

**NUREG-2191 and NUREG-2192 (February 2017 Draft)
Electrical Comments**

Comment #	Location of Change	Description of Change	Justification for Change
Table VI.A-1	GALL VI.A, Table line items for Metal Enclosed Bus and GALL XI.E4	The GALL XI.E4 AMP includes discussion of elastomers for metal enclosed bus, through program description and elements. The line item for elastomers in metal enclosed bus in the GALL table in VI.A has been deleted per the last entry of the table.	Editorial – content inconsistency Re-include line item VI.A.LP-29 in Table VI.A.
Table VI.A-2	GALL VI.A, Table line items for Cable Bus	Comment Table VI.A-1 above may also apply to cable bus. The first deleted line item at the end of the table deleted elastomers for cable bus.	Editorial – content inconsistency Re-include line item VI.A.LP-08 in Table VI.A.
Table VI.A-3	GALL VI.A, Table line VI.A.LP-33	The AMP name provided in the table does not match the new GALL SLR AMP name in GALL section XI.E1.	Editorial – content inconsistency Change AMP title to “ <u>Electrical Insulation Material</u> for Electrical...”
Table VI.A-4	GALL VI.A, Table line VI.A.LP-34	The AMP name provided in the table does not match the new GALL SLR AMP name in GALL section XI.E2.	Editorial – content inconsistency Change AMP title to “ <u>Electrical Insulation Material</u> for Electrical ...”
Table VI.A-5	GALL VI.A, Table line VI.A.LP-47	Should include AAC conductor as well	Editorial – content inconsistency Add AAC.
Table VI.A-6	GALL VI.A, Table line VI.A.LP-48	This line item component name should be “Transmission conductors <u>connectors</u> .”	Editorial – content error Change “Transmission conductors <u>connectors</u> .”
X.E1-1	X.E1-5, EQ Program Description, Lines 17 - 18	The wording implies that all the passive EQ equipment will be inspected every 10 years to determine if they are in an ALE. To be clear; the process is to look for ALE’s every 10 years first. Then, the passive EQ equipment (cables jackets and connection insulation) will be visually inspected.	Editorial – content clarification See Comment X.E1-2

