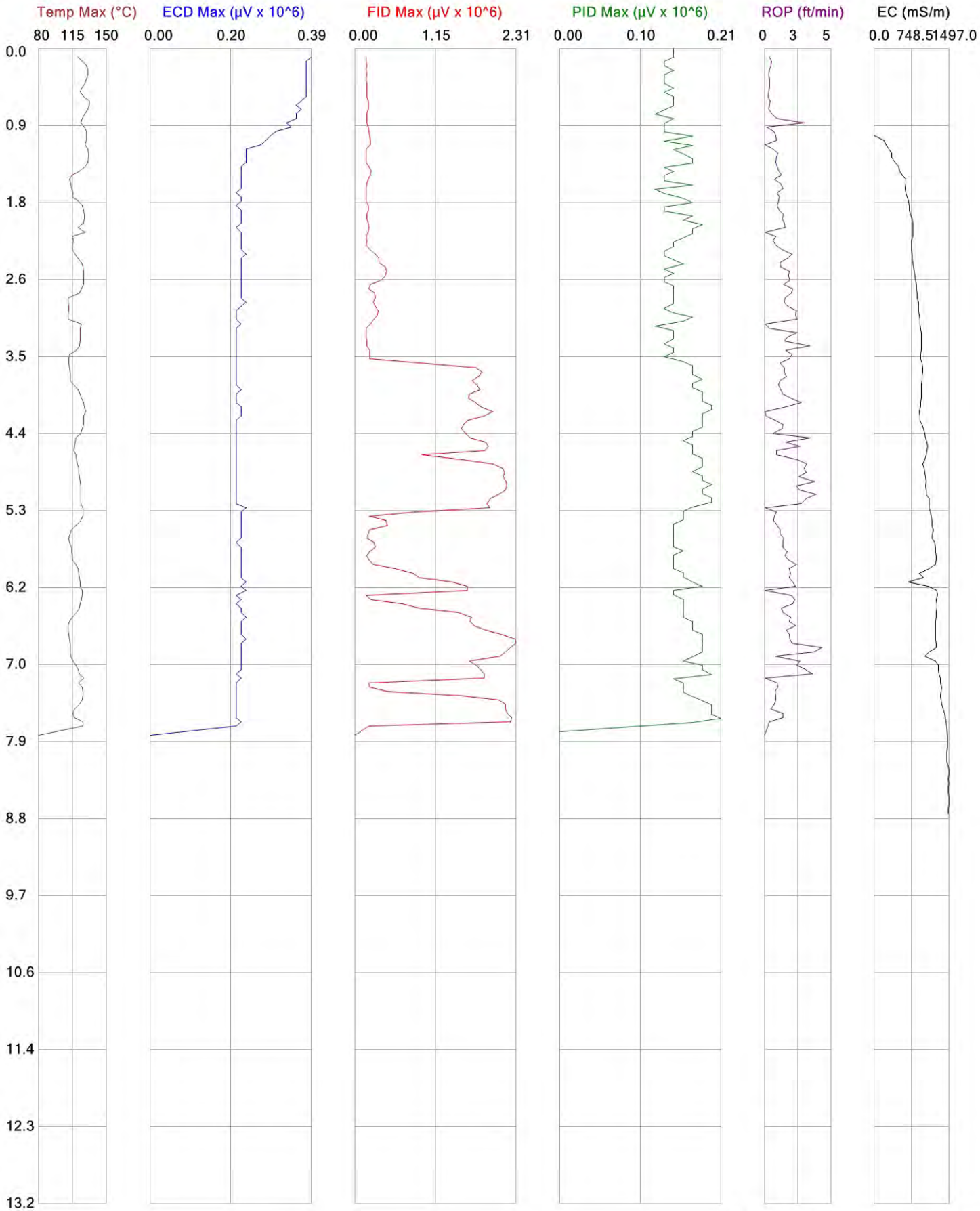

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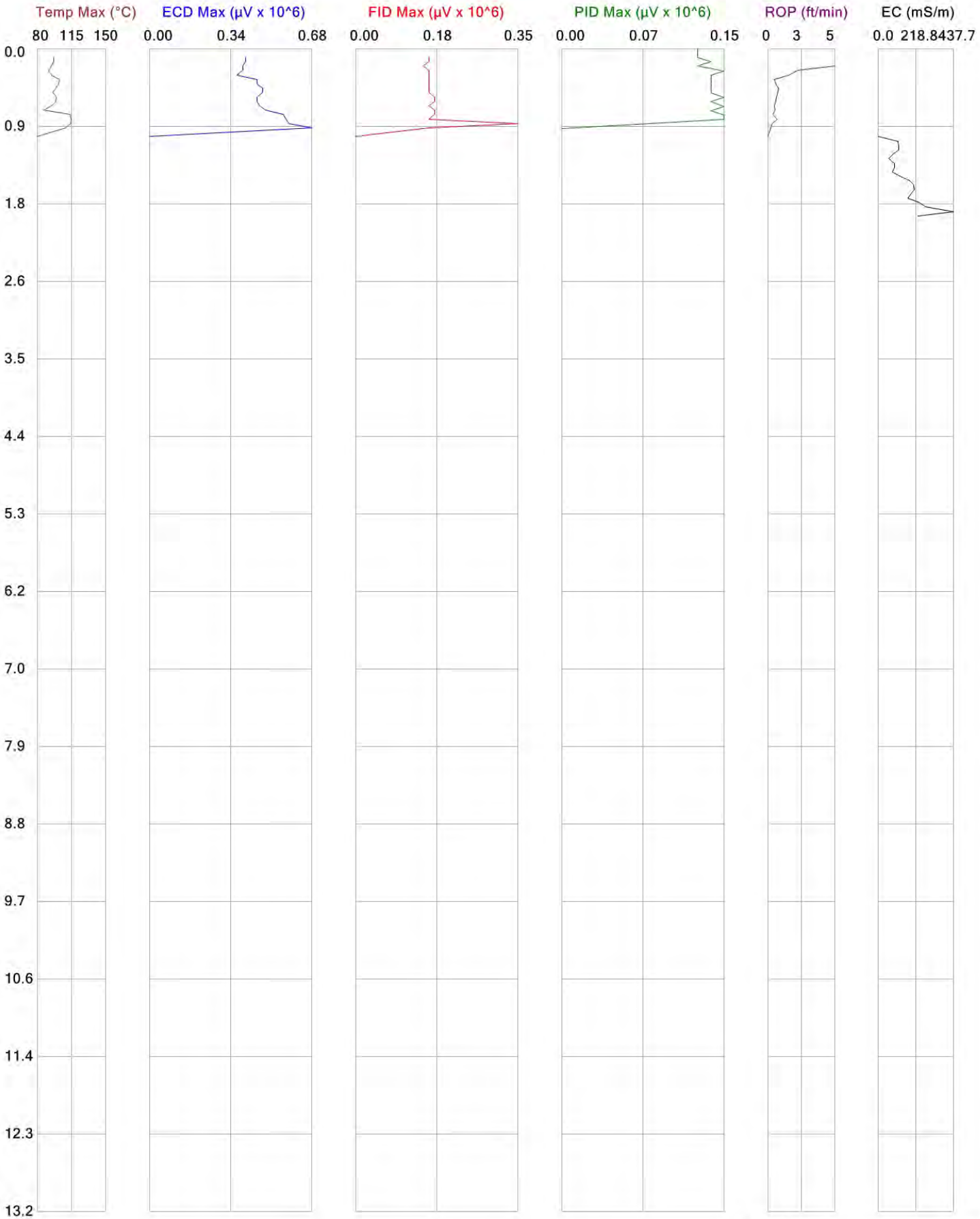

