

REGULATORY ANALYSIS

DRAFT REGULATORY GUIDE DG-1421

INSTALLATION DESIGN AND INSTALLATION OF VENTED LEAD-ACID STORAGE BATTERIES FOR PRODUCTION AND UTILIZATION FACILITIES

(Proposed Revision 3 of Regulatory Guide 1.128, Revision 2, issued February 2007)

This document presents the results of a regulatory analysis conducted by the U.S. Nuclear Regulatory Commission (NRC) concerning its determination of whether to issue Draft Regulatory Guide (DG)-1421 (proposed Revision 3 of Regulatory Guide (RG) 1.128), “Installation Design and Installation of Vented Lead-Acid Storage Batteries for Production and Utilization Facilities.” The analysis provides the public with an insight into how the NRC arrives at a decision.

1. Statement of the Problem

The NRC is considering revising RG 1.128 to endorse the latest version of a national consensus standard and modify the scope of the RG to include production and utilization facilities licensed under 10 CFR Part 50 and 10 CFR Part 52.

The NRC staff published the current version (Revision 2) of RG 1.128 in February 2007 to endorse Institute of Electrical and Electronics Engineers (IEEE) Std. 484-2002, “IEEE Recommended Practice for Installation Design and Installation of Vented Lead-Acid Batteries for Stationary Applications.” However, the IEEE standard was revised in 2019. The 2019 revision of IEEE 484 includes the addition of thermal factors of influence (exposure temperature, ambient temperature, temperature gradient, and rate of temperature change) and safety provisions (e.g., electrical hazards, shock hazards, ground fault hazards, arc flash hazards, chemical hazards), modifications to the personal protective equipment section, major changes to mounting and ventilation sections, new provisions on connection to direct current systems and spare cells, and new provisions for material handling and hazard assessment, as well as many other updates, corrections, and clarifications to various sections. In May 2023, the Office of Nuclear Reactor Regulation’s Division of Engineering and External Hazards and the Office of Nuclear Regulatory Research’s Division of Engineering agreed to consider updating the RG to endorse the revised standard (Agencywide Documents Access and Management System Accession No. ML23102A032).

2. Objective

The objective of this regulatory action is to assess the need to update NRC guidance and provide applicants with a method to demonstrate compliance with requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, “Domestic Licensing of Production and Utilization Facilities,” Appendix A, “General Design Criteria for Nuclear Power Plants,” and Appendix B, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants,” and 10 CFR Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants,” for installation design and installation of vented lead-acid batteries in production and utilization facilities.

3. Alternative Approaches

The NRC staff considered the following alternative approaches:

- Do not revise RG 1.128
- Withdraw RG 1.128
- Revise RG 1.128 to address the current methods and procedures.

Alternative 1: Do Not Revise Regulatory Guide 1.128

Under this alternative, the NRC would not revise guidance, and the current guidance (Revision 2) would be retained. If NRC does not act, there would not be any changes in costs or benefits to the public, licensees, or the NRC. This alternative is considered the “no-action” alternative and provides a baseline condition from which any other alternatives will be assessed. However, the “no-action” alternative would not address identified concerns with the current version of the RG. The NRC would continue to review each application on a case-by-case basis.

Alternative 2: Withdraw Regulatory Guide 1.128

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 10 CFR Part 50, Appendices A and B.

Alternative 3: Update Regulatory Guide 1.128

Under this alternative, the NRC would revise RG 1.128. This revision would incorporate the latest information in the installation design and installation of vented lead-acid batteries in production and utilization facilities, supporting guidance, and review practices. By doing so, the NRC would ensure that the regulatory 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 on the public would be the voluntary costs associated with reviewing and providing comments to the NRC during the public comment period. The value to the 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.

4. Conclusion

Revising this RG to endorse a consensus standard is consistent with the NRC policy of evaluating the latest versions of national consensus standards to determine their suitability for endorsement by RGs. This approach will also comply with the NRC’s Management Directive 6.5, “NRC Participation in the Development and Use of Consensus Standards,” issued December 2011 (ML100600460). This is in accordance with Public Law 104-113, “National Technology Transfer and Advancement Act of 1995.”

Based on this regulatory analysis, the NRC staff concludes that the revision of RG 1.128, Revision 2, is warranted. The action will enhance safety and provide updated

guidance on installation design and installation of vented lead-acid batteries in production and utilization facilities.