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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 ANSI/ISA-67.04.01-2018.

The standards referenced within this document may contain provisions which, through reference in this text, constitute requirements of this document. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the standards indicated within this document. Members of IEC and ISO maintain registers of currently valid International Standards. ANSI maintains registers of currently valid U.S. National Standards.

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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.

It is the policy of ISA to encourage and welcome the participation of all concerned individuals and interests in the development of ISA standards, recommended practices, and technical reports. Participation in the ISA standards-making process by an individual in no way constitutes endorsement by the employer of that individual, of ISA, or of any of the standards, recommended practices, and technical reports that ISA develops.

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