

Cable Quality Assurance Program



NEETRAC

National Electric Energy Testing,
Research, and Applications Center

JC Hernandez-Mejia, Stacy Elledge
Caryn Riley, Diana Ramirez

GT-NEETRAC

jean.hernandez@neetrac.gatech.edu

Background

- Program is open – member benefits
- Very effective at detecting issues
- Upgraded in 2015-2017 to archive data with image records
- Data can be queried to provide context to customers / manufacturers / industry fora
- Trends, “Normal” and “Outside Normal” ranges assessments can be established
- Optimized for cable orders that are held at the manufacturing facilities after routine testing
- Considerable growth in the last 5 years
- Utilities show a high degree of satisfaction
- Aids to follow/improve manufacturing processes

Test Philosophy

- Manufacturers provide 2 ft samples, one per Master Reel
- Orders held at plant until testing completed to utility satisfaction
- Testing completed within 5 full working days
- All tests conducted by the same person from A to Z

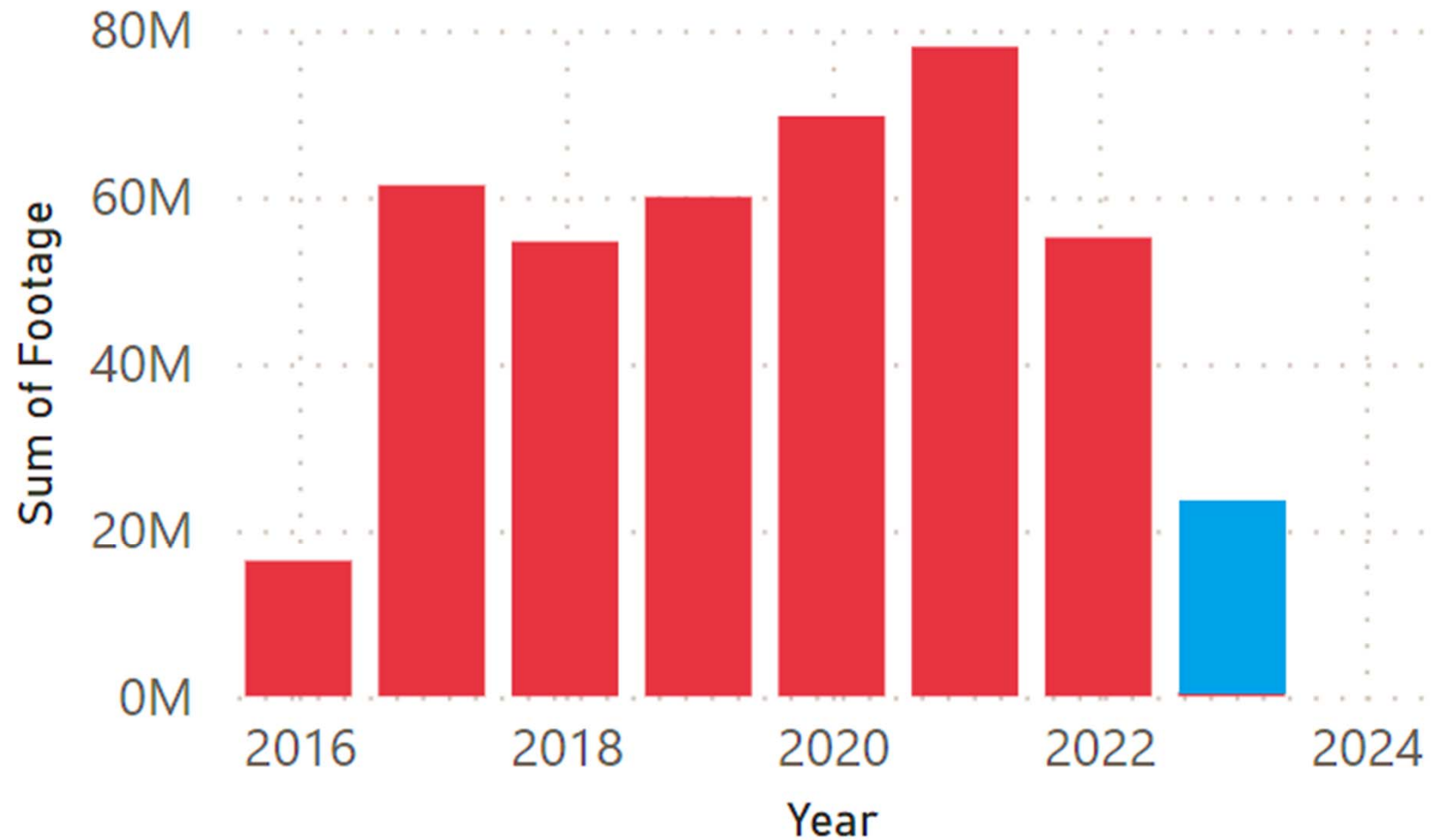
	WTRXLPE		EPR	
	Full	Partial	Full	Partial
Verification of sample compliance	*	*	*	*
Visual inspection of overall cable quality	*	*	*	*
Verification of correct jacket markings	*	*	*	*
Measurement of jacket thickness	*		*	
Correct metallic shielding	*		*	
Neutral indentation measurement	*		*	
Diameter over insulation shield	*		*	*
Diameter over insulation	*		*	*
Semiconductive shield dimensions	*		*	
Insulation dimensions & eccentricity	*		*	
Manufacturing features	*		*	
Conductor shield dimensions	*		*	
Conductor dimensions	*		*	
Conductor water blocking	*		*	
Insulation shield bond strength	*		*	
Insulation shield stripability test	*	*	*	*
Hot oil examination of cores for defects	*	*		
Inspection for cable core retraction	*	*		
Exam for gels, agglomerates, voids (EPR).			*	*
Notification of MS, UMS, DNMS results	*	*	*	*
Summary reports	*	*	*	*

