Electrical Condition Monitoring with Ultrasound

Charlee Lipham

WestRock

Background

7 Years of Experience:

- 4 years as a Reliability Co-Op
- 3 years as a Condition Monitoring Engineer

BSME from Auburn University

Certifications:

- Vibration Level II
- Ultrasound Level II
- Thermography Level I
- Machinery Lubrication Analyst Level 1

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Developing a Program

Safety

NFPA 70E, PPE

Frequency

Routes semi-annually

Criticality

All Critical Equipment above 480V (13.8kV switchgear, transformers, 4160V feeder breakers)

Documentation

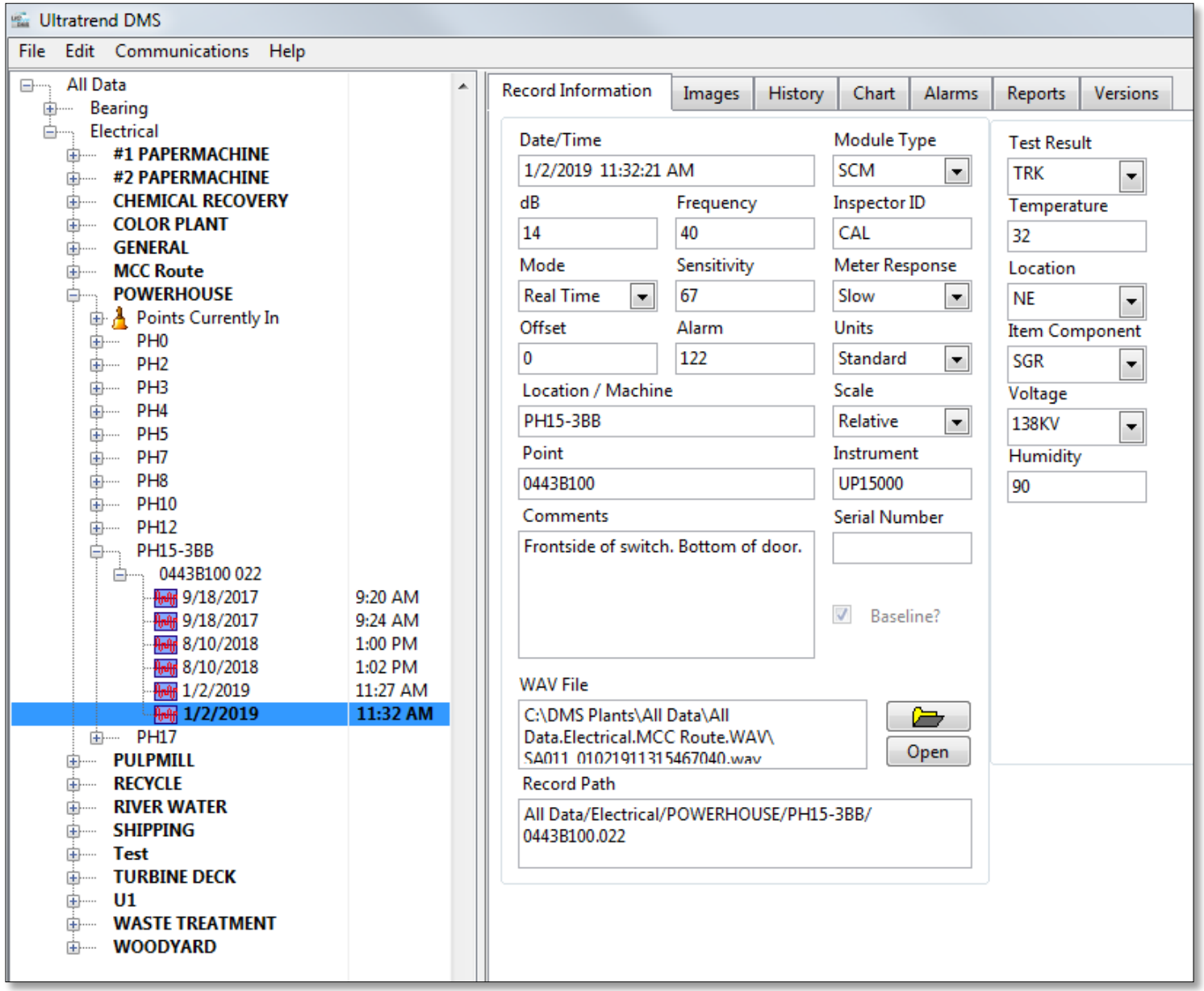
Stored in Ultratrend DMS 5, area ultrasound reports, and work orders

Documentation

Ultrasound MCC Scans

Area: _Powerhouse__	Humidity: _90%__	Equipment #: _____
Record #: __1__	Location of Recording: _____	Voltage: 4160V
Comments: _Tracking_____		
Area: _____	Humidity: _____	Equipment #: _____
Record #: _____	Location of Recording: _____	Voltage: _____
Comments: _____		

Documentation



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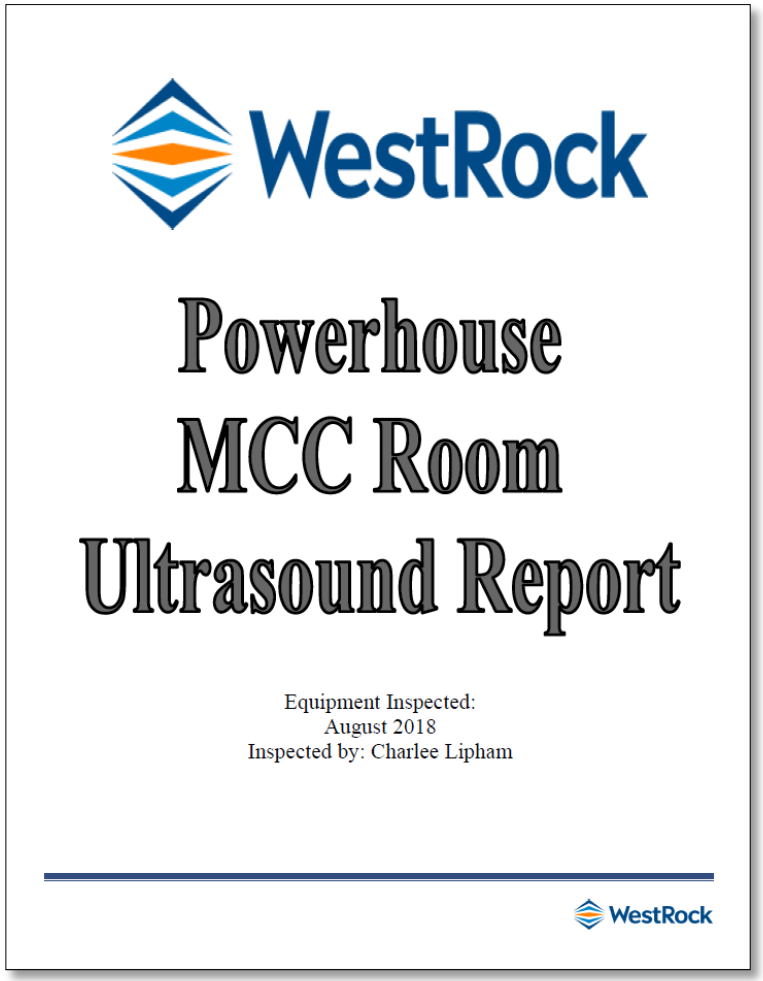
Documentation



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Powerhouse
MCC Room
Ultrasound Report