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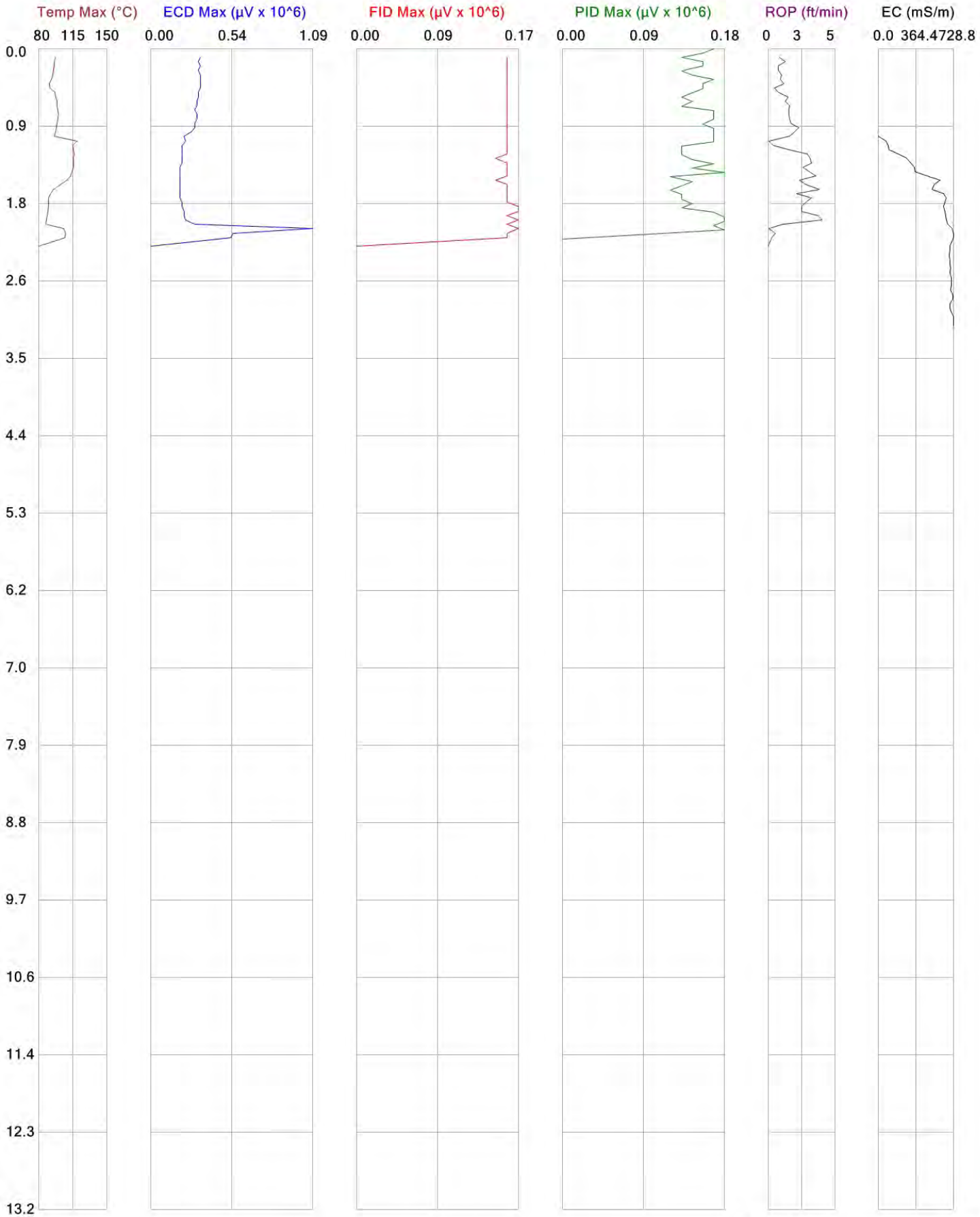

