

VI Electrical Components
Additional MEAP Combinations Not Currently Addressed by NUREG-1801

Item	Structure and/or Component	Material	Environment	Aging Effect/ Mechanism	Aging Management Program (AMP)	Further Evaluation
	Fuse Holders (Not Part of a Larger Assembly)	Metallic Clamps	Air – indoor	Fatigue / Ohmic heating, thermal cycling, electrical transients, frequent manipulation, vibration, chemical contamination, corrosion, oxidation	A plant-specific aging management program is to be evaluated.	Yes, plant specific
See also A.1-a A.1.1	Fuse Holders (Not Part of a Larger Assembly)	Insulation Material	Air – indoor	None	None	No
			Air – indoor uncontrolled > 60-year service limiting temp.	Embrittlement, cracking, melting, discoloration / Heat	Chapter XI.E1, “Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements”	Yes, plant specific
	Phase Bus	Copper / Silver Plated Copper	Air – indoor	None	None	No
	Phase Bus	Aluminum / Silver Plated Aluminum	Air – indoor	Increased Resistance / Ohmic heating, thermal cycling, electrical transients	A plant-specific aging management program is to be evaluated.	Yes, plant specific
	Phase Bus	Porcelain	Air – indoor	None	None	No
See also A.1-a A.1.1	Phase Bus	Insulation Materials	Air – indoor	Embrittlement, cracking / Heat, UV	Chapter XI.E1, “Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements”	Yes, plant specific
	Phase Bus	Stainless Steel	Air – indoor	None	None	No
	Phase Bus	Steel	Air – indoor	None	None	No
	Phase Bus	Galvanized Steel	Air – outdoor	None	None	No

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	Switchyard components	Aluminum	Air – outdoor	None	None	No
	Switchyard components	Copper	Air – outdoor	None	None	No
	Switchyard components	Bronze	Air – outdoor	None	None	No
	Switchyard components	Stainless Steel	Air – outdoor	None	None	No
	Switchyard components	Galvanized Steel	Air – outdoor	None	None	No
	High Voltage Insulators	Porcelain	Air – outdoor	None	None	No
	High Voltage Insulators	Malleable Iron	Air - outdoor	None	None	No
	High Voltage Insulators	Aluminum	Air - outdoor	None	None	No
	High Voltage Insulators	Galvanized metal	Air - outdoor	None	None	No
	High Voltage Insulators	Cement	Air - outdoor	None	None	No
	Transmission Conductors	Aluminum	Air - outdoor	None	None	No
	Transmission Conductors	Steel	Air - outdoor	None	None	No

Environment Categories

<u>Environment</u> ¹	<u>Description</u>
Air – indoor	Indoor air which may be controlled (air conditioned for heat and non-condensing humidity) or uncontrolled (normal spaces heating and ventilation to plant design standards and generally non-condensing humidity)
Air – indoor uncontrolled > 60-year service limiting temp.	Indoor air at a temperature that exceeds the temperature below which the material has a 60-year or greater service lifetime.
Air – indoor uncontrolled > 95°F	Indoor air above thermal stress threshold for elastomers
Air – outdoor	Exposed to air and local weather conditions including salt spray where applicable

References

1. *Safety Evaluation Report Related to the License Renewal of the H. B. Robinson Steam Electric Plant*, Unit 2, Docket 50-261, NRC, January 2004.
2. Letter from David B. Matthews (NRC) to Alan Nelson (NEI) et. al., *Interim Staff Guidance (ISG) – 5 on the Identification and Treatment of Electrical Fuse Holders for License Renewal*, March 10, 2003.
3. NUREG-1760, *Aging Assessment of Safety-Related Fuses Used in Low- and Medium-Voltage Applications in Nuclear Power Plants*, May 2002.
4. *License Renewal Application for St. Lucie Units 1 and 2*, November 30, 2001, Section 3.6.
5. *Safety Evaluation Report Related to the License Renewal of the St. Lucie Nuclear Plant*, Units 1 and 2, Docket Nos. 50-335 and 50-389, NRC, July 2003, Section 3.6.

¹ For all electrical component environments listed, the component surface is external.