Premises

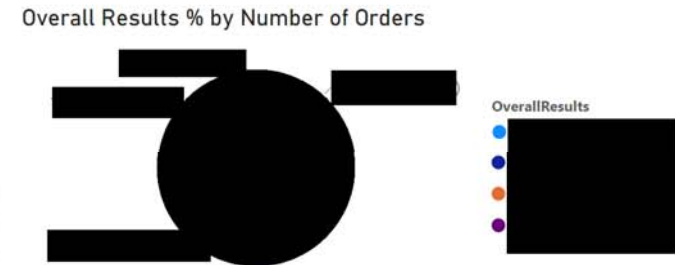
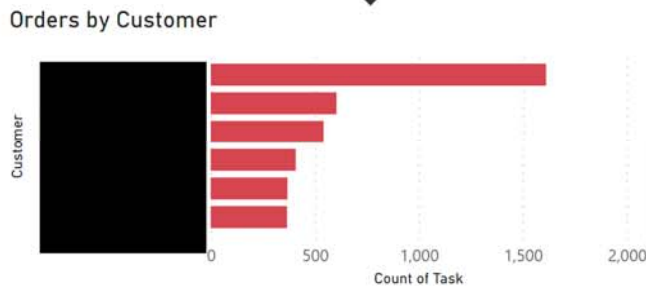
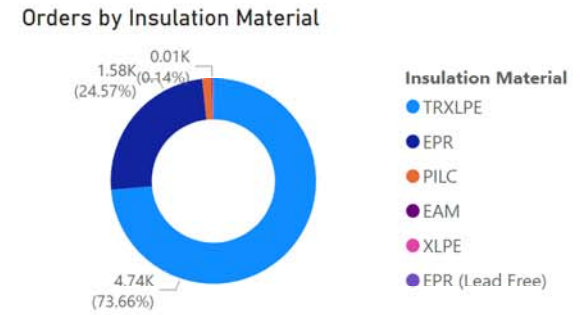
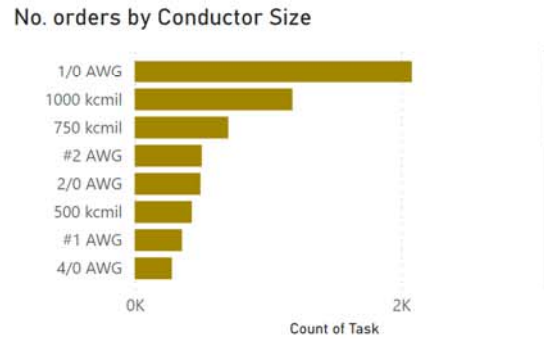
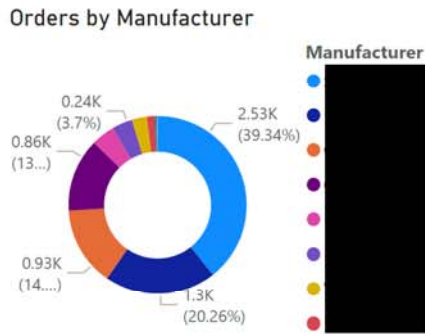
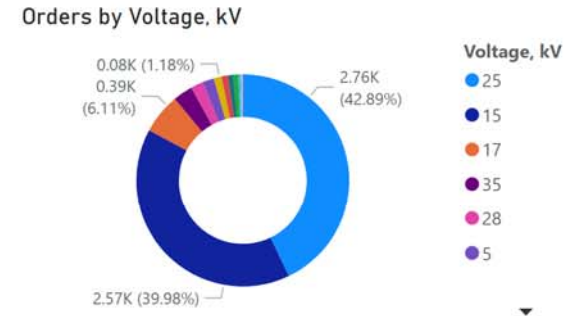
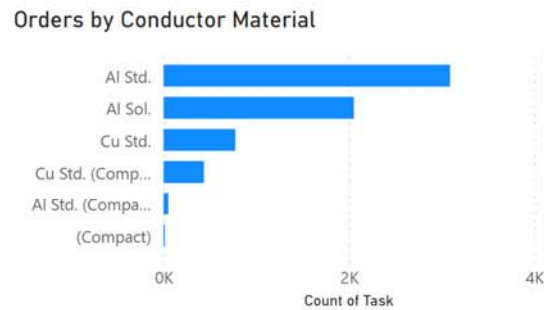
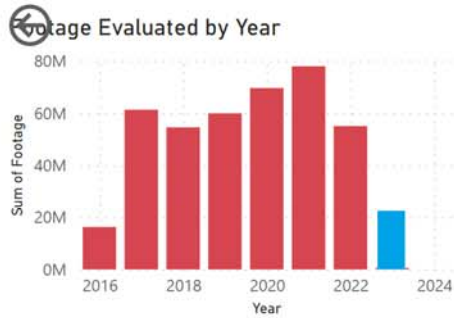


