PUBLIC SUBMISSION

SUNI Review Complete
Template=ADM-013
E-RIDS=ADM-03

ADD: Michael Eudy, Meraj Rahimi, Mary Neely
Comment (1)
Publication Date:12/17/2020
CITATION: 85 FR 81958

As of: 2/19/21 1:25 PM
Received: January 07, 2021
Status: Posted
Posted: January 26, 2021
Tracking No. kjn-2gbn-pciv
Comments Due: February 16, 2021
Submission Type: Web

Docket: NRC-2020-0245
Environmental Qualification of Certain Electrical Equipment Important to Safety for Nuclear Power Plants

Comment On: NRC-2020-0245-0001
Environmental Qualification of Certain Electrical Equipment Important to Safety for Nuclear Power Plants

Document: NRC-2020-0245-0004
Comment (1) of James Parello on FR Doc # 2020-27717

Submitter Information

Name: James Parello
Address:
Fort Mill, SC, 29708
Email: jamesparello@gmail.com
Phone: 8033709362

General Comment

Please find attached my comments to NRC Draft Regulatory Guide DG-1361 (Proposed Revision 2 to RG 1.89).
Best regards,
James Parello
jamesparello@gmail.com

Attachments

James Parello Comments to Draft RG DG-1361_ Proposed R2 of RG 1_89

James Parello (jamesparello@gmail.com)

Review of U.S. Nuclear Regulatory Commission Draft Regulatory Guide DG-1361
(Proposed Revision 2 Regulatory Guide 1.89)

Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants

No.	Page / Section / Paragraph	Comment	Proposed Resolution
1.	Pg. 8 / Background / 1st Paragraph	Editorial: Reference is made in a few places in the main document to the term "Class 1E" but is not defined until Section C. (STAFF REGULATORY GUIDANCE)	Recommend defining "Class 1E" as "safety classification of the electrical equipment and systems" per IEC/IEEE 60780-323 on Page 8 / Background / 1st Paragraph.
2.	Pg. 10 / Section C.1.b.	Section C.1.b. states it provides a description and definition for the term "important to safety". But this is not the case. This section defines the subsections within 10 CFR 50.49 for requirements associated with safety-related and nonsafety-related electrical equipment as they apply to "important to safety". The definition for "important to safety" from 10 CFR 50.49 is actual at the end of Section C.1.c. The definition in IEC/IEEE 60780-323 Clause 3.12 (equipment important to safety) as it applies to IEEE documents and Class 1E categorization is consistent with 10 CFR 50.49(b)(1)(i) and therefore this first sentence is not needed.	Delete the first sentence of Section C.1.b.

James Parello (jamesparello@gmail.com) Review of U.S. Nuclear Regulatory Commission Draft Regulatory Guide DG-1361 *(Proposed Revision 2 Regulatory Guide 1.89)* Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants			
No.	**Page / Section / Paragraph**	**Comment**	**Proposed Resolution**
3.	Pg. 10 / Section C.1.c.	A change in the definition for "qualified life" is not needed. The use of "qualified life" is used in conjunction with 'equipment important to safety". The proposed definition for "qualified life" is an applied definition based on "equipment important to safety" undergoing equipment qualification at the end of its service life. The definition in IEC/IEEE 60780-323 for "qualified life" is appropriate since it is a global industry standard and should be not referencing requirements from a specific regulatory body. The definition in the standard addresses the period of time demonstrated through the equipment qualification process that the equipment will maintain its ability to perform its designated safety function(s) in an accident condition or a postulated earthquake.	Recommend deleting the first paragraph of Section C.1.c and consolidating the remaining information if needed in Section C.1.b.
4.	Pg. 10 / Section C.1.d.	Equipment "service life" is the actual period of time the equipment is in service. The definition for "service life" in IEC/IEEE 60780-323 is the "period from initial operation to final withdrawal from service of a structure, system or component." The definition does not imply or infer aging effect outside of service are insignificant. I agree the example of shelf life can impact the "qualified life" of the equipment but not impact the "service life".	Recommend deleting the presumption that the definition for "service life" of IEC/IEEE 60780-323 implies that aging effects are insignificant unless the equipment is in service.

James Parello (jamesparello@gmail.com)
Review of U.S. Nuclear Regulatory Commission Draft Regulatory Guide DG-1361
(Proposed Revision 2 Regulatory Guide 1.89)
Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants

No.	Page / Section / Paragraph	Comment	Proposed Resolution
5.	Pg. 11 / Section C.1.d. / 1st Paragraph	Note: The definition for "service life" provided is the same as in IEC/IEEE 60780-323.	Recommend deleting the first paragraph: "Therefore, the following definition of "service life" should be used…"
6.	Pg. 11 / Section C.1.e.	Environmental and operational aging of equipment important to safety to the end of its service life in a mild environment is required by IEC/IEEE 60780-323 if it is determined that the equipment has significant aging mechanisms that impacts the ability of the equipment to perform its safety function(s) prior to Design Basis Events (DBE). In a mild environment a seismic event is a DBE. Examples of equipment aging mechanisms in a mild environment prior to DBE are: wear, vibration, thermal and radiation as a function of time.	Recommend deleting Section C.1.e.
7.	Pg. 12 / Section C.1.h.(2).	This section should be updated constant with Staff Position 2 (Page 16 / Section 2.c.) for defining a mild radiation environment. The Staff considers a mild radiation environment for electronic equipment to be a total integrated dose less than 10 gray (Gy) (10^3 rad) and a mild radiation environment for other equipment to be less than 100 Gy (10^4 rad), to be acceptable.)	Recommend the following update to Section C.1.h.(2): "Electric equipment that may be exposed to low-level radiation doses ***(electronic equipment to be a total integrated dose less than 10 gray (Gy) (10^3 rad) and other equipment less than 100 Gy (10^4 rad))*** should ~~**not**~~ generally be considered exempt from radiation qualification testing. Exceptions ***for higher doses*** may be