Equipment Inspected:
August 2018
Inspected by: Charlee Lipham

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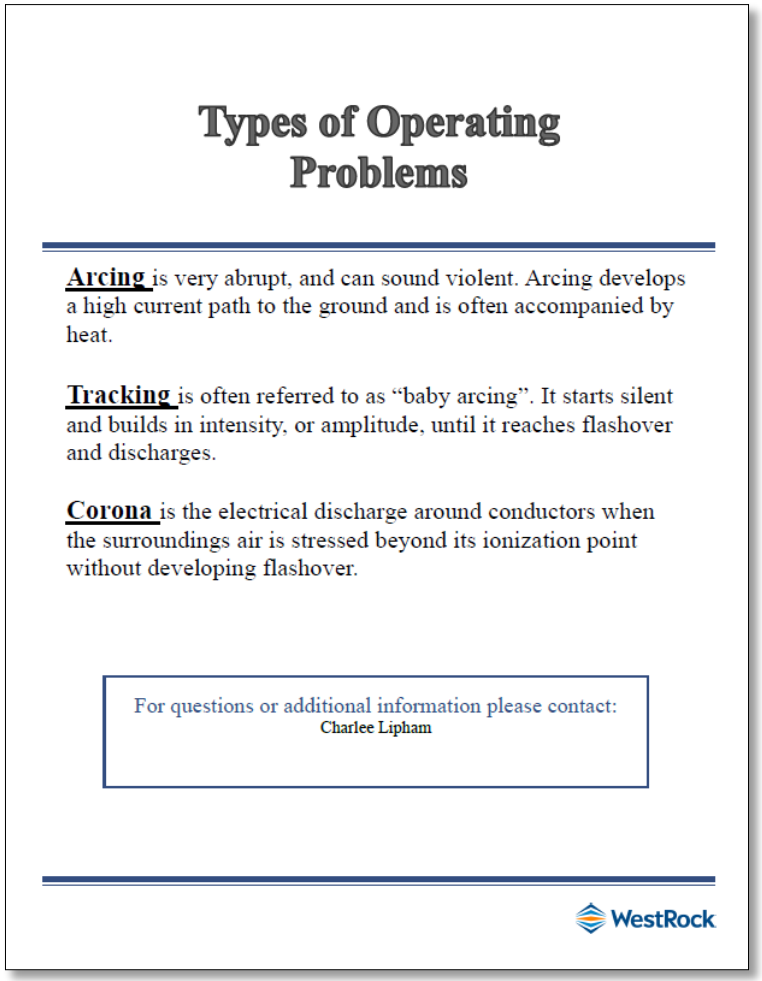

Types of Operating Problems

Arcing is very abrupt, and can sound violent. Arcing develops a high current path to the ground and is often accompanied by heat.

Tracking is often referred to as "baby arcing". It starts silent and builds in intensity, or amplitude, until it reaches flashover and discharges.

Corona is the electrical discharge around conductors when the surroundings air is stressed beyond its ionization point without developing flashover.

For questions or additional information please contact:
Charlee Lipham

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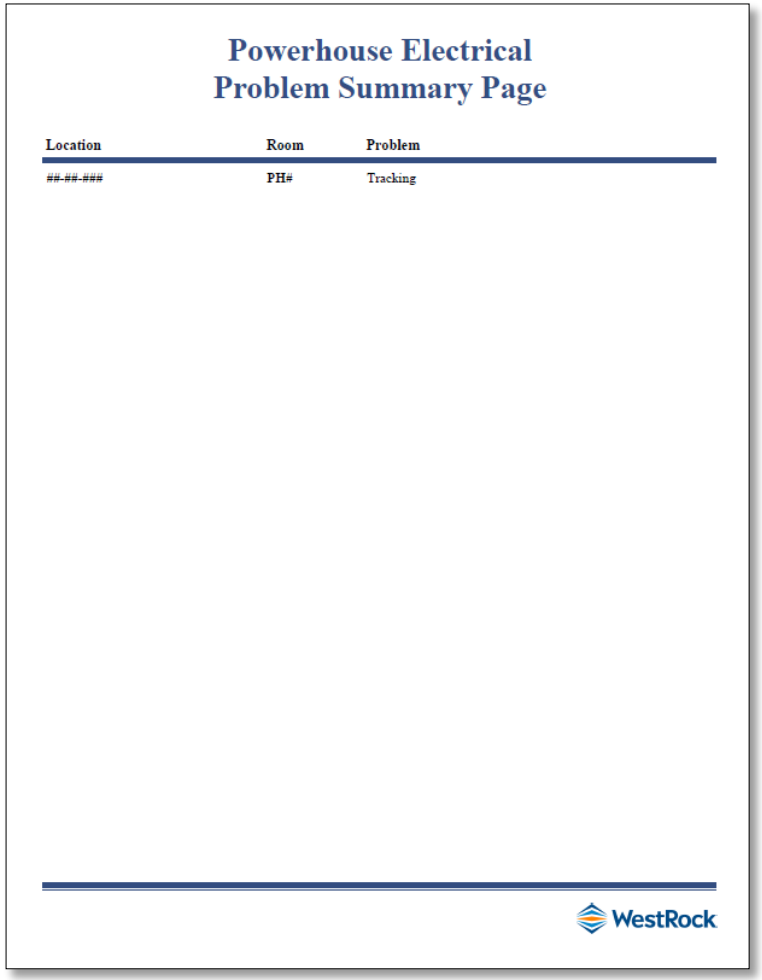

Powerhouse Electrical Problem Summary Page

Location	Room	Problem
##-##-###	PH#	Tracking

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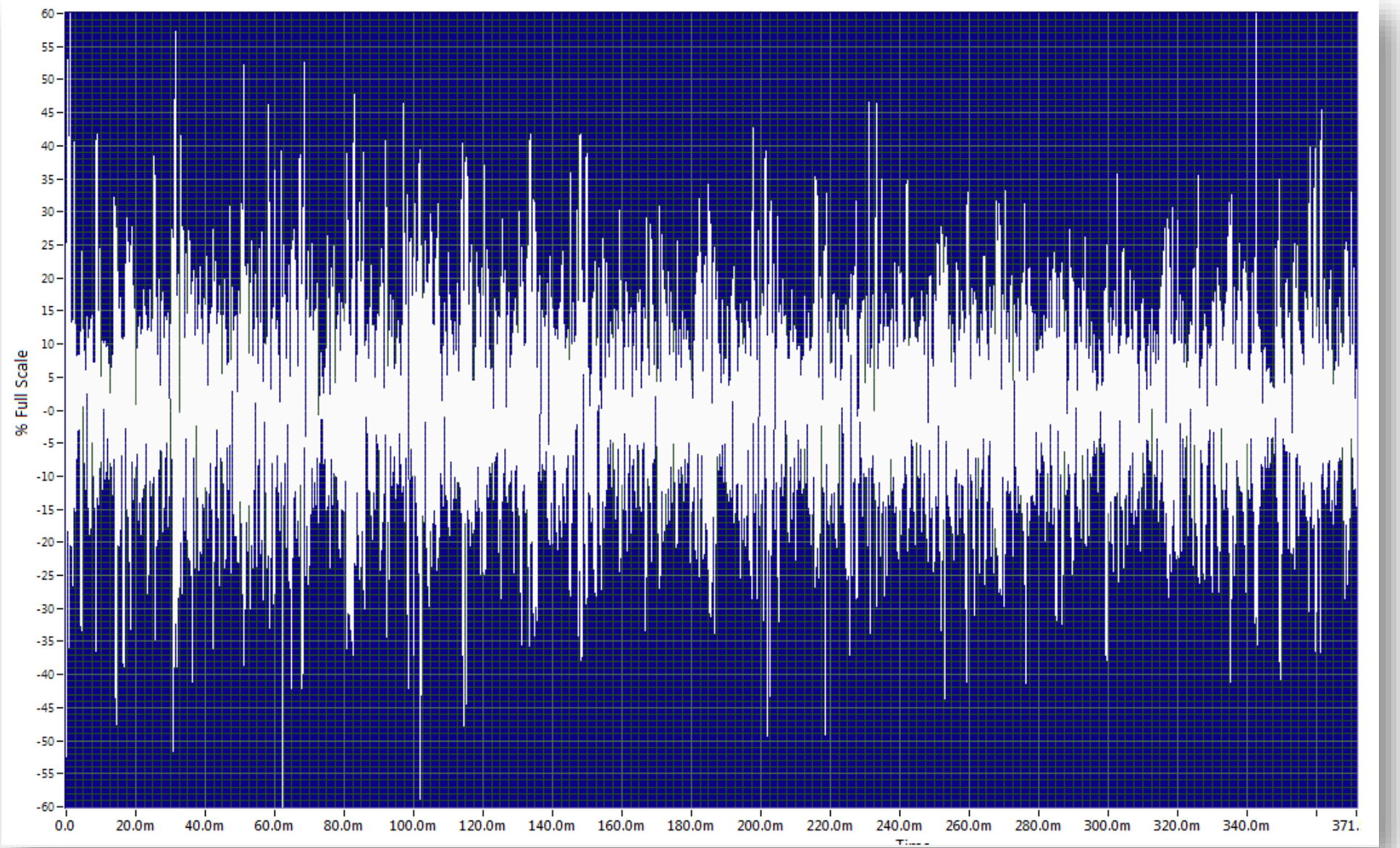
Electrical Faults

Corona – glow or electrical discharge around conductors when the surrounding air is stressed beyond its ionization point without developing flashover.