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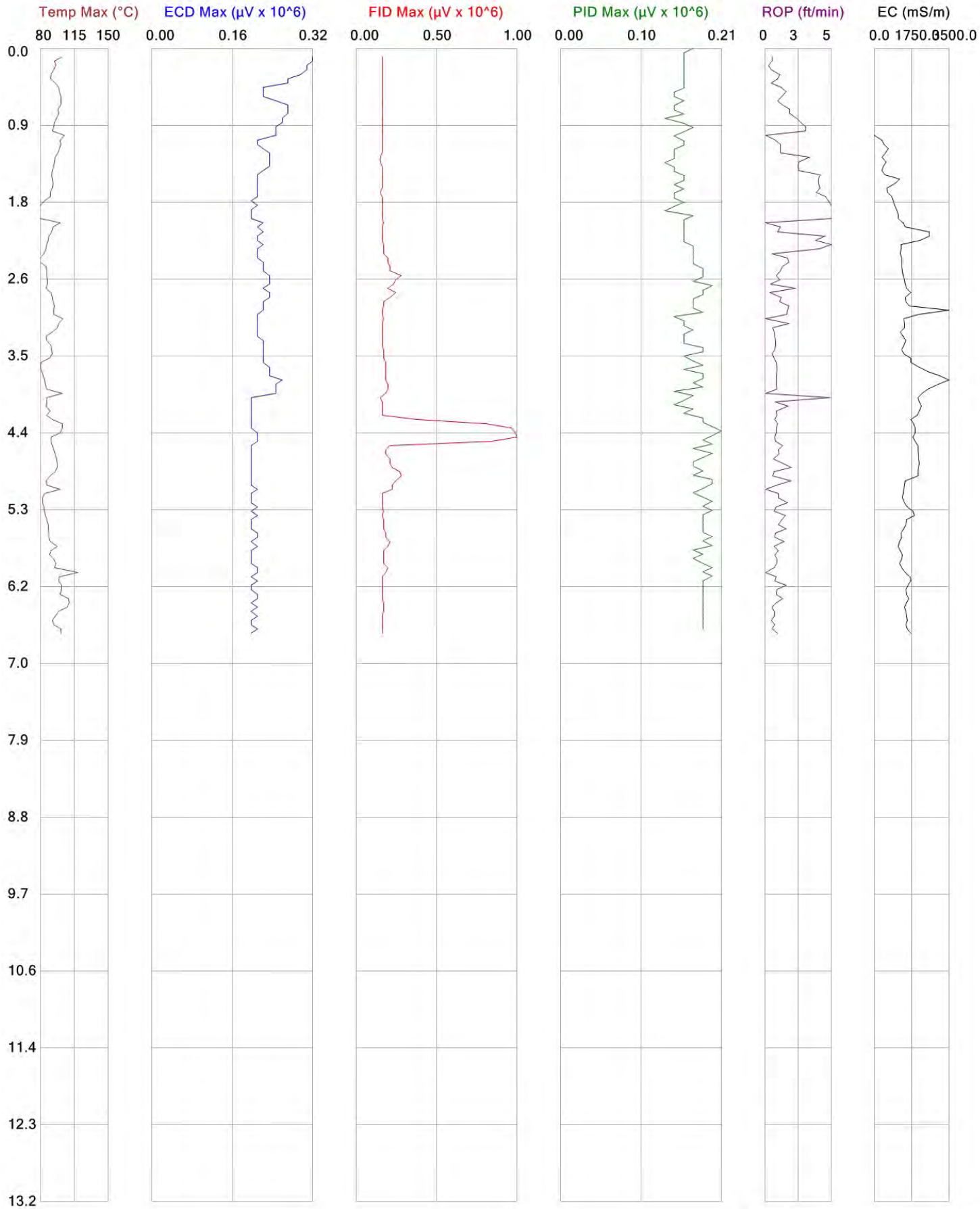

