

REGULATORY ANALYSIS

DRAFT REGULATORY GUIDE DG-1294 Pre-Operational Testing of Onsite Electric Power Systems to Verify Proper Load Group Assignments, Electrical Separation, and Redundancy (Proposed Revision 1 of Regulatory Guide 1.41, dated March 1973)

1. Statement of the Problem

Regulatory Guide (RG) 1.41, “Pre-Operational Testing of Onsite Electric Power Systems to Verify Proper Load Group Assignments, Electrical Separation, and Redundancy,” was developed to provide guidance on pre-operational testing of onsite electrical power systems important to safety for load group assignments, electrical separation, and redundancy. The U.S. Nuclear Regulatory Commission (NRC) first issued the guide in 1973, and it has not been revised despite multiple revisions to the underlying regulations. Since 1973, the Commission has amended its regulations at section 50.63 of Title 10 of the *Code of Federal Regulations* (10 CFR) for loss of all alternating current (ac) power (station blackout) and at 10 CFR 50.54(hh)(2) for loss of large areas of the plant caused by explosions or fire, and it has established a new combined (construction and operating) licensing process under 10 CFR Part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants.”

2. Objective

The staff believes this RG should be revised for three reasons: (1) to expand the scope of the guide to encompass pre-operational tests for the electrical power systems used to address regulatory requirements on station blackout and loss of large areas of the plant caused by explosions or fire, (2) to expand the scope of the guide to encompass testing the plant’s ability to meet time requirements for startup and alignment for use of electric power sources used in response to the station blackout and loss of large areas of the plant caused by explosions or fire, and (3) to update the guide references and address facilities licensed under 10 CFR Part 52.

3. Alternative Approaches

The staff considered the following alternative approaches:

- (1) Do not revise RG 1.41
- (2) Withdraw RG 1.41
- (3) Revise RG 1.41 to address revisions in regulations since 1973.

3.1 Alternative 1: Do Not Revise RG 1.41

This is considered the “no-action” alternative. Under this alternative, the NRC would not revise RG 1.41, and the current guidance would remain active.

If the NRC selects this alternative, there would be no change 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. The NRC would continue to review each application on a case-by-case basis. This alternative provides a baseline condition from which any other alternatives can be assessed.

3.2 Alternative 2: Withdraw RG 141

Under this alternative, the NRC would withdraw this RG. This action would eliminate the conflict that exists between the current RG and the newer regulations. It also would eliminate the only readily available description of methods that the staff considers acceptable for verifying that the as-built condition of the onsite electrical systems meet the design requirements for load group assignments, electrical separation, and redundancy. Although this alternative would be less costly than the proposed alternative, it would impede the public's accessibility to the most current guidance information.

3.3 Alternative 3: Revise RG 1.41

Under this alternative, the NRC would revise RG 1.41 to provide applicants and licensees with methods the staff considers acceptable for verifying that the as-built condition of the onsite electrical systems meet the design requirements for load group assignments, electrical separation, and redundancy. This includes:

- Verifying that the load group assignments, electrical separation, and redundancy meet the design requirements for onsite or temporarily installed power systems that may be used to comply with 10 CFR 50.63 and 10 CFR 50.54(hh)(2).
- Verifying that the design requirements and time requirements are met for startup and alignment of electric power sources that may be required to meet the regulations in 10 CFR 50.54(hh)(2).
- Demonstrating compliance with NRC regulations on verification of electrical separation and proper assignment of redundant load groups to onsite power sources as described in RG 1.6, "Independence between Redundant Standby (Onsite) Power Sources and between Their Distribution Systems (Safety Guide 6)," and RG 1.32, "Criteria for Power Systems for Nuclear Power Plants."
- Demonstrating that the time required for startup and alignment of another ac power source(s) and the associated equipment can be verified by testing in accordance with the requirements of 10 CFR 50.63(b)(2).

Revising this guide would make it applicable to all types of nuclear power plants that are licensed under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," or 10 CFR Part 52, including new construction and initial testing of major modifications or repairs to currently licensed nuclear power plants.

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 the NRC during the public comment period. The value to the NRC staff and NRC 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

Based on this regulatory analysis, the staff recommends revision of RG 1.41. The staff concludes that the proposed action will enhance NRC guidance to applicants and licensees by addressing current regulations and endorsing the most current revision of industry and international consensus standards.

Revising this RG to endorse portions of 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 also will comply with the NRC's directive that standards developed by consensus bodies must be used in accordance with Public Law 104-113, "National Technology Transfer and Advancement Act of 1995."