Tracking – “baby arcing” is an electrical breakdown on the surface of an insulating material.

Arcing – develops a high current path to ground and is often accompanied by significant heat, as well as sound.

Primary Switch



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Location of recording.

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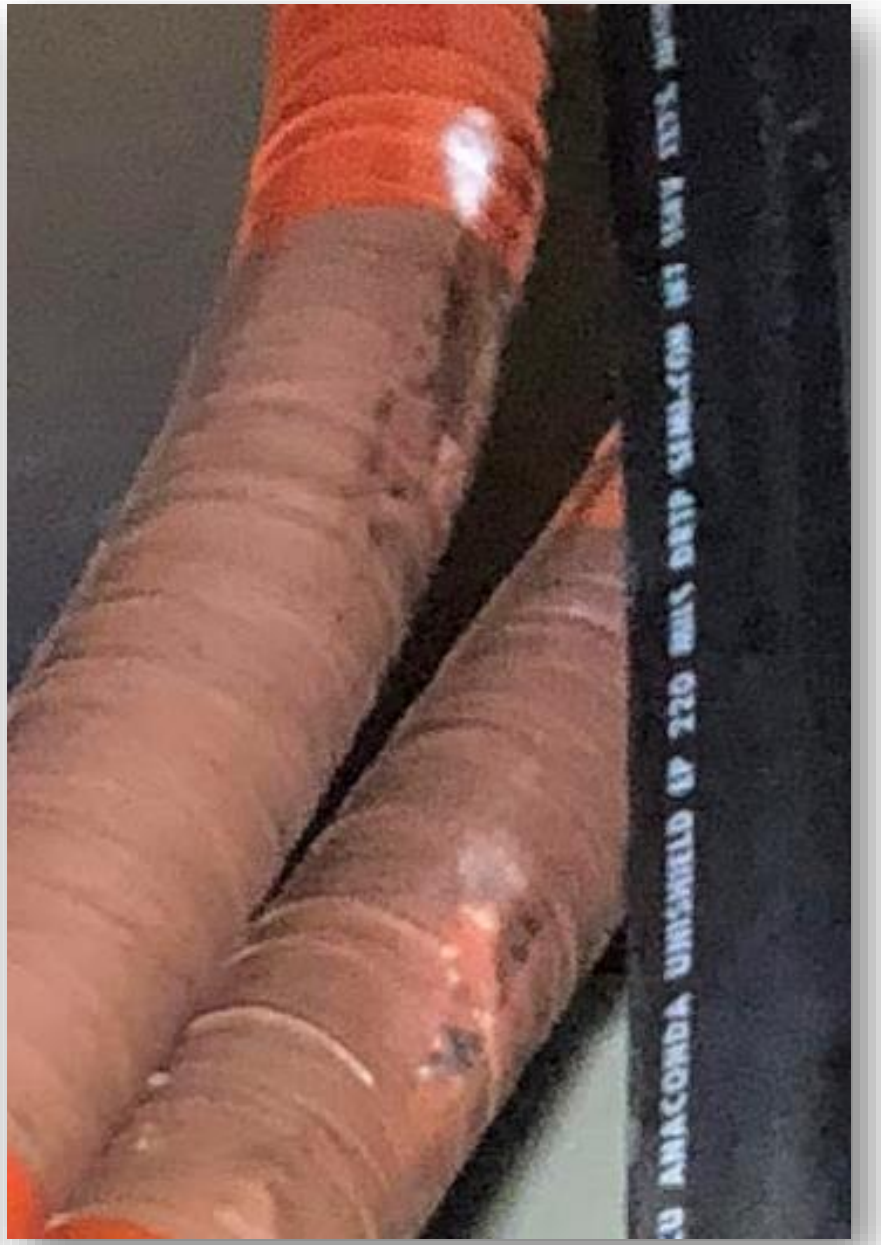
Primary Switch - Tracking



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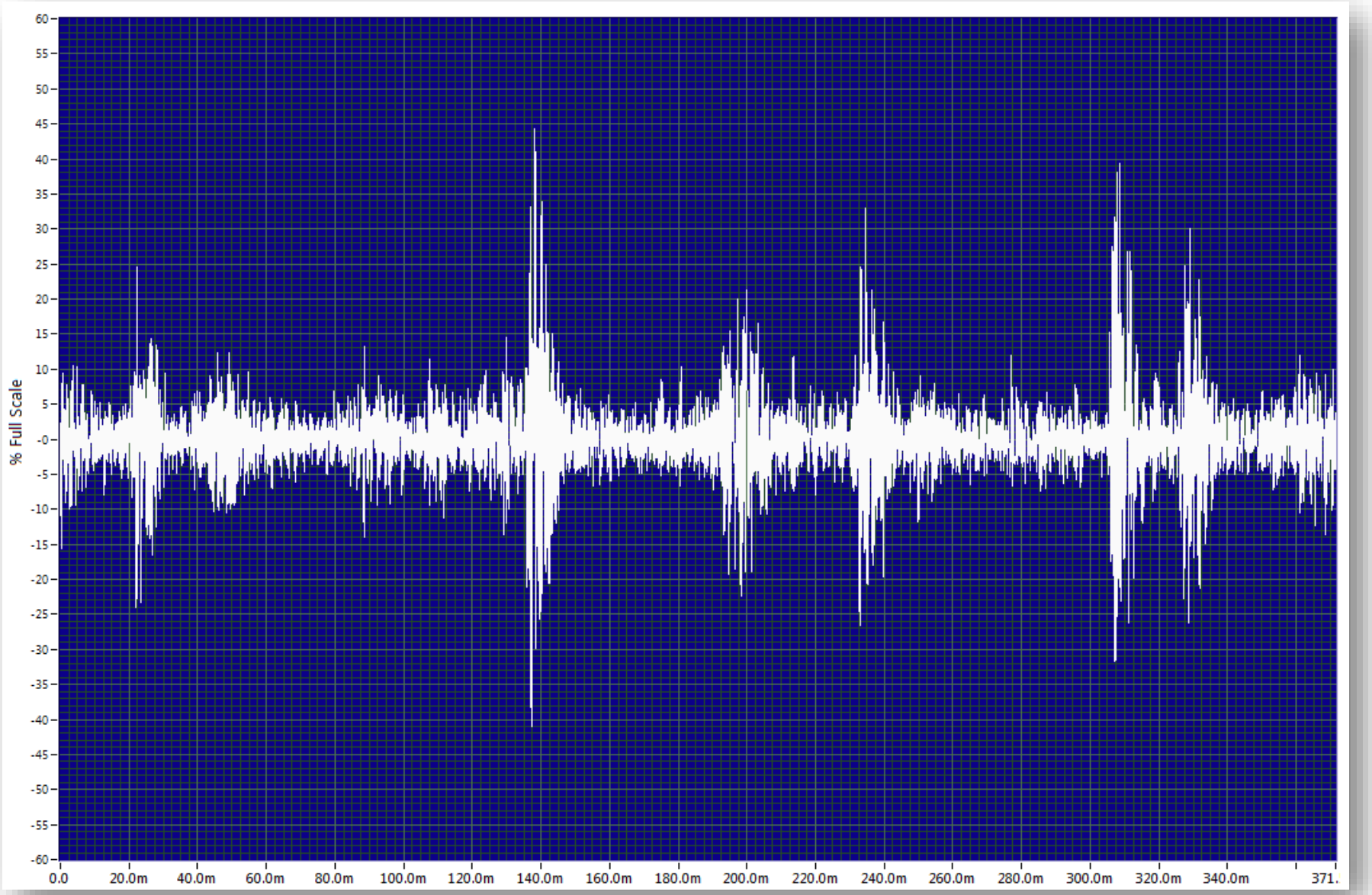
4160V Starter