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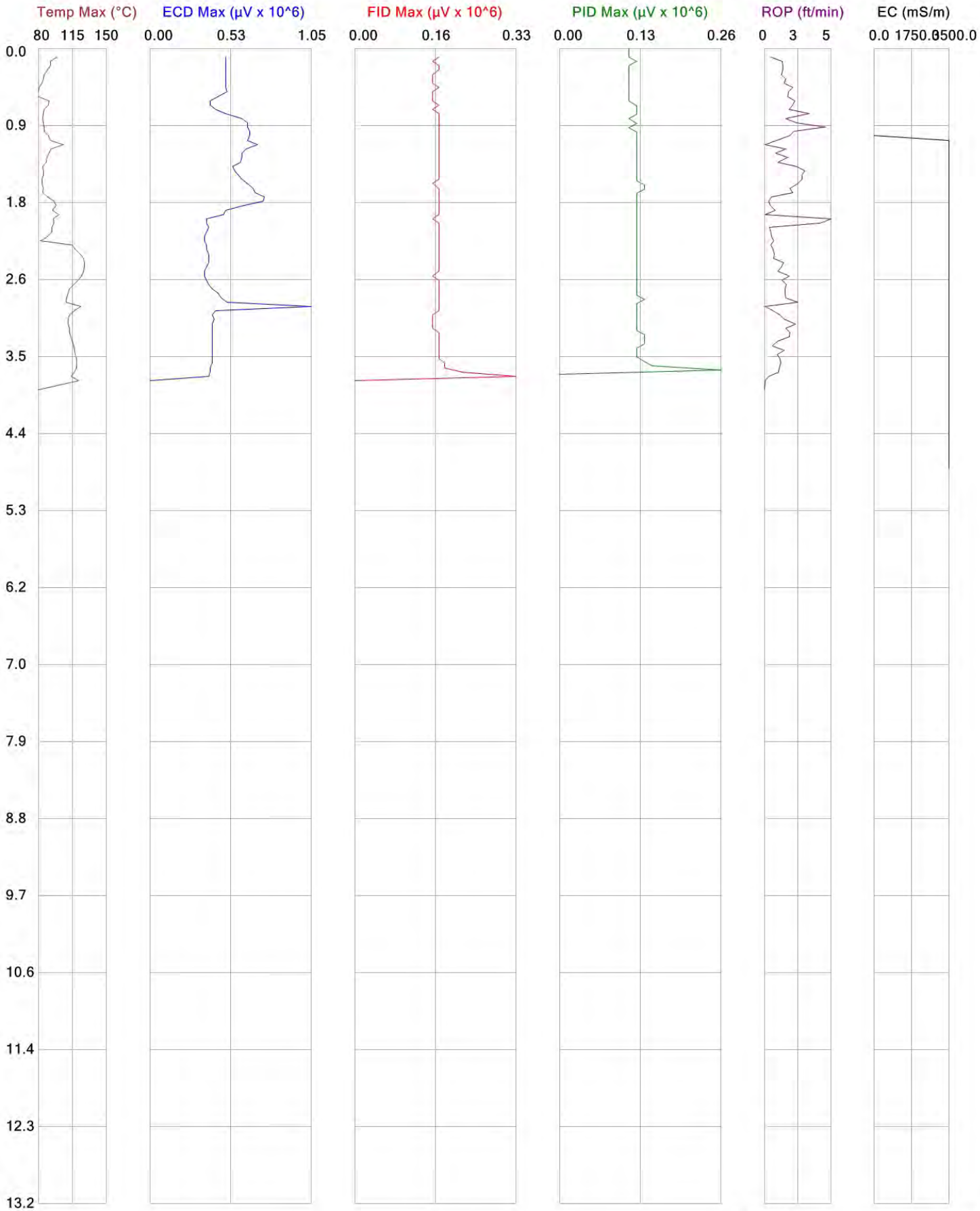

