

## Regulatory Guide Periodic Review

**Regulatory Guide Number:** 1.204, Revision 0  
**Title:** Guidelines for Lightning Protection of Nuclear Power Plants  
**Office/division/branch:** RES/DE/ICEEB  
**Technical Lead:** David Dawood  
**Staff Action Decided:** Reviewed with issues identified for future consideration

**1. What are the known technical or regulatory issues with the current version of the Regulatory Guide (RG)?**

Revision 0 of RG 1.204 endorses, with some exceptions and clarifications, four consensus standards issued by the Institute of Electrical and Electronics Engineers (IEEE). The four consensus standards are:

- IEEE Std. 665-1995, "IEEE Guide for Generating Station Grounding,"
- IEEE Std. 666- 1991, "IEEE Design Guide for Electric Power Service Systems for Generating Stations,"
- IEEE Std. 1050-1996, "IEEE Guide for Instrumentation and Control Equipment Grounding in Generating Stations," and
- IEEE Std. C62.23-1995 "IEEE Application Guide for Surge Protection of Electric Generating Plants."

In addition to the four endorsed standards the RG contains numerous references to secondary standards that contain clarifying information. As a result, portions of those secondary standards are included in the NRC's endorsement of the four primary standards. A table (below) lists the secondary standards referenced in the standards endorsed in the RG.

Since the initial release of RG 1.204 in 2005, some of the primary and secondary standards have been updated. While these revised consensus standards create no technical or regulatory issues, the RG should be updated to endorse the newest versions of the cited IEEE standards.

Other than the cited revisions to the endorsed IEEE standards there are no known technical or regulatory issues with this RG.

**2. What is the impact on internal and external stakeholders of not updating the RG for the known issues, in terms of anticipated numbers of licensing and inspection activities over the next several years?**

Since there are no known technical or regulatory issues, there is no impact.

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**3. What is an estimate of the level of effort (LOE) needed to address identified issues in terms of full-time equivalent (FTE) and contractor resources?**

The LOE needed for a revision of RG 1.204 will require approximately 0.3 to 0.5 FTE due to the multiple interrelated consensus standards that need to be reviewed and verified.

**4. Based on the answers to the questions above, what is the staff action for this guide (Reviewed with no issues identified, Reviewed with issues identified for future consideration, Revise, or Withdraw)?**

Reviewed with issues identified for future consideration.

**5. Provide a conceptual plan and timeframe to address the issues identified during the review.**

The NRC staff plans to develop a draft regulatory guide to endorse the newer IEEE standards and deliver it to the Regulatory Guidance and Generic Issues Branch (RGGIB) for processing within 12 to 18 months. The draft regulatory guide should be available for public comment within 6 to 9 months of its receipt by RGGIB.

**Table 1. Secondary Standards Referenced in the Primary Standards Endorsed by RG 1.204.**

<b>Standard Number</b>	<b>Standard Title</b>
IEEE Std. 80-2000	IEEE Guide for Safety in AC Substation Grounding (ANSI)
IEEE Std. 81-1983	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System (ANSI)
IEEE Std. 81.2-1991	IEEE Guide for Measurement of Impedance and Safety Characteristics of Large, Extended or Interconnected Grounding Systems
IEEE Std. 142-1991	IEEE Recommended Practice for Grounding of Industrial and Commercial Power Systems (IEEE Green Book)
IEEE Std. 367-1996	IEEE Recommended Practice for Determining the Electric Power Station Ground Potential Rise and Induced Voltage from a Power Fault (ANSI)
IEEE Std. 487-2000	IEEE Recommended Practice for the Protection of Wire-Line Communication Facilities Serving Electric Supply Locations (ANSI)
IEEE Std. 1100-1999	IEEE Recommended Practice for Powering and Grounding Electronic Equipment (IEEE Emerald Book) (ANSI)
IEEE Std. C37.101-1993	IEEE Guide for Generator Ground Protection (ANSI)
IEEE Std. C57.13.3-1983 (reaffirmed 1990)	IEEE Guide for the Grounding of Instrument Transformer Secondary Circuits and Cases (ANSI)
IEEE Std. C62.92.1-2000	IEEE Guide for the Application of Neutral Grounding in Electrical Utility Systems, Part I-Introduction (ANSI)

**NOTE: This review was conducted in April 2017 and reflects the staff's plans as of that date. These plans are tentative and are subject to change.**

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Standard Number	Standard Title
IEEE Std. C62.92.2-1989 (reaffirmed 2001)	IEEE Guide for the Application of Neutral Grounding in Electrical Utility Systems, Part II-Grounding of Synchronous Generator Systems (ANSI)
IEEE Std. C62.92.3-1993 (reaffirmed 2000)	IEEE Guide for the Application of Neutral Grounding in Electrical Utility Systems, Part III-Generator Auxiliary Systems (ANSI)
IEEE Std. C62.41.1-2002	IEEE Guide on the Surge Environment in Low-Voltage (1000 V and Less) AC Power Circuits (ANSI)
IEEE Std. C62.41.2-2002	IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and Less) AC Power Circuits (ANSI)
IEEE Std. C62.45-2002	IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits (ANSI)

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