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

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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 and circuit breakers rated above 1000 volts. The guide 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 it was approved, the Section was composed of the following members:

AREVA T&D—Philadelphia, PA
Cooper Power Systems—Waukesha, WI
Eaton Electrical Inc—Pittsburgh, PA
Federal Pacific—Bristol, VA
General Electric Co.—Plainville, CT
Square D—Smyrna, TN
S&C Electric Company—Chicago, IL
Siemens Power Transmission & Distribution—Raleigh, NC

Section 1 GENERAL

1.1 SCOPE

This guide emphasizes OSHA and NFPA 70E safety requirements when servicing and maintaining:

- Medium-voltage metal-clad switchgear assemblies (rated 1000 through 38,000 volts) in accordance with ANSI/IEEE C37.20.2, Standard for Metal-Clad Switchgear
- Medium-voltage metal-enclosed switchgear assemblies (rated 1000 through 38,000 volts) in accordance with ANSI/IEEE C37.20.3, Standard for Metal-Enclosed Interrupter Switchgear,
- Circuit breakers rated above 1000 volts in accordance with ANSI/IEEE C37.04, Standard Rating Structure for AC High-Voltage Circuit Breakers

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

1.2 PURPOSE

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 other serious injury. These accidents do not have to happen. Almost all accidents can be avoided if you carefully follow OSHA and NFPA standards and the operation and maintenance instructions for the equipment – read them and understand them fully before you begin work! Here are just a few examples by which maintenance and service personnel might avoid serious injury or death when working around electrical equipment:

- If you are tired or psychologically stressed, take a break from the work and avoid the risk of a serious accident that might be caused by worker fatigue or stress.
- Do not assume that any conductor is de-energized. A false assumption can lead to serious injury or death. Confirm that the conductor is de-energized and grounded before you begin work on electrical equipment.
- Do not assume that the electrical equipment is de-energized. Again, a false assumption can lead to serious injury or death. Review the entire operation sequence for disconnecting and grounding with a second knowledgeable person before actually doing the work, and make sure the entire sequence for disconnecting and grounding is in fact followed. A failure to follow the entire operation sequence could lead to serious injury or death.
- Do not rely on interlocks and other indicators to prevent an accident. Relying on interlocks and indicators are not a substitute for following the entire operation sequence for disconnecting and grounding electrical equipment in order to de-energize and avoid risk of death or serious injury. Interlocks are only a backup.
- Follow the standards and recommended practices developed by OSHA and NFPA 70E.

The purpose of this guide is to alert operating and maintenance personnel who service and maintain switchgear assemblies to federally required safety procedures in OSHA 29 CFR Parts 1910 and 1926, and NFPA 70E. This guide is based on the versions of OSHA and NFPA 70E standards in effect at the time this guide was prepared.