July 1981 Division 1 Task IC 010-5

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## DRAFT REGULATORY GUIDE AND VALUE/IMPACT STATEMENT

# INSTRUMENTS SETPOINTS

# Revision 2 A. INTRODUCTION

Criterion 13, "Instrumentation and Control" of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires, among other things, that instrumentation be provided to monitor variables and systems and that controls be provided to maintain these variables and systems within prescribed operating ranges.

Paragraph (c)(1)(ii)(A) of § 50.36, "Technical Specifications," of 10 CFR Part 50 requires that, where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting shall be so chosen that automatic protective action will correct the most severe abnormal situation anticipated without exceeding a safety limit.

This guide describes a method acceptable to the NRC staff for complying with the Commission's regulations for ensuring that instrument setpoints in systems important to safety are initially within and remain within the specified limits.

# B. DISCUSSION

Subcommittee SP 67.04 under the Nuclea Power Plant Standards Committee of the Instrument Society of America (ISA) has developed a standard containing criteria to be used for establishing and maintaining setpoints of individual instrument channels in systems important to safety. This standard is identified as "Setpoints for Safety Related Instrumentation in Nuclear Power Plants."

Regulatory Guide 1.105 "Instrument Setpoints" Rev. 1, dated November 1976 was published in response to the large number of reported instances where protection system instrument setpoints drifted outside the limits specified in the technical specifications. The method described in Regulatory Guide 1.105 for complying with the Commission's regulation regarding instrument setpoints has now been incorporated into a proposed national standard, along with additional criteria on gualification and setpoint maintenance.

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#### C. REGULATORY POSITION

The criteria set forth in the June 26, 1979 draft of ISA S67.04 "Setpoints for Nuclear Safety-Related Instrumentation Used in Nuclear Power Plants" establishes the minimum functional requirements acceptable to the NRC staff for ensuring that instrument setpoints in systems important to safety initially are within and remain within the specified limits, subject to the following:

- Throughout ISA Standard S67.04, the term "safety-related instruments" is used. This term shall be understood to mean "instruments in systems important to safety." Systems important to safety is defined as "...systems... that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public." (10 CFR 50, Appendix A, Introduction)
- Section 5.0 "Qualification" states in part that "these requirements are supplemental to those of IEEE Standard 323-1974." When using IEEE Standard 323-1974, the guidance presented in Regulatory Guide 1.89 should be followed.

# D. IMPLEMENTATION

The purpose of this section is to provide information to applicants regarding the NRC staff's plans for using this regulatory guide. Except in those cases in which an applicant proposes an acceptable alternative method, the method described in this guide will be used to evaluate that instrument setpoints in systems important to safety in all nuclear power plants are maintained within the technical specification limits.

This regulatory guide will also be applied to initial settings of new or replacement instruments installed in systems important to safety in all nuclear power plants.

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PRELIMINARY VALUE/IMPACT ASSESSMENT ON INSTRUMENT SETPOINTS

# 1. THE PROPOSED ACTION

#### 1.1 Description

The proposed action would enumerate the several factors which one must consider when establishing an instrument setpoint which will automatically correct the most severe abnormal situation anticipated without exceeding a safety limit. This action would provide guidance on determining setpoints to meet the requirements for limiting safety system settings as specified in 10 CFR 50, § 50.36, paragraph (c)(1)(ii)(A).

## 1.2 Need for the Proposed Action

Regulatory Guide 1.105 "Instrument Setpoints" was originally written to provide general guidance on instrument setpoint settings. Standard S67.04, "Setpoints for Nuclear Safety Related Instrumentation Used in Nuclear Power Plants" prepared by the Instrument Society of America, provides detailed guidance on establishment of setpoints, instrument performance, setpoint settings, qualification, and maintenance of setpoints.

This revision to Regulatory Guide 1.105 is being prepared to state the staff position on the more detailed guidance of ISA Standard S67.04.

## 1.3 Value/Impact of the Proposed Action

## 1.3.1 NRC Operation

The value to the NRC will be the anticipated reduction of instruments operating with incorrect setpoints. This, in turn, should reduce the number of Licensee Event Reports (LER) and the subsequent enforcement of remedial action. It will also reduce the manpower expended by the NRC in reviewing LER's. There is no perceived impact to the NRC.

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#### 1.3.2 Other Government Agencies

The proposed action should not impact other government agencies, unless the government agency is an applicant, such as TVA.

