

Discussion of NRC Equipment Qualification (EQ) Inspection Activities

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Agenda

- **Purpose of this Meeting**
- **Background of the EQ Inspections**
- **Inspection Objectives**
- **Inspection Status**
- **EQ Draft FAQs**
- **Next Steps**
- **Industry Feedback**
- **Public Comments/Questions**
- **Wrap Up**



Timeline related to EQ Inspections

- **12/15 - EQ Inspections started**
- **10/17 - NUGEC letter sent to NRC**
- **11/17 – NRC response to NUGEC Letter**
- **11/17 – Annual EQ Technical Meeting**
- **12/17 – NRC EQ Public Meeting**
- **04/18 – IEEE SC-2, “Qualification,” Meeting**
- **05/18 – NRC EQ Public Meeting**



Background on EQ Program

- **NUREG-0588 expressed the requirements in regards to the application of this methodology:**
 - **The aging acceleration rate used during qualification testing and the basis upon which the rate was established should be described and justified.**
 - **Documentation should be available which provides the basis of equipment's qualified life.**
 - **The qualified life should be established on the basis of:**
 - **the severity of the testing performed,**
 - **the conservatisms employed in the extrapolation of data,**
 - **the operating history, and**
 - **in other methods that may be reasonably assumed, coupled with good engineering judgment.**



Background of EQ Inspections

- **EQ components are inspected to safety and must be able to perform their function throughout their installed life.**
- **Browns Ferry Lessons-Learned**
- **Davis Besse Lessons-Learned**



EQ Inspections Objectives

- **To review the licensee's implementation of the electrical equipment EQ program, as required by their license**
- **To verify that the licensee is maintaining the qualified status of equipment during the life of the plant.**
- **To review the EQ record maintained in accordance with applicable requirements in order to verify that electric equipment important-to-safety and located in harsh environment meets their license.**



EQ Inspections

- Inspection Results**

	# of Inspections	# of Findings	# of Remaining Inspections
Region I	9 +1 event follow-up	6 + 1 licensee ID	7
Region II	10	16	7
Region III	5	5	10
Region IV	6	5	6



EQ Frequently Asked Questions

- **The Agency approved the use of the Arrhenius Equation methodology to address the thermal aging aspect of the qualified life.**
- **The proper application of Arrhenius equations to extend the life of an EQ component beyond its qualified life is by utilizing excess conservatism incorporated in the original qualification bases (generally conservatism existed in the initial assumption of the actual operating temperature).**



EQ Frequently Asked Questions

- **Activation energy**
 - **Licensees responsibility**: to justify the activation energy (including those supplied by Appendix B vendors) used in the reanalysis of EQ parts in accordance with the licensee's EQ program.
 - **NRC inspectors responsibility**: verify that the licensees have defined, justified, and documented the activation energies, including those supplied by Appendix B vendors, that have been selected for the analysis.



EQ Frequently Asked Questions

- **Licensees do not automatically have to upgrade the qualification requirements for components initially licensed under DOR Guidelines when transitioning into the extended period of operation.**
- **Per 10 CFR 50.49(I), replacement equipment must be qualified in accordance with the provisions in 10 CFR 50.49 unless there are sound reasons to the contrary.**



EQ Frequently Asked Questions

- **Licensees use NUREG-0588 CAT II requirements where the DOR Guidelines do not provide sufficient detail.**
 - Only applicable for aging.
- **For extending the qualified life of EQ components, the methodology described in IEEE standards and used by the licensees to qualify EQ components during their initial licensing period is identified by its licensing basis.**



EQ Frequently Asked Questions

- **Information contained in EQ files**
 - **EQ files that contain design basis specific values and/or a detailed explanation of test procedures and the results thereof which establish the basis for qualified life of an equipment are considered part of design basis information.**



Next Steps

- **Staff will continue to closely assess inspection findings and URIs through the use of the HQ/Cross-Regional EQ Panel.**
- **Finalize and share EQ Inspection Questions with inspection staff.**
- **Inspector training on backfit**

Industry Feedback

Bill Horin and Ron Wise

Wrap Up