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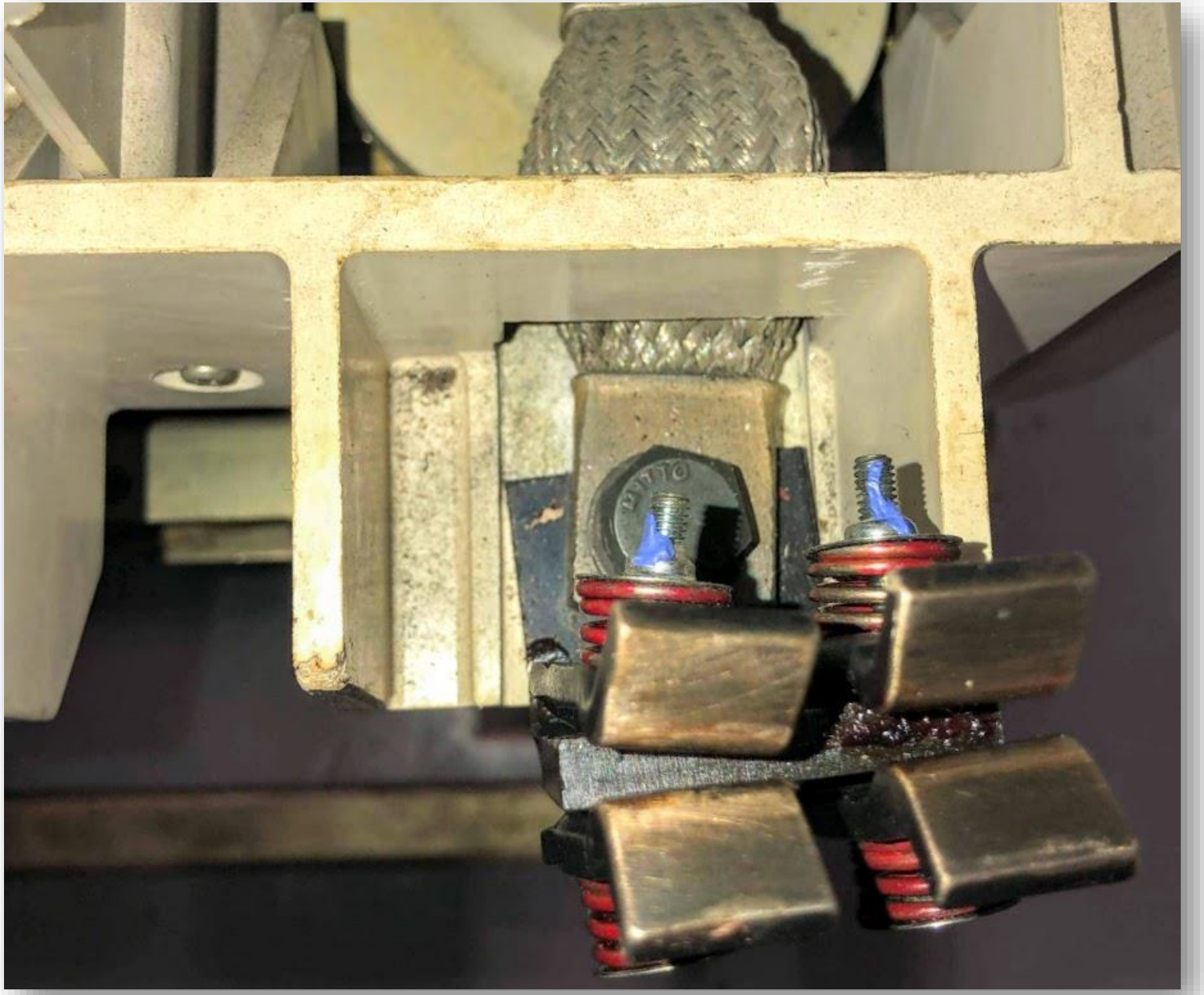
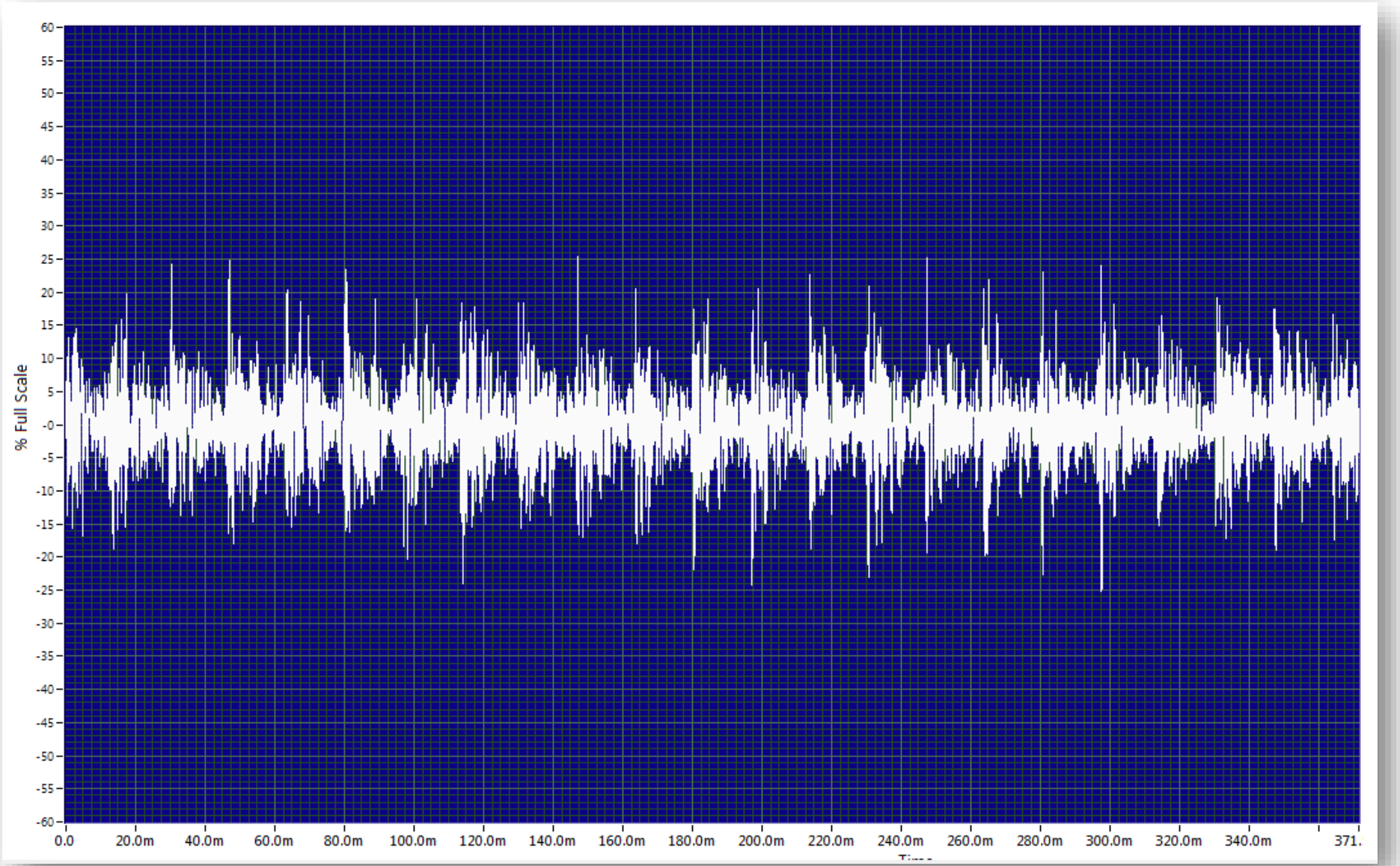
4160V Starter - Arcing



