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IEEE Application Guide for an Engineered Restoration Program for Failed Transmission Structures

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IEEE Power and Energy Society

Developed by the
Transmission and Distribution Committee

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IEEE Application Guide for an Engineered Restoration Program for Failed Transmission Structures

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Abstract: An outline for the development of a restoration program using engineered restoration structures for failed transmission line structures is provided in this guide.

Keywords: emergency structures, engineered restoration structures, IEEE 1071™, program

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Introduction

This introduction is not part of IEEE Std 1071-2019, IEEE Application Guide for an Engineered Restoration Program for Failed Transmission Structures.

During major events that require an emergency response, having enough structures in stock to get the lines back up and in service may be a challenge Asset owners often have emergency response plans in place to effectively respond to emergency situations. It is important that the asset owners have a good understanding of anticipated emergency situations, and a thorough understanding of key components required to effectively manage the emergency response. Some factors to be considered are:

- Outage evaluation teams
- Emergency response team management
- System operations
- Engineering resources
- Field construction resources
- Materials availability and coordination
- Safety resources and coordination
- Logistics, transport, permits, and communications
- Communication coordination
- Contract management resources
- Property issues
- Environmental issues and permits
- Financial coordination

This application guide is intended to communicate the safe use of engineered transmission restoration structures and use to get a line or lines back in service after a structure(s) failure. The importance of the line and the availability to shift load can determine the process used to get the line back into normal operation.

Many factors will be evaluated to determine if a line needs a formal emergency restoration program such as criticality of the line, line design, location, and environmental conditions, etc. The use of Engineered Line Specific Restoration structures and Engineered Restoration Structures (ERS) have been adopted by many utilities over the years as part of their emergency restoration program. Other utilities have identified the need to have replacement structure on hand, as well as design specific structures to be used on particular line designs for the emergency restoration program. For the purpose of this document, both types of structures will be considered Engineered Transmission Restoration Structures (ETRS).

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IEEE Application Guide for an Engineered Restoration Program for Failed Transmission Structures

1. Overview

This application guide is intended to communicate the safe use of engineered transmission restoration structures (ETRS) used to get a line or lines back in service after a structure(s) failure.

1.1 Scope

This application guide provides recommendations and guidance on safety considerations for the planning, training and installation of ETRS as part of a restoration program. In addition, this guide outlines key elements to the proper maintenance and storage of restoration structures.

1.2 Purpose

This document identifies key elements for implementing a program for temporary transmission-line restoration structures in a safe, efficient, and cost-effective manner.

The purpose of this guide is to provide the industry with a generic methodology that can be used by companies to develop a plan for restoration by evaluating their particular system and structure needs. The result of which would then be compatible with a large number of the system restoration structures presently in use within the utility industry, and would allow for even greater transmission mutual assistance aid.

The guide gives a common sense approach for planning, engineering, and training, as well as inspection of components and storage of the engineered structures and supporting components. The guide is also intended to outline many processes that could make structure restoration safer.

This guide is not intended to be an application guide for complete assembled emergency restoration structures; however, it is intended to be a companion document with IEEE 1070™.

1.3 Application

This guide is intended to be used as a reference source for owners or contractors that will use engineered transmission restoration structures and for those owners that may be considering the development of a formal restoration program. This application guide should help owners and users better understand the commitment required for proper and safe application and installation of these structures.