

REGULATORY ANALYSIS

Proposed Revision 1 of Regulatory Guide (RG) 1.62, “Manual Initiation of Protective Actions.”

1. Statement of the Problem

The current revision of RG 1.62 (Revision 0) is dated October 1973 and is based solely on Institute of Electrical and Electronics Engineers (IEEE) Std 279-1971¹. According to Title 10, of the *Code of Federal Regulations*, Part 50.55a, “Codes and Standards”(10 CFR 50.55a), applications filed on or after May 13, 1999, for preliminary and final design approvals (under 10 CFR Part 52, “Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants,” Appendix O, “Standardization of Design: Staff Review of Standard Designs”)² design certification; and construction permits, operating licenses, and combined licenses must meet the requirements for safety systems in IEEE Std 603-1991³ and the correction sheet dated January 30, 1995. In addition, computer-based digital instrumentation and control (I&C) systems or advanced analog systems are currently replacing existing I&C equipment in nuclear power plants. Regulatory Guide 1.62 (Revision 0) is silent on the application of digital I&C systems to the manual initiation of protective actions in nuclear power plants.

Therefore, revision of this regulatory guidance is necessary to incorporate the most recent IEEE standard on safety systems endorsed by the U.S. Nuclear Regulatory Commission (NRC) and to discuss the implications of the use of digital systems on the manual initiation of protective actions in nuclear power plants.

2. Objective

The objective of this regulatory action is to include appropriate references to IEEE Std 603-1991 and a discussion of computer-based digital I&C systems and advanced analog systems.

3. Alternative Approaches

The NRC staff considered the following alternative approaches:

- Do not revise RG 1.62.
- Update RG 1.62.

3.1 Alternative 1: Do Not Revise Regulatory Guide 1.62

Under this alternative, the NRC would not revise this guidance, and the original version of this regulatory guide would continue to be used. This alternative is considered the baseline or “no action” alternative and, as such, involves no value/impact considerations. This alternative would leave the NRC

¹ IEEE Std 279-1971, “Criteria for Protection Systems for Nuclear Power Generating Stations,” Institute of Electrical and Electronics Engineers, Piscataway, NJ, 1971.

² 10 CFR Part 52, “Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants,” U.S. Nuclear Regulatory Commission, Washington, DC.

³ IEEE Std 603-1991, “IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations,” Institute of Electrical and Electronics Engineers, Piscataway, NJ, 1991, and the correction sheet dated January 30, 1995.

staff with a regulatory guide that does not reference the most recent IEEE standard on safety systems endorsed by the NRC and does not address the emerging digital I&C technology.

3.2 Alternative 2: Update Regulatory Guide 1.62

Under this alternative, the NRC would update RG 1.62, taking into consideration the requirements of IEEE Std 603-1991. The updated guide would include a discussion of computer-based digital I&C systems and advanced analog systems. It would continue to reference IEEE Std 279-1971, which remains applicable to plants with construction permits issued after January 1, 1971, but before May 13, 1999.

One benefit of this action is that it would enhance reactor safety by addressing the most current IEEE standard on safety systems endorsed by the NRC. Consideration would also be given to important computer-based digital I&C system issues such as the single-failure criterion and communications.

The costs to the NRC would be the one-time cost of issuing the revised regulatory guide (which is expected to be relatively small). Applicants would incur little or no cost and may, in fact, achieve cost savings.

4. Conclusion

Based on this regulatory analysis, the staff recommends that the NRC revise RG 1.62. The staff concludes that the proposed action will enhance reactor safety by referencing the latest IEEE standard on safety systems endorsed by the NRC. It could also lead to cost savings for the industry, especially with regard to applications for standard plant design certifications and combined licenses.