

REGULATORY ANALYSIS

DRAFT REGULATORY GUIDE DG-1141 SETPOINTS FOR SAFETY-RELATED INSTRUMENTATION

(Proposed Revision 4 of Regulatory Guide 1.105, dated December 1999)

1. Statement of the Problem

In 2003, the NRC staff raised a concern related to the use of Allowable Value (AV) as the Limiting Safety System Setting (LSSS) required by 10 CFR 50.36, "Technical Specifications." The concern was based on the use of Method 3 from ANSI/ISA RP67.04.02-2000, "Methodologies for the Determination of Setpoints for Nuclear Safety Related Instrumentation," (or a similar methodology) for calculating technical specification allowable values. The NRC staff determined that the use of this method, as commonly implemented, resulted in the potential for instrument channels to operate beyond their analytical limits. The staff therefore determined that Method 3 should not be used to support technical specifications (TS). The International Society for Automation (ISA) revised ANSI/ISA 67.04.01 in 2006 and issued it as ANSI/ISA 67.04.01-2006 to, among other changes, remove guidance concerning the use of AV as LSSS and to reflect current industry practice in the maintenance of setpoints.

In addition, the NRC staff believes that explicit discussion and clarification concerning the assessment of As-Found setpoint values (AsF) and As-Left setpoint criteria (AsL) will lead to the establishment of clearer and more effective setpoint criteria both for TS and surveillance testing.

2. Objective

The objective of this regulatory action is to clarify the requirements relating to setpoint determination and assessment and to present methods acceptable to the staff for establishing appropriate setpoint related criteria.

3. Alternative Approaches

The NRC staff considered the following alternative approaches:

1. Do not revise RG 1.105
2. Withdraw RG 1.105
3. Revise RG 1.105 to address the current methods and procedures.

Alternative 1: Do Not Revise RG 1.105

Under this alternative, the NRC would not revise this guidance, and the original version of RG 1.105 would continue to be used. This alternative is considered the baseline, or "no action," alternative.

In this approach, licensees would continue to rely on the current version (Revision 3) of RG 1.105. However, the current version does not support the NRC staff positions that TS based on AV alone do not adequately protect Analytical Limits (AL) and that some methods for

computing AV result in inherently nonconservative technical specifications. As a consequence of this alternative, licensees would be required to answer a potentially large number of detailed questions concerning setpoint maintenance in each license amendment request involving setpoint-related changes to TS. There would be considerable potential costs to both the NRC and to licensees and applicants as a result of the failure of the unrevised RG to adequately address the salient issues. There is no value added by not revising the RG.

Alternative 2: Withdraw RG 1.105

Under this alternative the NRC would withdraw RG 1.105. This would eliminate the problems identified above regarding the RG. It would also eliminate the only readily available description of the methods the NRC staff considers acceptable for demonstrating setpoint compliance with 10 CFR 50.36. Although this alternative would be less costly than the proposed alternative, it would impede the public's accessibility to the most current regulatory guidance.

Alternative 3: Revise RG 1.105

Under this alternative, the NRC would endorse, in part, ANSI/ISA 67.04.01-2006, with additional criteria related to limiting setpoint (LSP), Deviation Limit (DL), and Setting Tolerance (ST). By providing licensees with a method that the NRC staff endorses for meeting the requirements of 10 CFR 50.36, this change would make it easier for both the NRC staff, licensees, and applicants to understand NRC requirements and expectations, and it would simplify the preparation and evaluation of license requests involving setpoint related TS changes. Whether or not the staff revises this regulatory guide, changes to setpoint related TS will need to conform to the regulations. This revision to the regulatory guide will make that process easier, clarify staff expectations, and increase the efficiency and effectiveness of the regulatory process.

This action would enhance reactor safety by ensuring conformity among safety analyses and design bases, TS limits, and surveillance test acceptance criteria.

The costs to the NRC would be the one-time cost of issuing the revised RG. Applicants, licensees, and the NRC staff would all experience reduced costs in developing and processing setpoint related TS changes because of the increased clarity in NRC staff expectations. Applicants and licensees would experience lower costs for developing and submitting TS change requests because the NRC staff expectations and review criteria would be clearer.

Conclusion

Based on this regulatory analysis, the NRC staff concludes that RG 1.105 should be revised to clarify the NRC staff positions concerning setpoint determination and assessment and to present methods acceptable to the NRC staff for establishing appropriate setpoint related criteria.