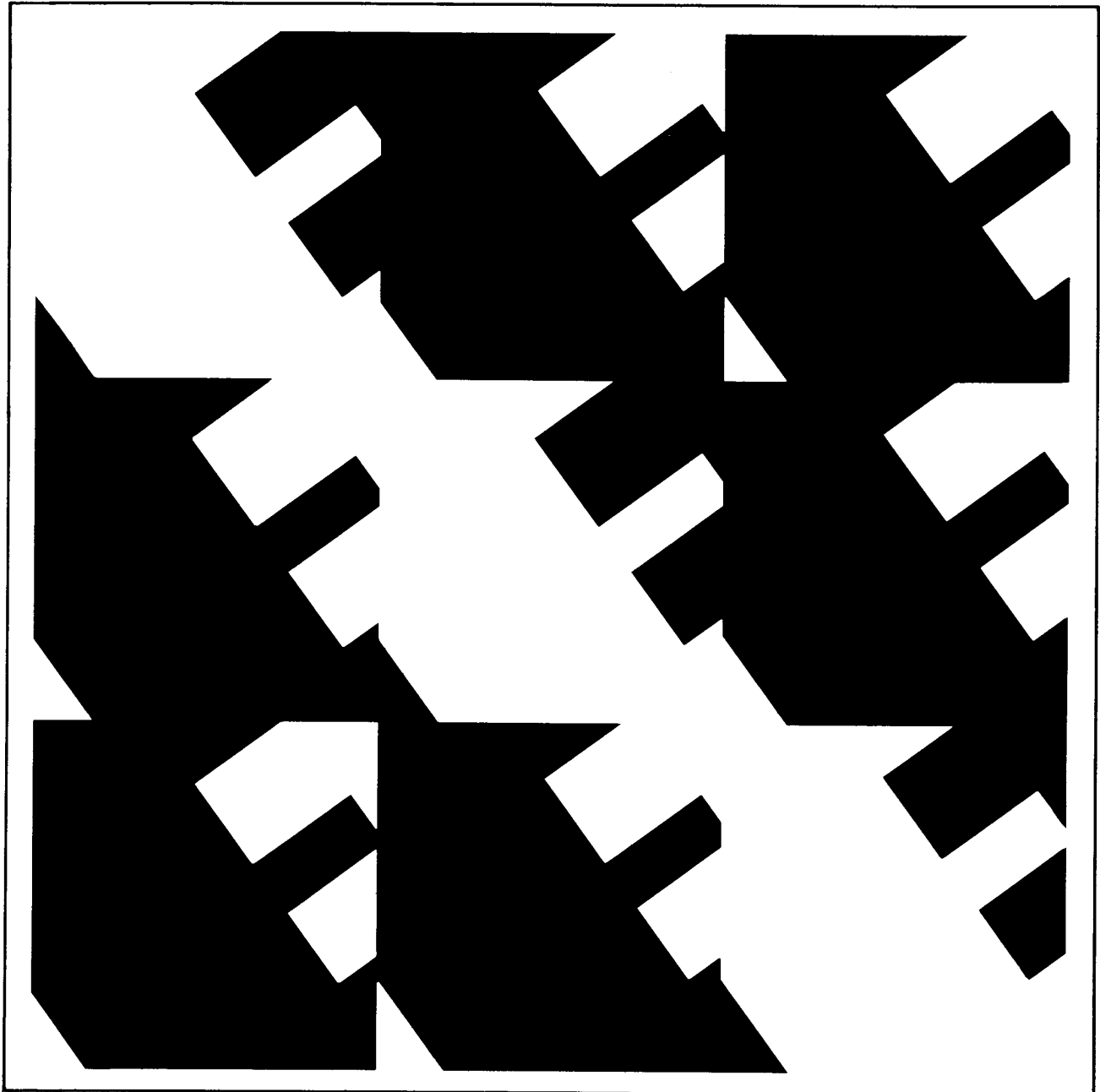


IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations



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1. Scope

This standard applies to the design of instrumentation provided for the control room operator to monitor variables required to determine accident conditions within nuclear power generating stations. The criteria apply to accident monitoring instrumentation required during the period from accident initiation, through the point in time when personnel access is possible to commence activities in parts of the plant that require inspection, repair, or replacement.

Instrumentation addressed by this standard is the minimum necessary for the control room operator to: (1) take the preplanned manual actions to accomplish and maintain safe plant shutdown for design basis accident events; (2) assess the processes of accomplishing and maintaining critical safety functions (that is, reactivity control, core cooling, reactor coolant system integrity, primary reactor containment integrity, and radioactive effluent control); and (3) monitor the extent to which those variables which have the potential for causing a breach of the primary reactor containment have exceeded the design basis values, or that the in-core fuel cladding, the reactor coolant pressure boundary, or the primary containment may have been breached.

The scope of the standard is limited to on-site environmental and process monitoring.

2. Purpose

The purpose of this standard is to provide the minimum design criteria for instrumentation used to meet the accident monitoring requirements of ANSI/ANS-4.5-1980 [1].¹ This standard provides that information required to consolidate existing standards into a cohesive set for application to accident monitoring.

¹The numbers in brackets correspond to the references listed in Section 4 of this standard.

3. Definitions

The user of this standard should familiarize himself with the terminology defined in ANSI/ANS-4.5-1980 [1].

3.1 Terms defined in ANSI/ANS-4.5-1980 [1].
accident

accident phases

controlled condition

critical safety functions

design basis accident events

variable types A, B, and C

NOTE: The term *critical safety function* (defined in ANSI/ANS-4.5-1980 [1]) pertains to a subset of *safety functions*. That subset is distinguished by the words *direct and immediate threat to the health and safety of the public*. This term is used in the definition of type B variables in ANSI/ANS 4.5-1980 [1].

3.2 Other terms used in this document:

components. Discrete items from which a system is assembled.

divisions. The designation applied to a given system or set of components that enables the establishment and maintenance of physical, electrical, and functional independence from other redundant sets of components.

module. Any assembly of interconnected components which constitutes an identifiable device, instrument, or piece of equipment. A module can be disconnected, removed as a unit, and replaced with a spare. It has definable performance characteristics which permit it to be tested as a unit. A module could be a card, a drawout circuit breaker, or other subassembly of a larger device, provided it meets the requirements of this definition.

power sources. The electrical and mechanical equipment and their interconnections necessary to generate or convert power.

redundant equipment or system. A piece of equipment or a system that duplicates the essential function of another piece of equipment