4160V Starter



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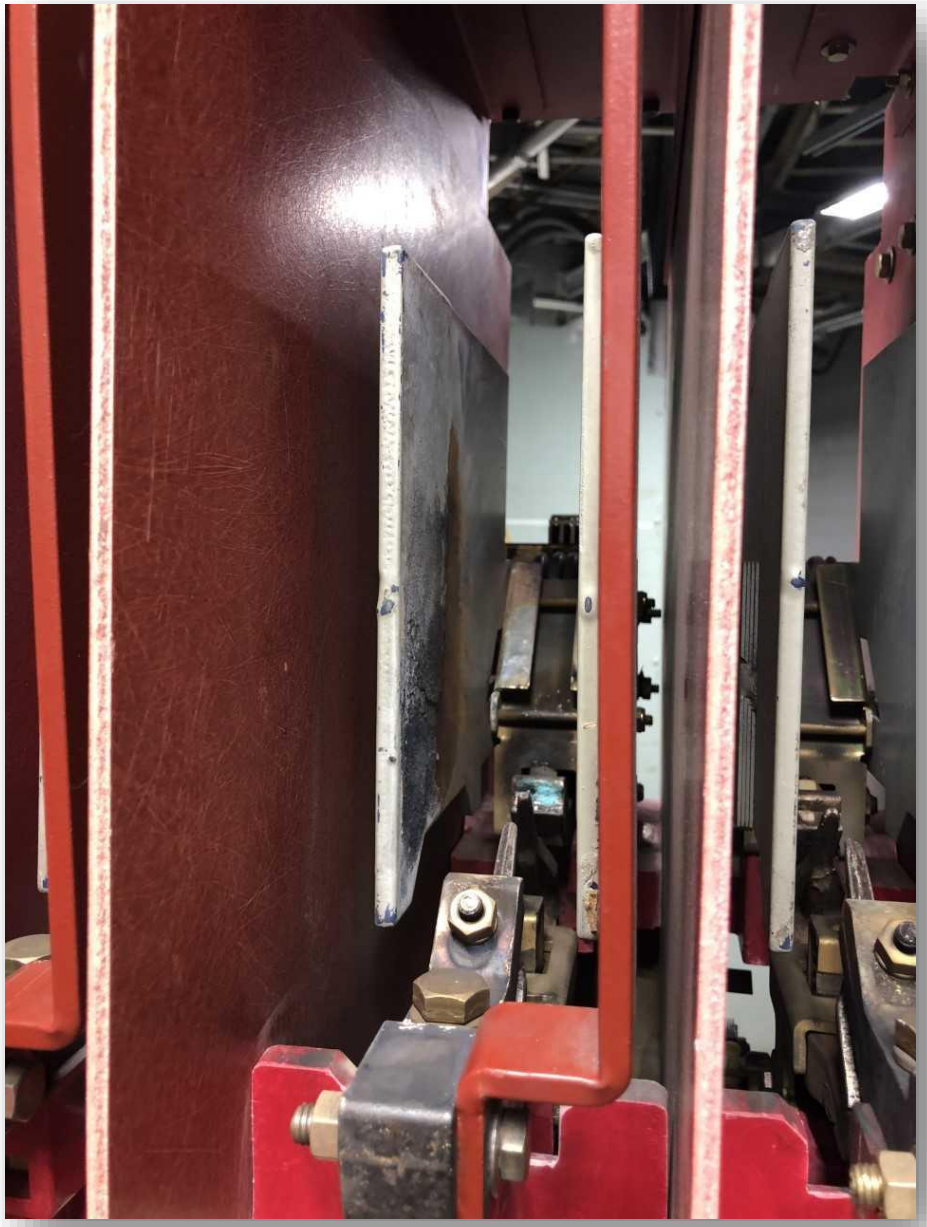
4160V Starter – Corona



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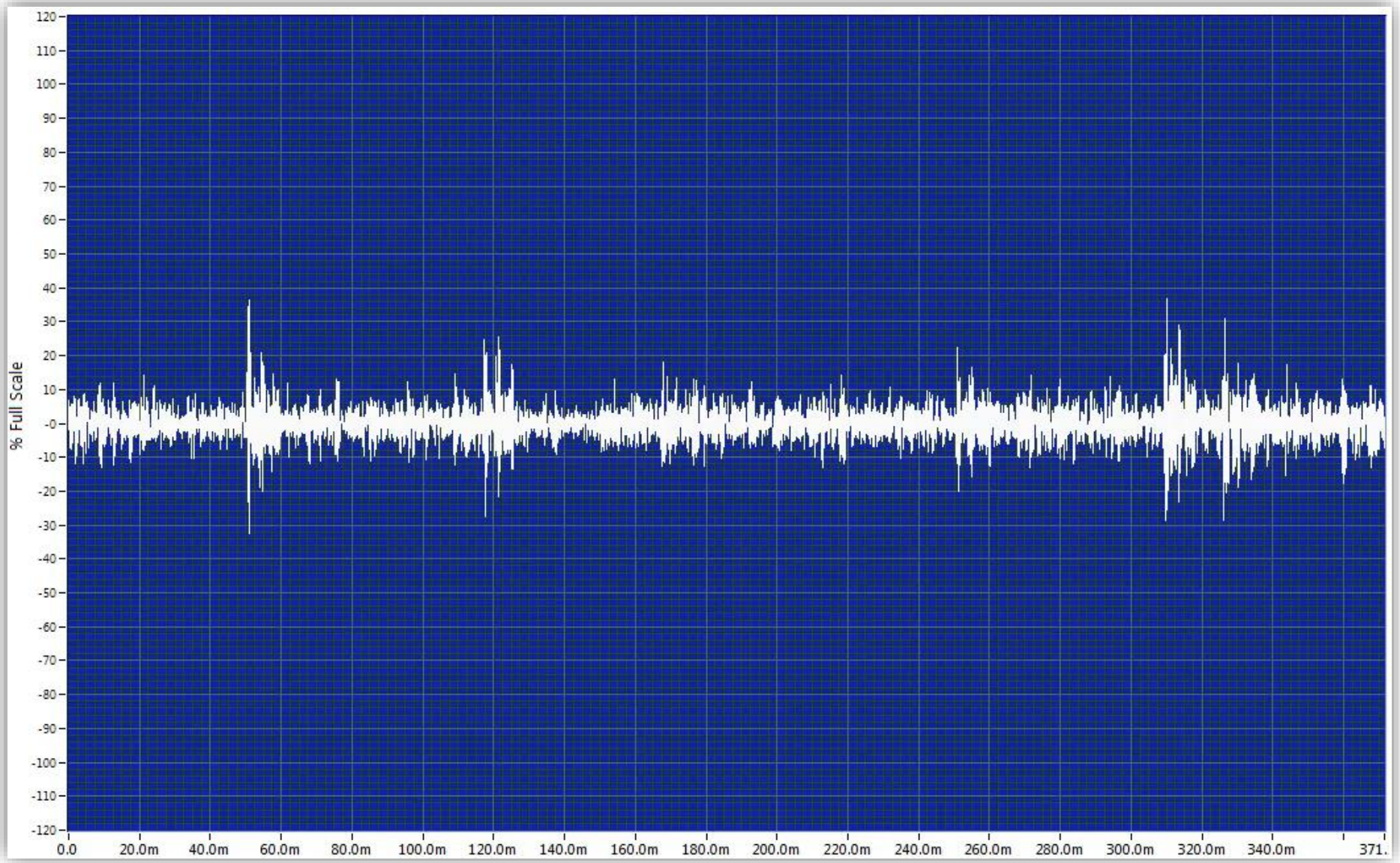
4160V Starter



