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IEEE Standard for Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations

Sponsor

**Nuclear Power Engineering Committee
of the
IEEE Power Engineering Society**

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Foreword

(This Foreword is not a part of ANSI/IEEE Std 572-1985, IEEE Standard for Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations.)

The Institute of Electrical and Electronics Engineers, Inc has generated this standard to provide specific direction for the implementation of IEEE Std 323-1983, IEEE Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations, as it pertains to the qualification of Class 1E Connection Assemblies (connectors, terminations, and environmental seals in combination with cables as assemblies). This standard augments the direction given by IEEE Std 383-1974, IEEE Standard for Type Test of Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations, by providing guidance for the qualification of connection assemblies.

It is required that Class 1E equipment in nuclear power generating stations meets or exceeds its performance requirements throughout its installed life. This is accomplished by a disciplined program of design, qualification, and quality assurance of design, production, installation, maintenance, and surveillance. This standard is for the qualification portion of the program only.

This standard establishes the general requirements, philosophies, and principles for all types of connection assemblies (except fire stops, field splices, and containment electric penetration assemblies). Emphasis is placed on multipin, quick, disconnect-type connection assemblies primarily utilized for instrumentation, control, and power. Specific qualification information for other types of connection assemblies will be added in the future. Though intended primarily to pertain to connection assemblies for field installation, this standard may also be used to obtain guidance for the qualification of internal connection assemblies of manufactured devices.

Sections 6.2.5 and 6.2.6 describe the consensus of the working group regarding methodology and procedures for age-conditioning connection assemblies to the end of their design life.

Accelerated aging techniques, including Arrhenius methods, are considered state-of-the-art and the users of this standard are cautioned that changing technology and state-of-the-art may produce improved methodology. Aging mechanisms, other than thermal and radiation may exist for the connection assembly and should be considered in any accelerated aging program. Vibration, corrosion, voltage stress, and humidity have been identified by the working group as aging mechanisms for which proven accelerated aging methodology is presently beyond the state-of-the-art.

Suggestions for improvement of this standard will be welcomed. They should be sent to the Secretary

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An American National Standard

IEEE Standard for Qualification of Class 1E Connection Assemblies for Nuclear Power Generating Stations

1. Scope

This standard provides general requirements, direction, and methods for qualifying Class 1E connection assemblies for service in nuclear power generating stations. These include connectors, terminations, and environmental seals in combination with related cables or wires as assemblies. This standard does not apply to containment electric penetrations, fire stops, in-line splices, or components for service within the reactor vessel.

2. Purpose and References

2.1 Purpose

The purpose of this standard is to provide specific direction for the implementation of IEEE Std 323-1983 [2]¹ on qualification as it pertains to the qualification of connectors, terminations, and environmental seals (related to cables as assemblies). This standard augments the direction given by IEEE Std 383-1974 [4] by providing requirements for the qualification of connection assemblies.

2.2 References

When the following American National Standards referred to in this standard are superseded by a revision approved by the American National Standards Institute, the latest revision shall be used.

[1] ANSI/IEEE Std 99-1980, IEEE Recommended Practice for the Preparation of Test Procedures for the Thermal Evaluation of Insulation Systems for Electric Equipment.²

¹The numbers in brackets correspond to those of the references in Section 2.

²ANSI publications are available from the Sales Department, American National Standards Institute, 1430 Broadway, New York, NY 10018.