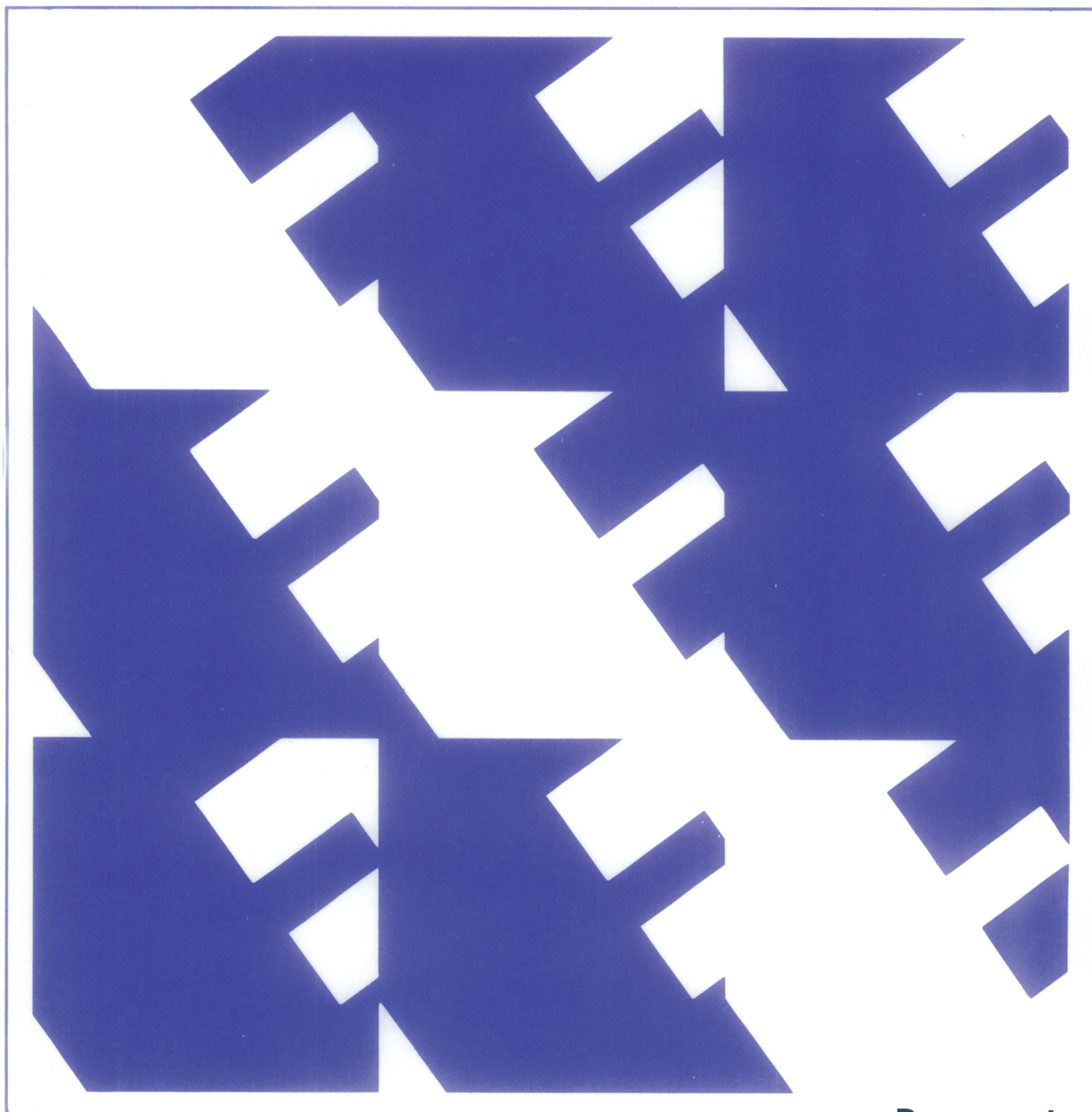


IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits



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of the
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Foreword

(This Foreword is not a part of IEEE Std 384-1981, IEEE Standard Criteria for Independence of Class 1E Equipment and Circuits.)

This standard provides criteria and requirements for establishing and maintaining the independence of Class 1E equipment and circuits and auxiliary supporting features by physical separation and electrical isolation.

This 1981 revision of IEEE Std 384-1977, Standard Criteria for Independence of Class 1E Equipment and Circuits, reflects an expansion in scope responsive to various expressed needs to address the following:

- (1) Exposure fires (those caused by ignition sources external to the raceway) and their effects on the safe shutdown capability of the plant
- (2) Associated circuits—more definitive explanation.

For item (1), a new Section 8 has been added to the standard. The working group has identified the underlying criteria for the separation of redundant circuits required for the safe shutdown of the plant. Generally, this separation is more stringent than that for other Class 1E circuits. American National Standard on Generic Requirements for Light Water Power Plant Fire Protection have been considered in these new requirements.

For consideration of the effect on safe shutdown circuits, the working group has taken the position that the fire can occur in any area of the plant (whether or not the area contains ignition sources or combustibles), with two notable exceptions:

- (1) A fire in the containment is postulated only in those areas containing installed combustible liquids or material. It is not postulated in other areas of the containment, since the building is sealed during plant operation, except for limited access under strict administrative control, precluding the introduction of transient combustibles.
- (2) A fire is not postulated in the control room, since this area is continuously occupied and conditions leading to fire would be detected and responded to quickly.

For the action item (2) above regarding associated circuits, Section 5 of this standard has been reworked. The working group has attempted to improve the presentation of associated circuits—their creation and criteria for the attached loads. New Figs 1, 2, and 3 are provided to illustrate the criteria.

Other sections of this standard have been reviewed, and many editorial improvements have been made. One rather substantive change has been made in the designation of areas in Section 6. Many concerns have been expressed to us and comments written regarding this area of the standard. Therefore, the following changes have been made to clarify the intent of the standard:

- | | |
|---|----------------------------|
| (1) Cable Spreading Room is now referred to as | Nonhazard Area |
| (2) General Plant Area is now called | Limited Hazard Area |
| (3) Hazard Area is still to be called | Hazard Area |

The Institute of Electrical and Electronics Engineers (IEEE) has developed these criteria to provide guidance in the determination of the independence requirements related to the Class 1E systems of the nuclear facility. Each applicant for a construction permit or an operating license for a nuclear power generating station in the United States is required to develop these items to comply with the Code of Federal Regulations, Title 10—Energy, Chapter I NRC (Parts 0-199).

Adherence to these criteria may not suffice for assuring the public health and safety, because it is the integrated performance of the structures, the fluid systems, and the instrumentation and the electric systems of the station that establish the consequences of accidents. Failure to meet these requirements may be an indication of system inadequacy. Each applicant has the responsibility to assure himself and others that this integrated performance is adequate.

The working group feels that the criteria herein represent an industry and government consensus for ascertaining the adequacy of the independence of Class 1E systems.

The IEEE will maintain this standard current with the state of the technology. Comments are invited on this standard as well as suggestions for additional material that should be included in future revisions. These should be addressed to:

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