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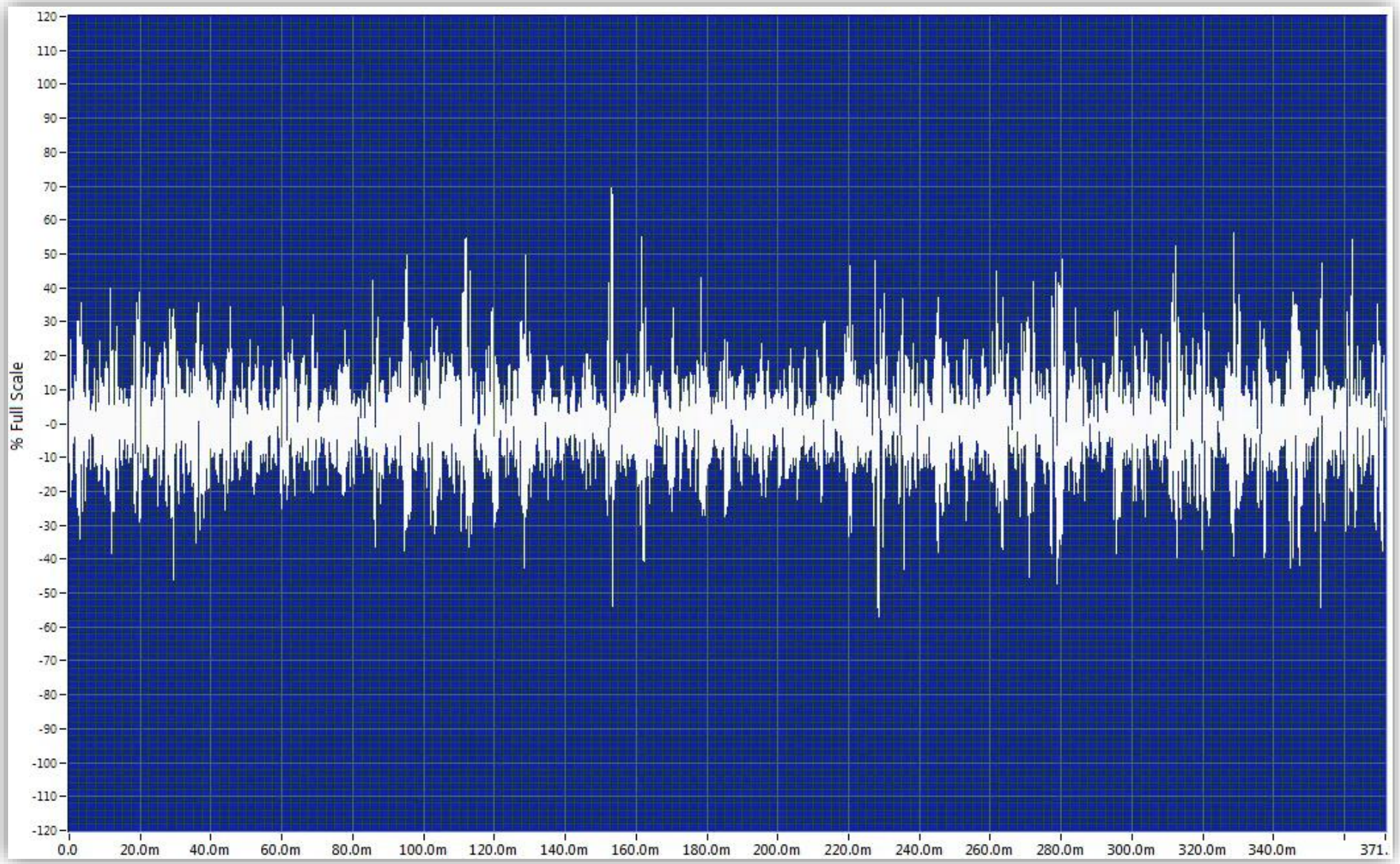
4160V Starter

Primary Switch



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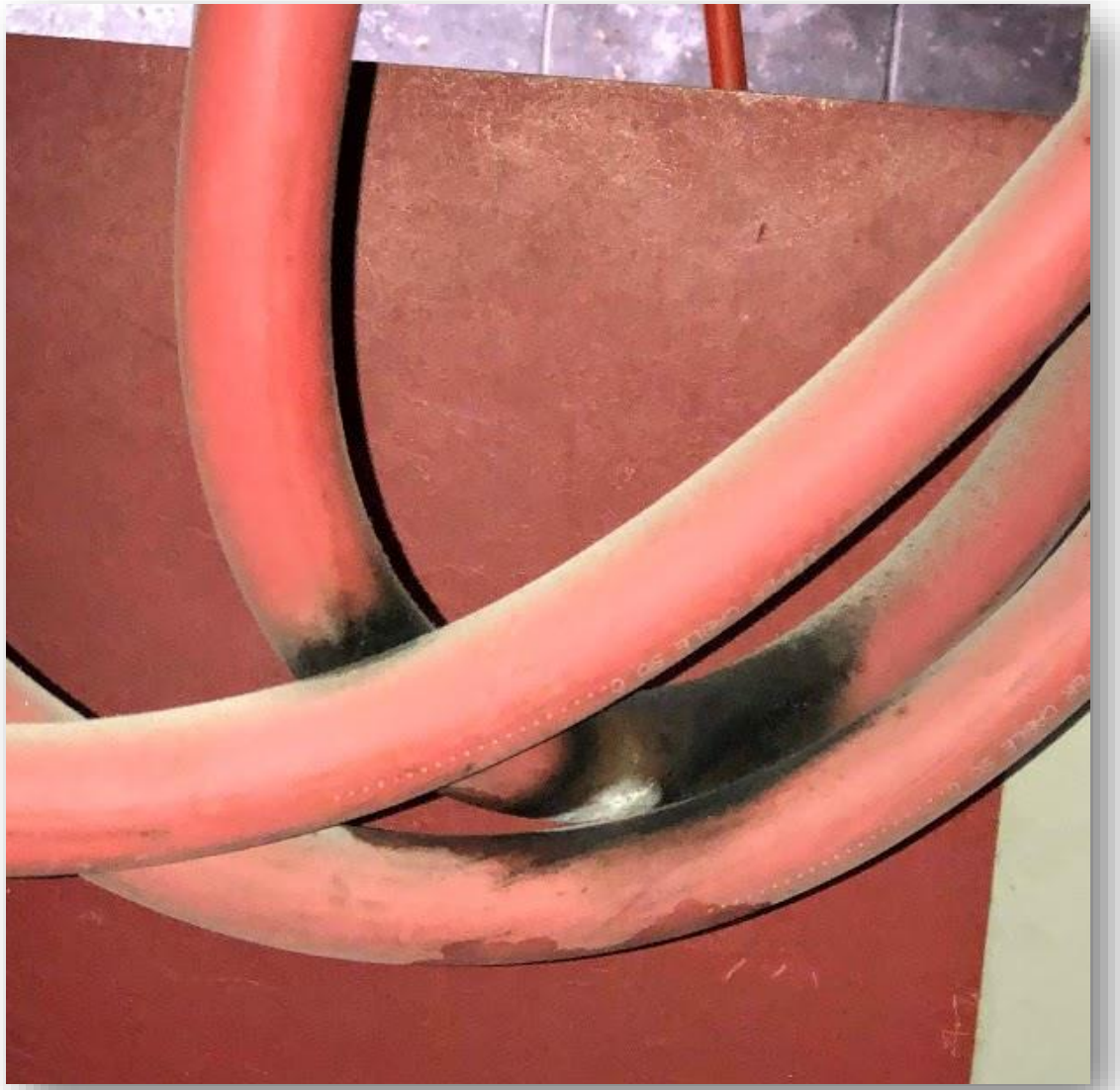
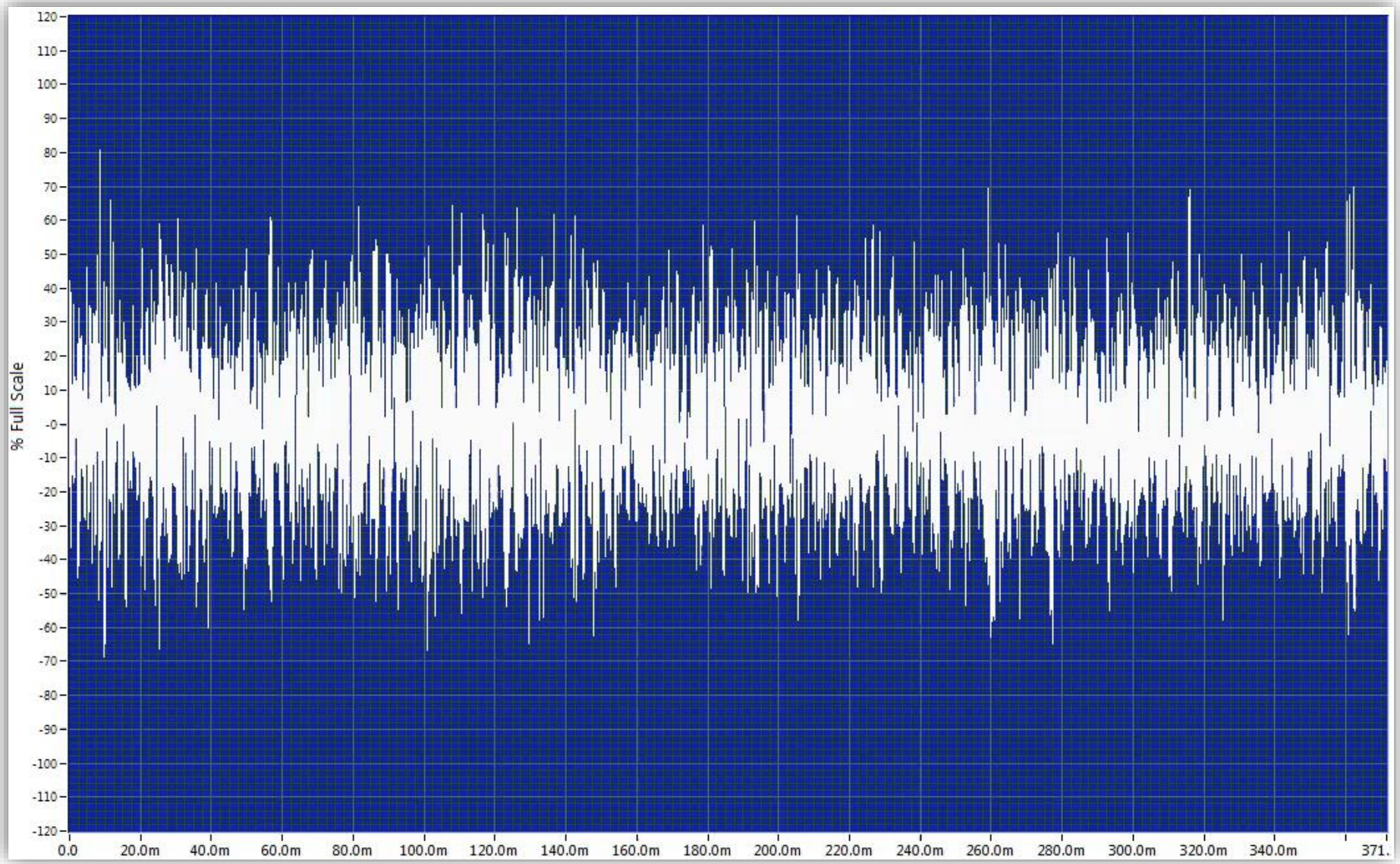
Primary Switch - Tracking



