

# PUBLIC SUBMISSION

SUNSI Review Complete  
Template=ADM-013  
E-RIDS=ADM-03  
ADD: Joseph Bridget  
Curran, Jim Steckel, Mary  
Neely

Comment (1)  
Publication Date: 5/3/2023  
Citation: 88 FR 27714

<b>As of:</b> 6/7/23, 1:26 PM
<b>Received:</b> June 01, 2023
<b>Status:</b> Pending_Post
<b>Tracking No.</b> lid-86ez-mv19
<b>Comments Due:</b> June 02, 2023
<b>Submission Type:</b> Web

**Docket:** NRC-2023-0089

Draft Regulatory Guide: Guidelines for Lightning Protection for Production and Utilization Facilities

**Comment On:** NRC-2023-0089-0001

Draft Regulatory Guide: Guidelines for Lightning Protection for Production and Utilization Facilities

**Document:** NRC-2023-0089-DRAFT-0003

Comment on FR Doc # 2023-09390

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## Submitter Information

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**Organization:** Nuclear Utility Group on Equipment Qualification

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## General Comment

See attached file(s)

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## Attachments

06-01-23 NUGEQ Comments on DG-1409 (final)

NUCLEAR UTILITY GROUP  
ON EQUIPMENT QUALIFICATION

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June 1, 2023

Mr. Meraj Rahimi, Chief  
Regulatory Guide and Programs Management Branch  
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Office of Nuclear Regulatory Research  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Subj: Comments by the *Nuclear Utility Group on Equipment Qualification* Regarding Draft Regulatory Guide, DG-1409, “Guidelines for Lightning Protection for Production and Utilization Facilities” -- Docket ID NRC–2023–0089

Dear Mr. O’Donnell:

The Nuclear Utility Group on Equipment Qualification (“NUGEQ” or “Group”)<sup>1</sup> hereby submits three comments on the proposed Revision 1 of Regulatory Guide (RG) 1.204, “Guidelines for Lightning Protection of Nuclear Power Plants in accordance with the *Federal Register* notice, dated May 3, 2023.<sup>2</sup> DG-1409 describes an approach that is acceptable to the NRC staff (“Staff”) to meet regulatory requirements for adequate lightning protection of safety-related systems, structures, and components (“SSCs”) by endorsing with clarifications several IEEE Standards (Std.) including: IEEE Std 665-1995, “IEEE Standard for Generating Station Grounding”; IEEE Std. 666–2007, “IEEE Design Guide for Electrical Power Service Systems for Generating Stations”; and IEEE Std. 1050-2004, “IEEE Guide for [I&C] Equipment Grounding in Generating Stations.”

As reflected in the attached comment form, our concern with DG-1409 is that it cites 10 C.F.R. § 50.49—specifically, §§ 50.49(b) and (d)—as applicable regulatory requirements for lightning protection of Part 50 and Part 52 plants. Lightning is a natural phenomenon that is

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<sup>1</sup> The Group represents approximately 75% of the operating nuclear power plants in the United States. The Group was founded in 1981, as the NRC staff was evaluating and planning the ultimate promulgation of 10 CFR 50.49, “Environmental qualification of electric equipment important to safety for nuclear power plants.” Since its inception, the Group has been actively involved in the development and implementation of licensee EQ programs, and in interaction with the NRC, regarding evolving NRC requirements and guidance. Most recently, the Group was also actively involved in the NRC DBA EQ program inspections and worked with licensees and the NRC in addressing implementation issues associated with those inspections.

<sup>2</sup> Draft Regulatory Guide (DG), DG-1409, “Guidelines for Lightning Protection for Production and Utilization Facilities.” See 88 Fed. Reg. 27,714.

explicitly excluded from the provisions of the EQ Final Rule by § 50.49(c).<sup>3</sup> We note that 10 C.F.R. Part 50, Appendix A, GDC 2, “Design Bases for Protection against Natural Phenomena,” is the applicable regulatory requirement for SSCs important to safety to be designed to withstand the effects of natural phenomena without loss of capability to perform their safety functions. However, the Staff’s citation to §§ 50.49(b) and (d) as applicable regulations for lightning protections is: (1) contrary to the specific exclusion of natural phenomenon in §50.49(c); and (2) inconsistent with RG 1.89, “Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants” (Rev 1 or Rev 2), as neither revision suggests that lightning protection is an environmental parameter that is within the scope of 10 C.F.R. § 50.49.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'R. T. McCarty', with a long horizontal flourish extending to the right.