#### 1.3.3 Industry

The impact on industry will be that stricter setpoint limits and increased paperwork will be required. The increased paperwork is due to stricter instrument qualification, documentation, and justification of positions. The value to industry will be that the proposed action should result in less setpoint readjustment, and less of a chance for unwarranted reactor shutdown.

#### 1.3.4 Public

The value to the public will be enhanced public safety due to more accurate settings of the automatic protective devices which sense variables having significant safety functions. Use of the revised guidance may result in allowing lesser margins between nominal setpoints and safety limits resulting in greater reactor output power with attendant cost savings to consumers of electric power. This saving will be compensated somewhat by the impact of higher costs due to stricter requirements. There is no perceived impact to the public.

# 1.4 Decision on the Proposed Act

The proposed action should be undertaken to provide guidance on instrument setpoints.

#### 2. TECHNICAL APPROACH

#### 2.1 Technical Alternatives

1. Not endorse the national standard and not produce any comparable guide.

 Not endorse the national standard, but require adherence to a product to be developed by the NRC.

3. Endorse the national standard.

#### 2.1 Discussion and Comparison of Technical Alternatives

Alternative (1) would maintain Regulatory Guide 1.105, revision 1 dated November 1976. This would retain the various definitions and regulatory positions of revision 1, but would not update and expand these sections. Furthermore, important guidance on establishment of setpoints, instrument performance and setpoint setting, qualification, and maintenance of setpoints would not be endorsed.

Alternative (2) would expand existing Regulatory Guide 1.105 by adding new sections deemed important for establishing and maintaining setpoints for instrumentation in systems important to safety. This course of action is not recommended because it appears that the national standard will generally meet the needs of the NRC.

Alternative (3) would endorse the national standard with supplementary material including a general discussion of the regulatory guide and information on the NRC staff's plan for implementing the regulatory guide.

## 2.3 Decision on Technical Approach

The proposed action should be undertaken and alternative 3 should be selected to accomplish the action. By endorsing the national standard, the NRC will sanction not only the provisions in Revision 1 of Regulatory Guide 1.105, but other important positions on qualification and setpoint maintenance in the ISA standard.

#### 3. PROCEDURAL APPROACH

## 3.1 Procedural Alternatives

- 1. Regulation
- 2. Preparation of a Regulatory Guide not endorsing a national standard
- 3. ISA/ANSI Standard, endorsed by a Regulatory Guide

## 3.2 Value/Impact of Procedural Alternatives

The value of alternative (1) is that it would have the full force and authority of a law. The impact of alternative (1) is the difficulty of obtaining approval and the lack of flexibility in implementation. The value of alternative (2) is that it achieves the desired result with sufficient flexibility to allow innovation by licensees. However, this approach would not avail itself of the work performed by a national standards committee, and thus would result in a longer period of guide development with a greater expenditure of NRC manpower. The value of alternative (3) is that it achieves the desired result by taking advantage of the work performed by the standards committee on ISA S67.04, "Setpoints for Nuclear Safety-Related Instrumentation Used in Nuclear Power Plants."

The impact of alternative (3) is the effort by the NRC in preparing, reviewing, and issuing the regulatory guide. However, it is estimated that this effort would be much less than if alternates (1) or (2) were selected.

# 3.3 Discussion on Procedural Approach

The proposed action should be accomplished by a regulatory guide endorsing the final issuance of ISA S67.04.

#### STATUTORY CONSIDERATIONS

#### 4.1 NRC Authority

The proposed action would fall under the Atomic Energy Act of 1954 and the Energy Reorganization Act of 1974.

# 4.2 Need for NEPA Assessment

An environmental impact statement is not required since the proposed action is <u>not</u> a major action that may significantly affect the quality of the human environment.

# 5. RELATIONSHIP TO OTHER EXISTING OR PROPOSED REGULATIONS OR POLICIES

The proposed action would revise Regulatory Guide 1.105, Revision 1, dated November 1976.

# 6. SUMMARY AND CONCLUSION

A regulatory guide providing guidance on "Setpoints for Nuclear Safety-Related Instrumentation Used in Nuclear Power Plants." This guide should endorse, with possible exceptions, ISA S67.04.

# REFERENCES

- ISA S67.04, "Setpoints for Nuclear Safety-Related Instrumentation Used in Nuclear Power Plants."
- 2. Regulatory Guide 1.105, Revision 1, November 1976, "Instrument Setpoints."