Primary Switch



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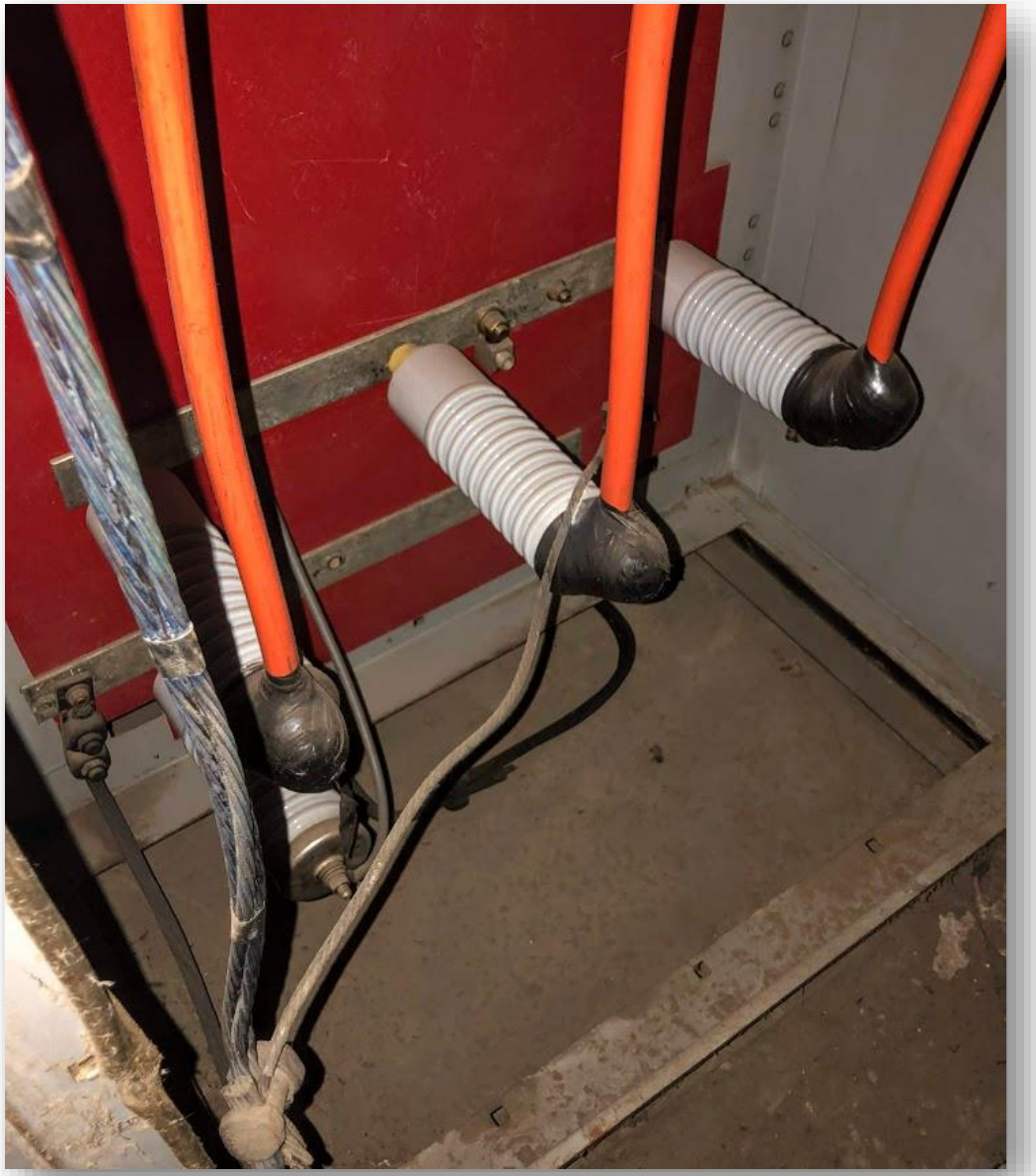
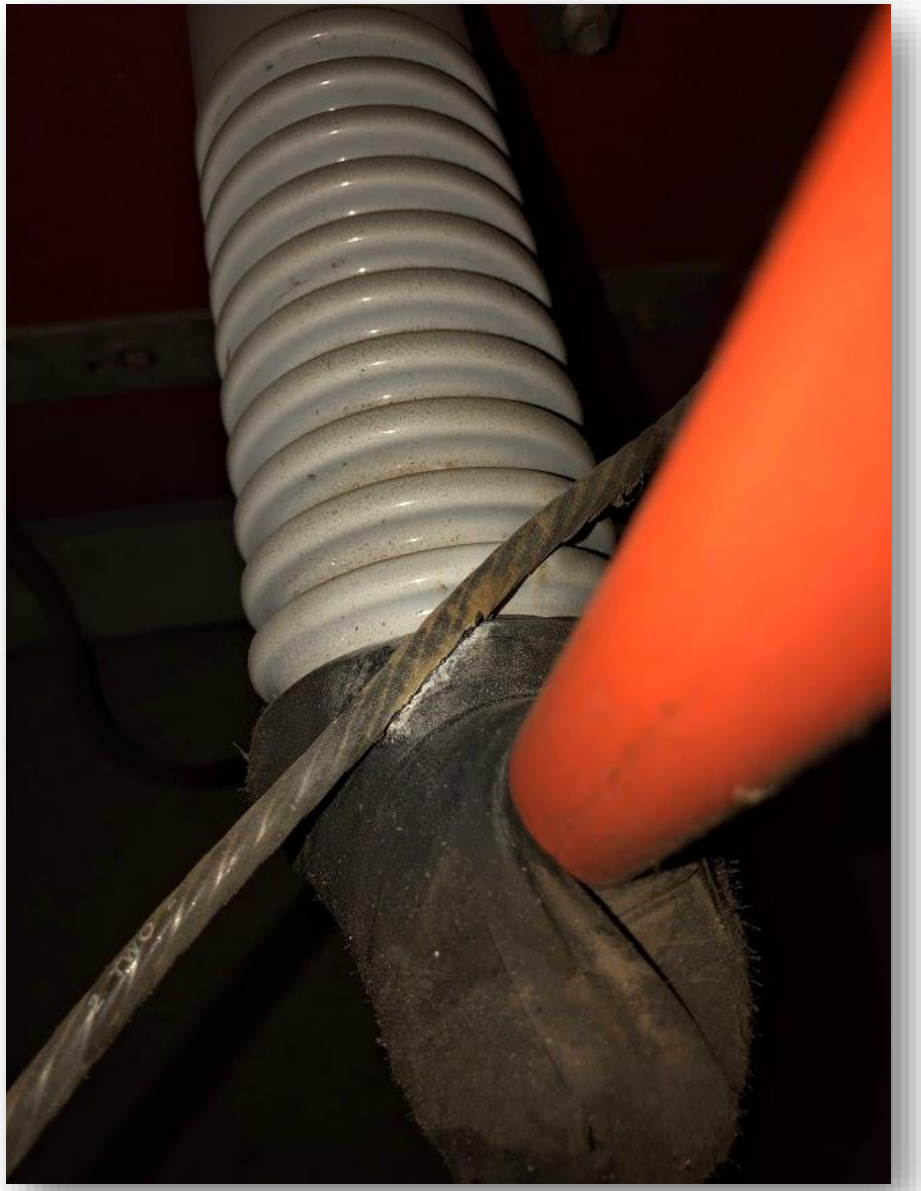
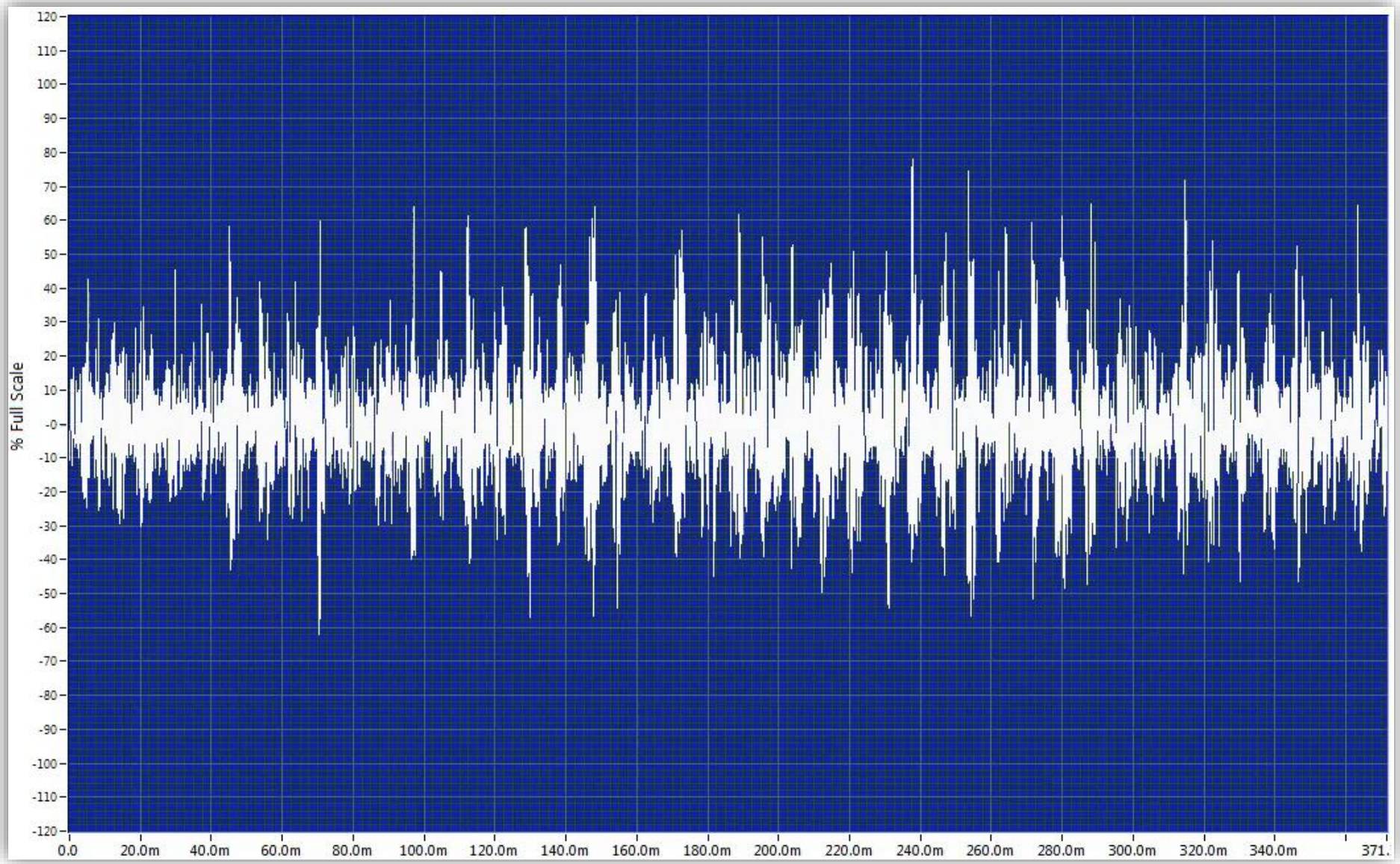
Primary Switch - Tracking