James Parello (jamesparello@gmail.com) Review of U.S. Nuclear Regulatory Commission Draft Regulatory Guide DG-1361 *(Proposed Revision 2 Regulatory Guide 1.89)* Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants			
No.	**Page / Section / Paragraph**	**Comment**	**Proposed Resolution**
			based on qualification by analysis supported by test data or operating experience that verifies that the dose and dose rates will not degrade the operability of the equipment below acceptable values.
8.	Pg. 12 / Section C.1.j.	Information presented regarding aging may be better suited to be with the aging details presently in Clause 7.4.1.9.3 (Age Conditioning).	Recommend changing “Section 7.3.2” to “Section 7.4.1.9.3.
9.	Pg. 13 / Section C.1.k.(5)	The chemical spray or demineralized water spray during design basis event (DBE) testing needs to be conservatively injected after the peak of the environmental profiles (temperature, pressure). Depending on the nuclear facility, chemical spray or demineralized water spray may be initiated at a time prior to reaching the peaks of the postulated DBE environmental profile. During DBE testing if the spray is initiated prior to reaching the peak of the DBE profile then the initial profile ramp and peak may not be met.	Recommend the following wording change: “(5) Chemical spray or demineralized water spray that is representative of service conditions should be incorporated during simulated event testing ***after the test chamber reaches the maximum*** ~~***at***~~ pressure and temperature conditions that would occur when the spray systems actuate.

James Parello (jamesparello@gmail.com) Review of U.S. Nuclear Regulatory Commission Draft Regulatory Guide DG-1361 *(Proposed Revision 2 Regulatory Guide 1.89)* Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants			
No.	**Page / Section / Paragraph**	**Comment**	**Proposed Resolution**
10.	Pg. 14 / Section C.n.(1)	This section requested Clause 7.4.10 be updated with the following: "A double-transient should be used with equipment that may be vulnerable to thermal binding from different expansion rates of materials during the initial heatup." This statement is misleading because the potential for thermal binding of materials with different material expansion rates is also addressed during single-transient DBE testing, thermal aging and thermal cycle testing. The transient used during equipment qualification testing should be representative of the DBE postulated environment for the nuclear facility as a minimum.	Recommend deleting Section C.n.(1)
11.	Pg. 14 / Section C.n.(2)	It is unclear how the use of a double-transient will offset tests where the ramp rate (initial temperature rise) of the test is slower than the required profile. By not meeting the initial ramp you have not demonstrated the equipment can withstand the thermal shock and pressure conditions it will experience when changing from its normal environment through the DBE peak environment.	Please include the requirements for a double-transient that are acceptable to the NRC for demonstrating a double-transient DBE can be used to conservatively represent the initial ramp of a single-transient DBE that cannot be met.
12.	Page 16 / Section 2.c.	This states from RG 1.209 that: "An additional stressor to be considered in the qualification of digital systems is smoke exposure from an electrical fire." Stressors caused by fire and smoke are address in design, construction, installation, and procedural practices	Recommend deleting Section 2.c. starting with "An additional stressor to be considered…."

James Parello (jamesparello@gmail.com) Review of U.S. Nuclear Regulatory Commission Draft Regulatory Guide DG-1361 *(Proposed Revision 2 Regulatory Guide 1.89)* Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants			
No.	**Page / Section / Paragraph**	**Comment**	**Proposed Resolution**
		(e.g., redundancy, diversity, site location, protective barriers, etc.) for the equipment and the nuclear facility it is to be installed. These potential stressors are addressed by others and not in equipment qualification programs addressed by test, analysis, combined test and analysis, or experience programs documented in IEC/IEEE 60780-323. 10 CFR 50.48 and RG 1.209 are the correct documents to address fire and smoke as it relates to the nuclear facility and the impact it has on electric equipment important to safety (not in RG 1.89).	
13.	Page 19 / References / Ref. 9. and Ref. 10.	Editorial: Reference 9 and 10 are out of order has they appear in the main body of the document.	Change Reference 9 to Reference 10 and vice-versa.
14.	Page 21 / References / Ref. 36.	Reference 36 should be Chapter 11 of 10 CFR 100 has identified on Page 17 (Section 2.f. / 2nd Paragraph / 1st Sentence). The title for Chapter 11 is also missing.	Recommend changing: “Chapter 1” to “Chapter 11” and adding the following chapter title: “Determination of exclusion area, low population zone, and population center distance”.