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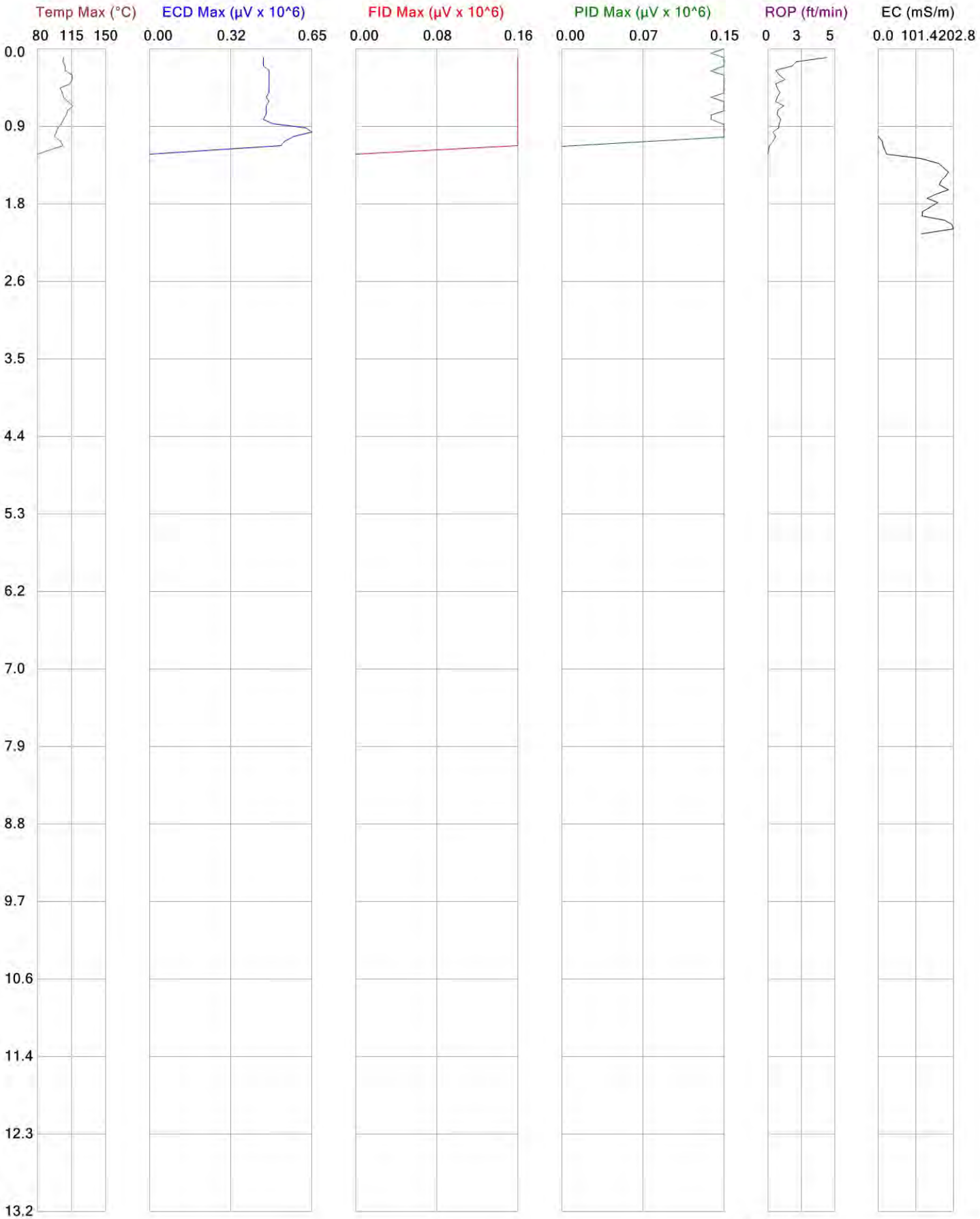