Primary Switch



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Primary Switch - Tracking
Rubbing due to Cable Contact and Overcrowding

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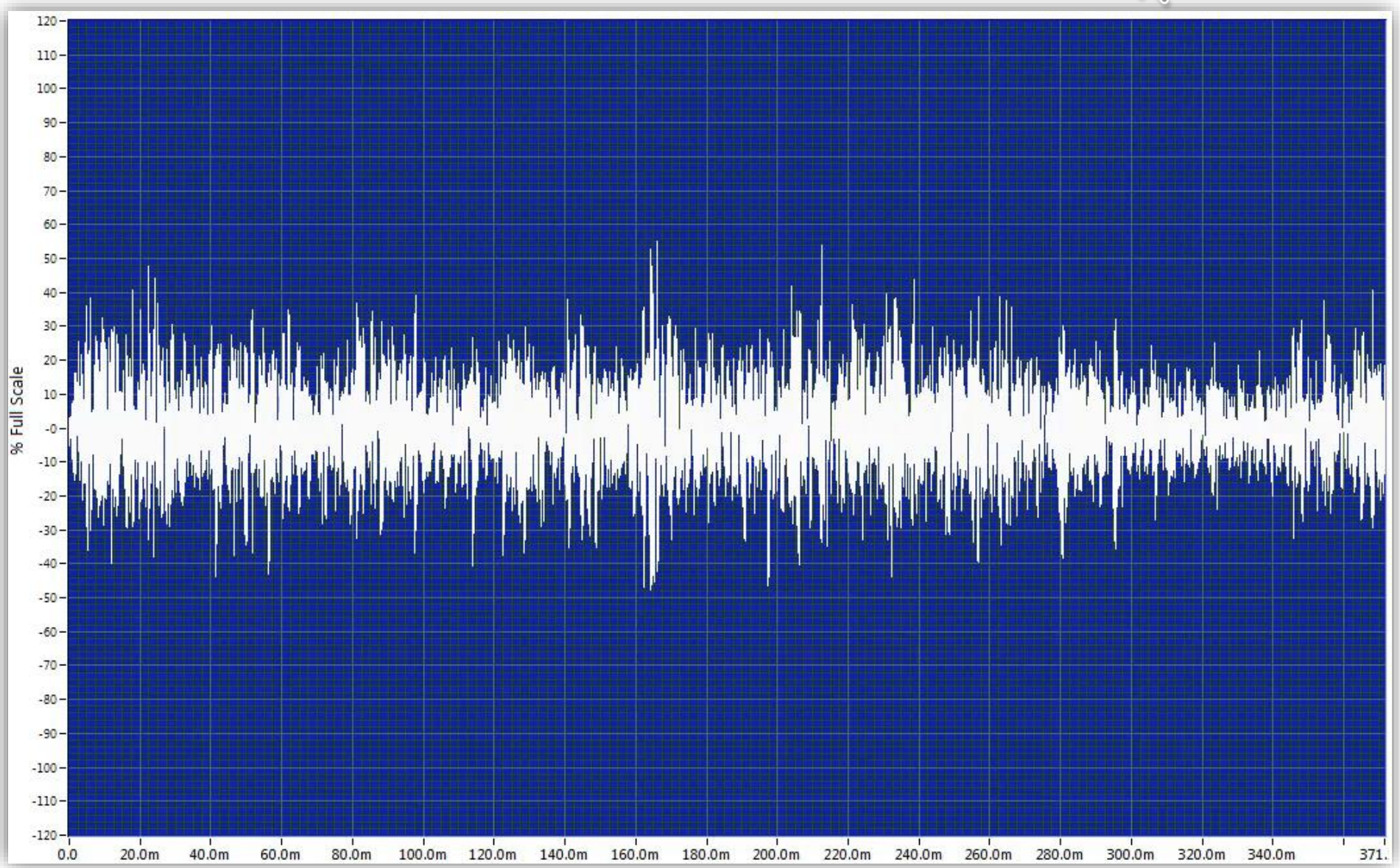
Feeder Breaker



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Feeder Breaker – Arcing

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