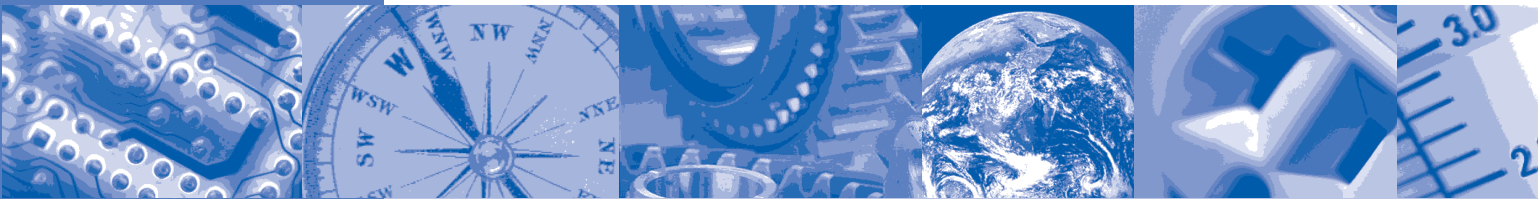


## **ANSI/ISA–S67.04.01–2000** (Equivalent to ANSI/ISA–S67.04, Part I–1994)



# **Setpoints for Nuclear Safety-Related Instrumentation**



**Approved 29 February 2000**

ANSI/ISA–S67.04.01–2000  
Setpoints for Nuclear Safety-Related Instrumentation

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## Preface

This preface, as well as all footnotes and annexes, is included for information purposes and is not part of ISA-S67.04.01.

This document has been prepared as part of the service of ISA, the international society for measurement and control, toward a goal of uniformity in the field of instrumentation. To be of real value, this document should not be static but should be subject to periodic review. Toward this end, the Society welcomes all comments and criticisms and asks that they be addressed to the Secretary, Standards and Practices Board; ISA; 67 Alexander Drive; P. O. Box 12277; Research Triangle Park, NC 27709; Telephone (919) 549-8411; Fax (919) 549-8288; E-mail: standards@isa.org.

The ISA Standards and Practices Department is aware of the growing need for attention to the metric system of units in general, and the International System of Units (SI) in particular, in the preparation of instrumentation standards. The Department is further aware of the benefits to USA users of ISA standards of incorporating suitable references to the SI (and the metric system) in their business and professional dealings with other countries. Toward this end, this Department will endeavor to introduce SI-acceptable metric units in all new and revised standards, recommended practices, and technical reports to the greatest extent possible. *Standard for Use of the International System of Units (SI): The Modern Metric System*, published by the American Society for Testing & Materials as IEEE/ASTM SI 10-97, and future revisions, will be the reference guide for definitions, symbols, abbreviations, and conversion factors.

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Instrument setpoint drift is a problem that has led to numerous abnormal occurrence reports (now referred to as "Licensee Event Reports"). Section 50.36, "Technical Specifications," of Code of Federal Regulations, Title 10, Chapter 1, Part 50, Washington, D.C., 1987, requires that, where a Limiting Safety System Setting (LSSS) is specified for a variable on which a safety limit has been placed, the setting be so chosen that automatic protective action will correct the most severe abnormal situation anticipated before a safety limit is exceeded. Inappropriate selection of a setpoint that does not allow sufficient margin to account for instrument accuracy, the expected environment, and minor calibration variations can result in calculated drift allowances insufficient for the instrument used. Protective instruments are provided with setpoints where specific actions are either initiated, terminated, or prohibited. Setpoints correspond to certain provisions of Technical Specifications that are incorporated into the facility operation license.

The single most prevalent reason for the drift of a setpoint out of compliance with a technical specification has been the selection of a setpoint that does not allow a sufficient margin between the technical specification limit to account for instrument accuracy, the expected environment, and minor calibration variations. In some cases the setpoint selected was numerically equal to the technical specification limit and stated as an absolute value, thus leaving no apparent margin for uncertainties. In other cases, the setpoint was so close to the upper or lower limit of the instrument's range that instrument drift placed the setpoint beyond the instrument's range thus nullifying the trip function. Other causes for drift of a setpoint out of conformity with the technical specifications have been instrumentation design inadequacies and questionable calibration procedures.

ISA sponsored a review of the setpoint drift problem in April 1975 by establishing the SP67.4 Subcommittee (now renumbered as SP67.04). The Committee's review indicated that a more thorough consideration of setpoint drift was necessary in the design, test, purchase, installation, and maintenance of nuclear safety-related instrumentation.