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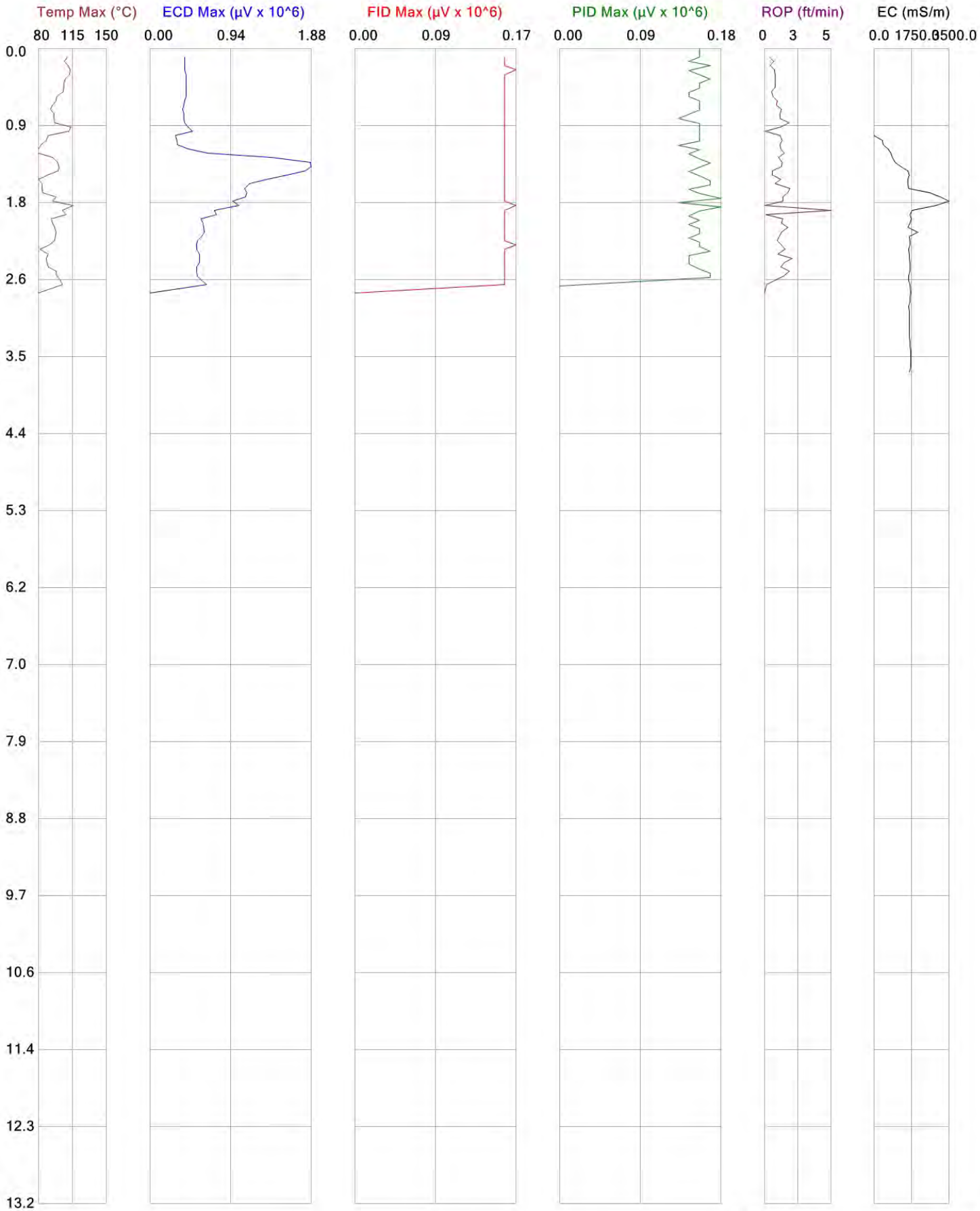
COLUMBIA TECHNOLOGIES