Richard T. McCarty, Winston & Strawn LLP  
Counsel to the Nuclear Utility Group on Equipment Qualification

Attachment

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<sup>3</sup> § 50.49(c) states: “Requirements for ... (2) protection of electric equipment important to safety against other natural phenomena and external events, ... are not included within the scope of this section.”

## NUGEQ Comments on DG-1409 - Proposed Revision 2 to Regulatory Guide 1.204

Reviewed Document: U.S. NRC Draft Regulatory Guide DG-1409, "Guidelines for Lightning Protection for Production and Utilization Facilities," Issued April 2023

No.	Comment Type <sup>(note 1)</sup>	Section / Page	Current Wording	Comment or Feedback	Basis for Comment or Proposed Changes (as applicable)	Comment Provided By
1	C	A / Page 1-2 Applicable Regulations	10 CFR 50.49(d) requires an applicant or licensee to prepare a list of electric equipment important to safety as listed in 50.49(b) and to include information for this electric equipment on performance specifications under conditions existing during and following design basis accidents; the voltage, frequency, load, and other electrical characteristics for which these performance specifications can be ensured; and the environmental conditions, including temperature, pressure, humidity, radiation, chemicals, and submergence at the location where the equipment must perform as specified.	10 CFR 50.49 (d) is not an applicable regulation for lightning protection and should not be listed as an applicable regulation in DG-1409. Lightning is a natural phenomenon that is explicitly excluded from the provisions of the EQ Final Rule (§50.49) by 10 CFR 50.49(c), which states:  <i>“(c) Requirements for (1) dynamic and seismic qualification of electric equipment important to safety, (2) <b>protection of electric equipment important to safety against other natural phenomena and external events</b>, and (3) environmental qualification of electric equipment important to safety located in a mild environment <b>are not included within the scope of this section</b>. A mild environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences.”</i> [Emphasis added]  Note that lightning is not an environmental parameter that results from design basis accidents nor is it required to be addressed under 10 CFR 50.49(e).	Citing §50.49(d) as an applicable regulation for lightning protections is:  a) Contrary to the specific exclusion of natural phenomenon in §50.49(c). b) Inconsistent with RG 1.89 (Rev 1 or Rev 2) as neither edition indicates that lightning protection is an environmental parameter that is within the scope of the EQ Final Rule (§50.49).  The currently listed General Design Criteria 2 from 10 CFR 50 Appendix A, “Design Bases for Protection Against Natural Phenomena.” is the applicable regulation.	
2	C	A / Page 2 Applicable Regulations	10 CFR 50.49(b) defines electric equipment important to safety as safety-related electric equipment (Class 1E equipment in IEEE 323-1974) that is relied upon to remain functional during and following design basis events to ensure the integrity of the reactor coolant pressure boundary; the capability to shut down the reactor and maintain it in a safe shutdown condition; or the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures.	Similar to Comment 1 above, 10 CFR 50.49 (b) is not an applicable regulation for lightning protection and should not be listed as an applicable regulation in DG-1409.	See Basis for Comment for Comment #1.	
3	C	A / Page 2 Applicable Regulations	<ul style="list-style-type: none"> <li>○ 10 CFR 52.47(a)(13) requires that an applicant for a design certification must provide the list of electrical equipment important to safety as specified in 10 CFR 50.49(d).</li> <li>○ 10 CFR 52.137(a)(13) requires that an applicant for a standard design approval must provide the list of electric equipment that is important to safety as defined by 10 CFR 50.49(d).</li> </ul>	Similar to Comment 1 above, 10 CFR 50.49(d) is not an applicable regulation for lightning protection for plants licensed under Part 52.	See Basis for Comment for Comment #1.	

Note 1: Codes for Types of Comments - (C) = Comment, (Q) = Question, (O) = Observation