



IEEE Guide for Aeolian Vibration Field Measurements of Overhead Conductors

IEEE Power Engineering Society

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Abstract: Current practices related to field measurements of aeolian vibration of overhead conductors are covered in this guide.

Keywords: aeolian vibration, bending amplitude, overhead conductors, vibration measurement, vibration recorders

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Introduction

This introduction is not part of IEEE Std 1368-2006, IEEE Guide for Aeolian Vibration Field Measurements of Overhead Conductors.

This guide has been prepared by the Task Force on Conductor Vibration Field Measurements of the Working Group on Conductor Dynamics of the Subcommittee on Towers, Poles, and Conductors of the Transmission and Distribution Committee of the Power Engineering Society.

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IEEE Guide for Aeolian Vibration Field Measurements of Overhead Conductors

1. Overview

The general intent of this guide is to recommend testing procedures, general data gathering formats, and general data reduction formats for field monitoring of overhead conductor vibration. The guide also provides some background information on technical aspects of vibration field measurements for overhead conductors, techniques for evaluating the severity of conductor vibration including amplitude and frequency, and some effects on conductor performance and life.

The recommendations of this guide are intended to standardize data gathering and reduction efforts so the user can evaluate long-term effects of conductor vibration and develop mitigation schemes. Standardizing the data gathering and reduction procedure allows comparison among vibration field monitoring programs. The guide is not intended to be a comprehensive treatment of conductor motion theory, or of the evaluation and prediction of vibration effects, or mitigation techniques. Such technical treatments are beyond the scope of this guide and the reader is referred to the bibliography in Annex E.

Intended users of the guide are those who desire to gather and compile overhead conductor field vibration data.

Typically, field vibration measurements gathered for overhead transmission lines are useful for one of the following reasons:

- a) Determining the cause of visible conductor fatigue damage
- b) Identifying existing vibration levels
- c) Assessing the likelihood of future conductor fatigue damage
- d) Evaluating the damping performance of conductors and any attached vibration damping systems

Each application requires that field vibration data be gathered and compiled in a standard form that lends itself to accepted analysis procedures and/or comparison with other data.