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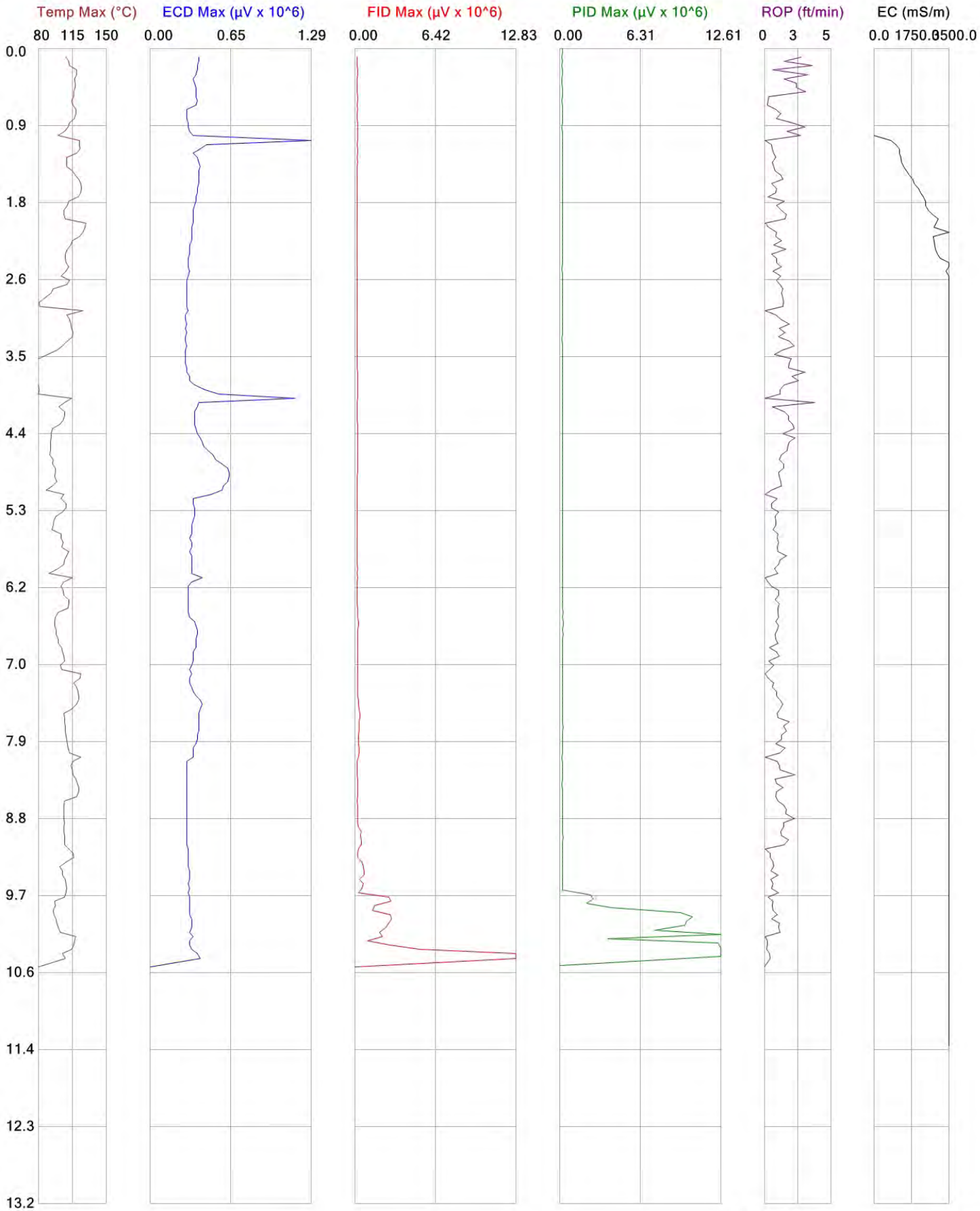

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COLUMBIA TECHNOLOGIES

ATTACHMENT C

VaporPin™ Standard Operating Procedures

Standard Operating Procedure Installation and Extraction of the Vapor Pin™

May 20, 2011

Scope:

This standard operating procedure describes the installation and extraction of the Vapor Pin™[1] for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the Vapor Pin™ for the collection of sub-slab soil-gas samples.

Equipment Needed:

- Assembled Vapor Pin™ [Vapor Pin™ and silicone sleeve (Figure 1)];
- Hammer drill;
- 5/8-inch diameter hammer bit (Hilti™ TE-YX 5/8" x 22" #00206514 or equivalent);
- 1½-inch diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch diameter bottle brush;
- Wet/dry vacuum with HEPA filter (optional);
- Vapor Pin™ installation/extraction tool;
- Dead blow hammer;
- Vapor Pin™ flush mount cover, as necessary;
- Vapor Pin™ protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel.

[1]Cox-Colvin & Associates, Inc., designed and developed the Vapor Pin™; a patent is pending.

Figure 1. Assembled Vapor Pin™.

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch diameter hole at least 1¾-inches into the slab.

4) Drill a 5/8-inch diameter hole through the slab and approximately 1-inch into the underlying soil to form a void.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of Vapor Pin™ assembly into the drilled hole. Place the small hole located in the handle of the extraction/installation tool over the Vapor Pin™ to protect the barb fitting and cap, and tap the Vapor Pin™ into place using a

dead blow hammer (Figure 2). Make sure the extraction/installation tool is aligned parallel to the Vapor Pin™ to avoid damaging the barb fitting.

Figure 2. Installing the Vapor Pin™.

For flush mount installations, unscrew the threaded coupling from the installation/extraction handle and use the hole in the end of the tool to assist with the installation (Figure 3).

Figure 3. Flush-mount installation.

During installation, the silicone sleeve will form a slight bulge between the slab and the Vapor Pin™ shoulder. Place the protective cap on Vapor Pin™ to prevent vapor loss prior to sampling (Figure 4).

Figure 4. Installed Vapor Pin™.

7) For flush mount installations, cover the Vapor Pin™ with a flush mount cover.

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the Vapor Pin™ (Figure 5).

Figure 5. Vapor Pin™ sample connection.

10) Conduct leak tests [(e.g., real-time monitoring of oxygen levels on extracted sub-slab soil gas, or placement of a water

dam around the Vapor Pin™) Figure 6]. Consult your local guidance for possible tests.

Figure 6. Water dam used for leak detection.

