

REGULATORY ANALYSIS

DRAFT REGULATORY GUIDE DG-1335 CRITERIA FOR ACCIDENT MONITORING INSTRUMENTATION FOR NUCLEAR POWER PLANTS

(Proposed Revision 5 to RG 1.97, dated June 2006)

1. Statement of the Problem

The current version of regulatory guide (RG) 1.97 (Revision 4) was issued in 2006 to endorse the Institute of Electrical and Electronics Engineers (IEEE) Standard (Std.) 497–2002, “IEEE Standard Criteria for Accident Monitoring Instrumentation for Nuclear Power Generating Stations.” The 2002 version of the IEEE Std. addresses accident monitoring instrumentation under operational states and design basis accident conditions and does not apply to severe accident conditions. Additionally, IEEE Std. 497–2002 does not have the new variables defined in 2016 version. The new variables (Type F) provide primary information to indicate fuel damage and the effects of fuel damage. The regulatory requirement for Type F variables derives from specific appendices of 10 CFR Part 52. One of the design certification rules requires, in part, that combined license applicants referencing a specific design must implement severe accident management guidelines (SAMGs). Since the SAMGs cannot be implemented without instrumentation to determine what actions are needed during a severe accident, Type F variables are required for these licensees. For other plants, implementation of SAMGs is voluntary. However, as of the date of issue of this regulatory analysis, every plant in the United States has voluntarily implemented SAMGs. They cannot do so without an equivalent to Type F variables, and therefore this guidance may be useful to them.

2. Objective

The staff of the U.S. Nuclear Regulatory Commission (NRC) proposes revising RG 1.97 to endorse IEEE Std. 497–2016, which is the most current version of the IEEE Std. The Advisory Committee on Reactor Safeguards (ACRS) recommended updating RG 1.97 to endorse IEEE Std. 497-2016 as part of its review of SECY-16-0041, “Closure of Fukushima Tier 3 Recommendations Related to Containment Vents, Hydrogen Control, and Enhanced Instrumentation.”

Revising this RG to endorse the current version of the IEEE consensus standard is in accordance with Section 12(a)(2) of Public Law 104-113, “National Technology Transfer and Advancement Act of 1995,” (codified at 15 U.S.C. § 272(b)(3)) and is consistent with the NRC policy of evaluating the latest versions of national consensus standards to determine their suitability for endorsement by regulatory guides. This revision also will comply with the NRC’s Management Directive (MD) 6.5, “NRC Participation in the Development and Use of Consensus Standards” (NRC’s Agencywide Documents Access and Management System (ADAMS) Accession No. ML16193A497).

3. Alternative Approach

The NRC staff considered the following alternative approaches:

1. Do not revise RG 1.97

2. Withdraw RG 1.97
3. Revise RG 1.97 to endorse IEEE Std. 497–2016.

Alternative 1. – Do not revise RG 1.97

Under this alternative, the NRC would not revise RG 1.97, and the current guidance would be retained. This alternative is considered the “no-action” alternative and provides a baseline condition from which any other alternatives will be assessed. If the NRC does not take action, there would not be any changes in costs or benefit to the public, licensees, or the NRC. However, the “no-action” alternative would not address identified concerns with the current version of the RG.

Alternative 2. – Withdraw RG 1.97

Under this alternative the NRC would withdraw this RG. 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 compliance with the applicable regulations. Although this alternative would be less costly than the proposed alternative, it would impede the public’s accessibility to the most current guidance.

Alternative 3 – Revise RG 1.97

Under this alternative, the NRC would revise RG 1.97. This revision would endorse IEEE Std. 497–2016, which is the most current version of the consensus standard. By revising RG 1.97 the NRC would ensure that the RG guidance available in this area is current, and accurately reflects the staff’s position.

The impact to the NRC would be the costs associated with preparing and issuing the RG revision. The impact to the public would be the voluntary costs associated with reviewing and providing comments to NRC during the public comment period. The value to NRC staff and its applicants would be the benefits associated with enhanced efficiency and effectiveness in using a common guidance document as the technical basis for license applications and other interactions between the NRC and its regulated entities.

Conclusion

Based on this regulatory analysis, the NRC staff concludes that Alternative 3, the revision of RG 1.97 is warranted. The revision will enhance the ability of applicants, licensees, and the NRC staff to perform safety evaluations of accident monitoring instrumentation for nuclear power plants.