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Guide to OSHA and NFPA 70E Safety Requirements When Servicing and Maintaining Medium-Voltage Switchgear, Circuit Breakers, and Medium-Voltage Controllers Rated above 1000 V

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Foreword

This guide was written to emphasize basic principles and guidance for safety when performing inspection, operation, and maintenance of medium-voltage switchgear, circuit breakers, and medium-voltage controllers rated above 1000 V. It also draws the reader's attention to important OSHA and NFPA safety Standards. Proposed or recommended revisions should be submitted to:

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This guide was developed by the Switchgear Section of the Power Equipment Division. Section approval of the guide does not necessarily imply that all section Members voted for its approval or participated in its development. At the time this guide was approved, the Section was composed of the following Members:

Organization Name	City	State
ABB Inc.	Cary	NC
Eaton	Cleveland	OH
Federal Pacific	Bristol	VA
G&W Electric Company	Bolingbrook	IL
GE Grid Solutions	Charleroi	PA
Hubbell Incorporated	Shelton	CT
Mersen USA Newburyport-MA, LLC	Newburyport	MA
Mitsubishi Electric Power Products, Inc.	Warrendale	PA
S&C Electric Company	Chicago	IL
Schneider Electric	Boston	MA
Siemens Industry, Inc.	Norcross	GA
Toshiba International Corporation USA	Houston	TX
Z Power & Distribution Inc.	Anaheim	CA

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Section 1
General

1.1 Scope

The main objective of this guide is to enhance electrical safety awareness and mitigate electrical hazards to Members of the workforce assigned to servicing and maintaining switchgear, owners, and users of the equipment, and the public. The goal of this guide is to ensure the adoption of OSHA and NFPA 70E safety-related practices for electrical work and requirements of electrical safety.

Provisions contained herein are applicable to all Members of the workforce who are engaged in testing, servicing, maintaining, and decommissioning switchgear, circuit breakers, and controllers rated above 1000 V.

This guide emphasizes OSHA and NFPA 70E safety requirements when servicing and maintaining equipment covered in, but not limited to, the following Standards:

a. Medium-voltage metal-clad switchgear assemblies (rated 1000 through 38,000 V) in accordance with ANSI/IEEE C37.20.2, *Standard for Metal-Clad Switchgear*
b. Medium-voltage metal-enclosed switchgear assemblies (rated 1000 through 38,000 V) in accordance with ANSI/IEEE C37.20.3, *Standard for Metal-Enclosed Interrupter Switchgear*
c. Circuit breakers rated above 1000 V in accordance with ANSI/IEEE C37.04, Standard Rating *Structure for AC High-Voltage Circuit Breakers*
d. Medium-voltage controllers in accordance with UL 347, *Medium-Voltage AC Contactors, Controllers, and Control Centers*
e. Medium-voltage pad-mounted switchgear (rated 1,000 through 38,000 V) in accordance with IEEE C37.74, *Standard Requirements for Subsurface, Vault, and Pad-Mounted Load-Interrupter Switchgear and Fused Load-Interrupter Switchgear for Alternating Current Systems Up to 38 kV*.
f. C37.60, IEEE/IEC International Standard—High-voltage switchgear and controlgear—Part 111: Automatic circuit reclosers and fault interrupters for alternating current systems up to 38kV

For convenience, this equipment will be called switchgear assemblies. Switchgear assemblies and controller assemblies may contain but are not limited to devices such as power circuit breakers, contactors, interrupter switches, selector switches, power fuses, controls, instrumentation, metering, and other protective equipment. These assemblies may be part of unit substations.

1.2 Purpose

The provisions of the *National Electric Code*® (NEC), *Standard for Electrical Safety in the Workplace,* NFPA 70E, *National Electric Safety Code* (NESC), and OSHA Standards contained in this guide should be complied with at all user-controlled premises. These guidelines have specific requirements that apply to installations, servicing, and maintaining switchgear regardless of when they were designed or installed and are considered essential for ensuring workplace safety.

1.3 General Considerations

Working on or around electrical equipment is potentially dangerous, and accidents in the course of maintaining and servicing electrical equipment can lead to death or serious injury. These accidents do not have to happen. Almost all accidents can be avoided if OSHA and NFPA Standards, as well as the operation and maintenance instructions for the equipment, are carefully followed. Read and understand them fully before work is started! A few examples by which maintenance and service personnel might avoid serious injury or death when working around electrical equipment: