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IEEE Trial-Use Guide for Class 1E Control Switchboards for Nuclear Power Generating Stations

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IEEE Trial-Use Guide for Class 1E Control Switchboards for Nuclear Power Generating Stations

Sponsor
**Power Generation Committee of the
IEEE Power Engineering Society**

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NOTICE OF TRIAL-USE

Comments on this Trial-use Standard are welcomed and should be addressed to: Secretary, IEEE Standards Board, 345 East 47th Street, New York, N.Y. 10017.

After a trial-use period of approximately one year, the Group responsible for this document will prepare a revision and submit it to the Standards Board for approval as a full-status standard.

Foreword

(This Foreword is not part of IEEE Std 420-1973, Trial-Use Guide for Class 1E Control Switchboards for Nuclear Power Generating Stations.)

This document offers guidance for the design, manufacture, and installation of Class 1E control boards and is a matter of concern for manufacturers, users, and for those who are responsible for licensing and regulating nuclear power generating stations. This guide is an industry consensus of an acceptable approach to assessing the adequacy of Class 1E switchboards at this time. Work to expand the scope of this document is under way and will be reflected in modifications following the period of *trial use*.

This guide is not intended to define the selection, design, or qualification of piping or modules mounted on the Class 1E control switchboards. The guide is concerned with the effect of the mounted piping and modules on the integrity of the Class 1E control switchboard in the areas listed in the guide. The selection, design, and qualification of piping and modules are covered by other documents.

Work remains to be done in the separation area to progress from the trial-use basis on the subject of physical separation of redundant Class 1E circuits and devices or other components. Fire tests are urgently needed to determine the minimum separation within the control board for maintained air space or for a fire-retardant barrier. Tests involving different types of barriers such as metallic conduit, two sheets of retardant material with air space or thermal insulating material, need to be carried out. The sufficiency of a single barrier with air space or thermal insulation needs evaluation from such tests.

Terms such as *flame retardance*, *self-extinguishing*, and *nonpropagating* have been used in the guide without definitions being given. Nor do the definitions exist. The committee feels that much more work is required to arrive at satisfactory terminology and the consensus is that it should not be in the scope of this document. Coordination with work on *separation criteria* documents, presently in preparation by an *ad hoc* committee of the Nuclear Power Engineering Committee of the IEEE Power Engineering Society needs to be done and the differences resolved.

In the area of quality assurance, the differences between the quality assurance classifications for electric equipment proposed by ANSI and those currently advocated by IEEE must be resolved. In addition, work is currently in progress on the formulation of ANSI standards which supplement the basic ANSI quality assurance document, Requirements for Nuclear Power Plants, Quality Assurance Program, ANSI N45.2-1971. When available, the results of this effort must be reviewed by the working group to determine the extent of its applicability to the Class 1E control switchboard and incorporate the appropriate portions of the requirements in the quality assurance section of this guide.

The Institute of Electrical and Electronics Engineers (IEEE) undertook the development of this guide under the auspices of the Power Generation Committee. Members of the Nuclear Power Plant Control and Protection Working Group at the time of generation of the Guide were:

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