Program Size

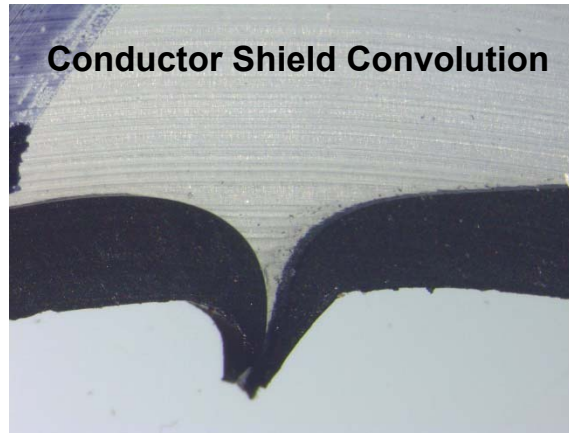
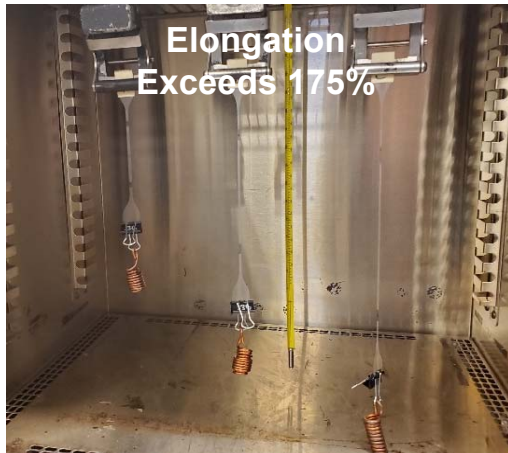
Footage Evaluated by Year     



Program Figures



Doesn't Meet Specification



Most Frequent Issues

Insulation Contamination

Semicon Pickoff

Jacket Thickness

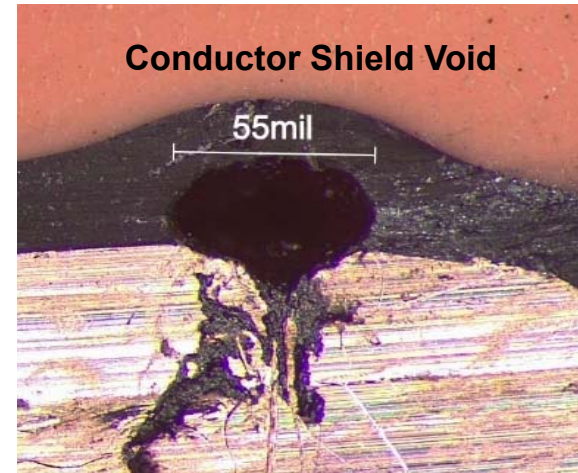
Conductor Shield Defect

Insulation Thickness

Performance judged against

- Industry specification
- Utility specification

Doesn't Meet Specification



Outside Normal Range

Unusual is a measured value outside “6 Sigma Limits”

Top Issues

Eccentricity

Value Very Close to Limit

High Strip Force

Cable Construction