11) Collect sub-slab soil gas sample. When finished sampling, replace the protective cap and flush mount cover until the next sampling event. If the sampling is complete, extract the Vapor Pin™.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the Vapor Pin™ (Figure 7). Continue turning the tool to assist in extraction, then pull the Vapor Pin™ from the hole (Figure 8).

Figure 7. Removing the Vapor Pin™.

Figure 8. Extracted Vapor Pin™.

2) Fill the void with hydraulic cement and smooth with the trowel or putty knife.

3) Prior to reuse, remove the silicone sleeve and discard. Decontaminate the Vapor Pin™ in a hot water and Alconox® wash, then heat in an oven to a temperature of 130° C.

The Vapor Pin™ to designed be used repeatedly; however, replacement parts and supplies will be required periodically. These parts are available on-line at www.CoxColvin.com.

Replacement Parts:

Vapor Pin™ Kit Case - VPC001
Vapor Pins™ - VPIN0522
Silicone Sleeves - VPTS077
Installation/Extraction Tool - VPIE023
Protective Caps - VPPC010
Flush Mount Covers - VPFM050
Water Dam - VPWD004
Brush - VPB026

Standard Operating Procedure
Use of the Vapor Pin™ Drilling Guide and Secure Cover

July 16, 2012

Scope:

This standard operating procedure (SOP) describes the methodology to use the Vapor Pin™ Drilling Guide and Secure Cover to install and secure a Vapor Pin™ in a flush mount configuration.

Purpose:

The purpose of this SOP is to detail the methodology for installing a Vapor Pin™ and Secure Cover in a flush mount configuration. The flush mount configuration reduces the risk of damage to the Vapor Pin™ by foot and vehicular traffic, keeps dust and debris from falling into the flush mount hole, and reduces the opportunity for tampering. This SOP is an optional process performed in conjunction with the SOP entitled "Installation and Extraction of the Vapor Pin™". However, portions of this SOP should be performed prior to installing the Vapor Pin™.

Equipment Needed:

- Vapor Pin™ Secure Cover (Figure 1);
- Vapor Pin™ Drilling Guide (Figure 2);
- Hammer drill;
- 1½-inch diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent);
- 5/8-inch diameter hammer bit (Hilti™ TE-YX 5/8" x 22" #00226514 or equivalent);
- assembled Vapor Pin™;
- #14 spanner wrench;
- Wet/Dry vacuum with HEPA filter (optional); and
- personal protective equipment (PPE).

Figure 1. Vapor Pin™ Secure Cover.

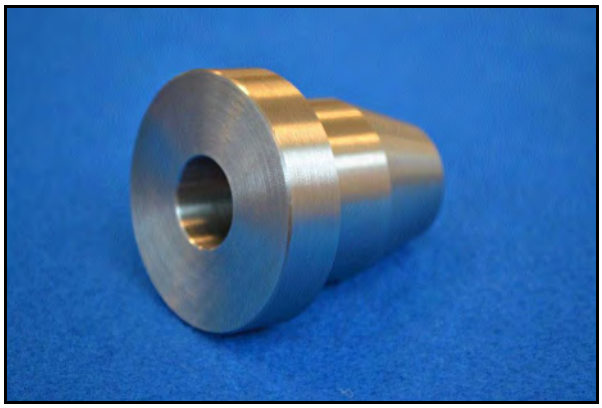

Figure 2. Vapor Pin™ Drilling Guide.

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) While wearing PPE, drill a 1½-inch diameter hole into the concrete slab to a

depth of approximately 1 3/4 inches. Pre-marking the desired depth on the drill bit with tape will assist in this process.

4) Remove cuttings from the hole and place the Drilling Guide in the hole with the conical end down (Figure 3). The hole is sufficiently deep if the flange of the Drilling Guide lies flush with the surface of the slab. Deepen the hole as necessary, but avoid drilling more than 2 inches into the slab, as the threads on the Secure Cover may not engage properly with the threads on the Vapor Pin™.

Figure 3. Installing the Drilling Guide.

5) When the 1½-inch diameter hole is drilled to the proper depth, replace the drill bit with a $^{5}/_{8}$-inch diameter bit, insert the bit through the Drilling Guide (Figure 4), and drill through the slab. The Drilling Guide will help to center the hole for the Vapor Pin™, and keep the hole perpendicular to the slab.

6) Remove the bit and drilling guide, clean the hole, and install the Vapor Pin™ in accordance with the SOP "Installation and Extraction of the Vapor Pin™.

Figure 4. Using the Drilling Guide.

7) Screw the Secure Cover onto the Vapor Pin™ and tighten using a #14 spanner wrench by rotating it clockwise (Figure 5). Rotate the cover counter clockwise to remove it for subsequent access.

Figure 5. Tightening the Secured Cover.

Limitations:

On slabs less than 3 inches thick, it may be difficult to obtain a good seal in a flush mount configuration with the Vapor Pin™.