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Comments on DRAFT REGULATORY GUIDE DG-1361, ENVIRONMENTAL  
QUALIFICATION OF CERTAIN ELECTRIC EQUIPMENT IMPORTANT TO SAFETY FOR  
NUCLEAR POWER PLANTS.

**James Gleason**

# Increase in Requirements without Safety Case

Section	Issue	Basis	Proposed resolution
Section C. 1, a	Misstates 10 CFR 50.49(e)(5) and introduces a new term <b>“end-of-installed life”</b>	10 CFR 50.49(i)(2): <b>end of its qualified life.</b>	The term <b>“end-of-installed life”</b> in IEC/IEEE Std. 60780-323, Edition 1, 2016-02, shall mean <b>end of qualified life.</b>
Section C. 1, b	does not state explicitly the <b>equipment important to safety</b> that is defined by 10CFR.50.49.	10 CFR 50.49 (b)	<b>Add 10 CFR 50.49 (b), explicitly the equipment important to safety that is defined by 10CFR.50.49</b>
Section C. 1, c	<b>states not to use the definition of qualified life in Section 3.12 of IEC/IEEE Std. 60780-323, Edition 1, 2016-02, but does not state explicitly the definition of qualified life to be used and its source.</b>	IEEE 323-74 defined Qualified Life: The period of time for which satisfactory performance can be demonstrated for a specific set of service conditions.	Change to IEEE 323-74 defined Qualified Life
Section C. 1, d	term <b>“service life”</b> and relates <b>service life, qualified life and shelf life.</b>	<b>There is no use of service life in 10CFR50.49.</b>	Delete section C.1 d and all discussion of service life.  Add that IEC/IEEE 60780-323 term service life is not endorsed.

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Section	Issue	Basis	Proposed resolution
Section C. 1, e	“Requirements, including <b>EMC and seismic requirements</b> , shall be specified in the design/purchase specifications.”	There is also no requirement for design/purchase specifications in 10CFR50.49 and there is no requirement for EMC in 10CFR50.49.	Modify Section C. 1, e to the following: In IEC/IEEE 60780-323, the discussion of design/purchase specifications requirements and <b>EMC and seismic requirements are not endorsed.</b>
Section C. 1, f	This <b>appears to misstate the purpose and application of condition monitoring</b>	<p><b>Condition monitoring is not a new approach for establishing the qualified life</b> of electrical equipment.</p> <p>The qualified life is established in the regulatory accepted method of aging, including time/temperature effects, radiation and mechanical degradation.</p>	Change Section C. 1, f to <b>Condition monitoring recognizes the fact that the aging process in a 10CFR50.49 test method qualification program can be an acceptable process of determining end of qualified life</b>

# Increase in Requirements without Safety Case

Section	Issue	Basis	Proposed resolution
Section C. 1, h	This is new and the following RG 1.89 Rev 1 section is <b>missing</b> : “(6) Shielded components need be qualified only to the gamma radiation environment...for the beta and gamma radiation environment.”	<b>constitutes a forwardfit as it deletes an acceptable process for addressing beta radiation</b> and the addition of Section C. 1, h 2 is an unjustified increase in requirements and therefore a forward fit.	Section C. 1, h 2 should be replaced with RG 1.89 Rev 1 section: “(6)... <b>for the beta and gamma radiation environment.</b> ”
Section C. 1, j (1)	<p>the <b>inclusion of accident conditions in determining synergistic effects creates a new requirement and is a forward fit.</b></p> <p>The requirement that <b>synergistic effects on materials</b> need to be accounted for in qualified life is new, as it requires all synergistic effects of materials to be included.</p>	inconsistent with the 10CFR50.49 threshold that <b>synergistic effects</b> must be considered when these effects are believed to have a <b>significant effect on equipment performance.</b>	Section C. 1, j (1) modify to: “Synergistic effects must be considered when these effects are believed to have a significant effect on equipment performance.”

# Increase in Requirements without Safety Case

Section	Issue	Basis	Proposed resolution
Section C. 1, j (3)	“Activation energy .. based on the testing of the specific compound ”	<p>Constitutes a significant effort to know each compound and to have Arrhenius test data for Activation Energy on every possible compound and failure mechanism.</p> <p>Activation energy is not a safety function and was never intended to be a quality attribute of a safety related component.</p> <p>Arrhenius theory and activation energy are intended to place a safety related type test specimen in a reasonable facsimile of the degradation to be seen in service when installed in its application in a nuclear power plant.</p>	Section C. 1, j (3) should be deleted.

# Increase in Requirements without Safety Case

Section	Issue	Basis	Proposed resolution
Section C. 1, k (2)	"Electric equipment located in an area where rapid pressure changes are	overlooks applications where seals perform safety functions when no pressure variations are requirements.	Section C. 1, k (2) should be deleted.
Section C. 1, k (4)	"Performance characteristics... throughout its range of required operability. Variables indicative of momentary failure that prevent the equipment from performing its safety function"	The requirement is to demonstrate the safety function.	Section C. 1, k (4): should be deleted
Section C. 2, e	" Considerations... (3) equipment required to initiate protective action... (4) analyses ..needed for mitigation of design basis accidents other than LOCA or high-energy line breaks (HELB) could be exposed to a more severe environment...."	10CFR50.49 requires equipment be qualified for its safety function.  Item (4) creates a category of environments beyond the 10CFR50 Definition: Design bases means ...bounds for design.	Section C. 2, e: should be deleted

# Increase in Requirements without Safety Case

Section	Issue	Basis	Proposed resolution
Section C. 2, f	"Electric equipment <b>should be exposed to radiation, before testing</b>	Contradicts 10CFR50.49 in that <b>radiation exposure is testing.</b>	Section C. 2, f change "Electric equipment to be.... intended safety functions." To: <b>10CFR50.49 "The radiation environment must...including dose-rate effects."</b>
Section C. 2, f	"In 10 CFR 100.11, " <b>should be based upon a major accident involving substantial meltdown of the core</b>	10CFR50.49 "associated with the most <b>severe design basis</b> accident.	Section C. 2, f change To: 10CFR50.49 "associated with the most severe design basis accident