Comment #	Location of Change	Description of Change	Justification for Change
X.E1-2	X.E1-6, Element 4. Detection of Aging Effects; Lines 37 - 40	<p>Element 4 states "Visual inspection of accessible, passive EQ equipment is performed at least once every 10 years. The purpose of the visual inspection is to identify adverse localized environments that may impact qualified life. Potential adverse localized environments are evaluated through the applicant's corrective action program."</p> <p>The wording implies that all the passive EQ equipment will be inspected every 10 years to determine if they are in an ALE.</p> <p>To be clear; the process is to look for ALE's every 10 years first. Then, the passive EQ equipment (cables jackets and connection insulation) will be visually inspected.</p>	<p>Recommend:</p> <p>Visual inspection of accessible, passive EQ equipment <u>in adverse localized environments</u> is performed at least once every 10 years. The purpose of the visual inspection is to identify adverse localized environments <u>conditions</u> that may impact qualified life. <u>Passive EQ equipment in potential adverse localized environments</u> are <u>is</u> evaluated through the applicant's corrective action program.</p>
XI.E1-1	XI.E1-3, Element 4 Detection of Aging Effects, Lines 28-30	<p>Testing was removed as a requirement for this program, and testing is now based on an engineering evaluation via the corrective action program. However, a sentence was left in Element 4, page XI.E1-3, Lines 28-30 which states "A sample of accessible electrical cables and connections are tested for reduced electrical insulation resistance."</p>	<p>Editorial</p> <p>This sentence should be removed.</p>
XI.E1-2	XI.E1-4, Element 4 Detection of Aging Effects, Line 1	<p>Element 4, page XI.E1-4, line 1 states: "...this AMP, then testing is performed for evaluation."</p>	<p>Editorial</p> <p>Since testing is now based on an engineering evaluation via the corrective action program, change this sentence to read "...then testing is <u>may be</u> performed for evaluation," or "testing, <u>if deemed necessary</u>, is performed for evaluation."</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E2-1	XI.E2-1, Program Description, Line 18	The Program Description states “An adverse localized environment is based on the most limiting environment ...” ALEs are not based on limiting environments, they exceed the most limiting environments.	Editorial Reword the sentence as follows: “An adverse localized environment is based on <u>exceeds</u> the most limiting environment...”
XI.E3A-1	XI.E3A-1, Program Description, Lines 10 – 14)	<p>The Program Description states that “This AMP applies to all inaccessible or underground (e.g., installed in buried conduit, embedded raceway, cable trenches, cable troughs, duct banks, vaults, manholes, or direct buried installations) medium voltage cables within the scope of subsequent license renewal (SLR) exposed to wetting or submergence (i.e., significant moisture).”</p> <p>The AMP applies to underground cables routed either in raceway underground or directly buried. The AMP manages water accumulation and its effects on underground cable. Within this AMP cables are inspected at locations where they can be accessed such as manholes and vaults. Since manholes and vaults are confined spaces and require administrative controls for entry, they are considered inaccessible. Use of the term “inaccessible” is not needed to properly describe the cables under consideration. Also, the term “underground” in this AMP is consistent with the definition given in Table IX.D as used for mechanical components.</p> <p>Also, the phrase “wetting or submergence” does not match the description of significant moisture given in Lines 28 – 30.</p>	<p>Change the scope statement to read “This AMP applies to all inaccessible or underground (e.g., installed in buried conduit, <u>underground</u> embedded raceway, <u>underground</u> cable trenches, <u>underground</u> cable troughs, duct banks, vaults, manholes, or direct buried installations) medium voltage cables within the scope of subsequent license renewal (SLR) exposed to wetting or submergence (i.e., significant moisture).”</p> <p>The proposed changes clarify that this AMP applies to underground cable installations which aligns with the AMP goals of managing water accumulation and its effect on underground cable. Above ground cable is managed by the XI.E1 AMP.</p> <p>The proposed change eliminates confusion between “wetting or submergence” and “significant moisture.”</p> <p>This change aligns XI.E3A, XI.E3B, and XI.E3C.</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3A-2	XI.E3A-1, Program Description, Lines 22 - 24	The Program Description states "Electrical insulation subjected to wetting or submergence could have an adverse effect on operability, or potentially lead to failure of the cable insulation system."	<p>Editorial</p> <p>Regulatory link when not necessarily the case, between aging degradation and operability.</p> <p>Aging degradation can impact performance of intended functions, not necessarily operability. Operability and intended functions may be the related or may be separate. Revise as suggested:</p> <p>"Electrical insulation subjected to wetting or submergence could have an adverse effect on the operability <u>on performance of intended functions</u>, or potentially lead to failure of the cable insulation system."</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3A-3	XI.E3A-2, Scope of Program, Lines 30 – 33	<p>The scope of program states that “This AMP applies to inaccessible or underground medium voltage (2kV to 35kV) power cable installations (e.g., direct buried, buried conduit, duct bank, embedded raceway, cable trench, vaults, or manholes) within the scope of subsequent license renewal exposed to significant moisture.”</p> <p>The AMP applies to underground cables routed either in raceway underground or directly buried. The AMP manages water accumulation and its effects on underground cable. Within this AMP cables are inspected at locations where they can be accessed such as manholes and vaults. Since manholes and vaults are confined spaces and require administrative controls for entry, they are considered inaccessible. Use of the term “inaccessible” is not needed to properly describe the cables under consideration. Also, the term “underground” in this AMP is consistent with the definition given in Table IX.D as used for mechanical components.</p>	<p>Change the scope statement to read “This AMP applies to inaccessible or underground medium voltage (2kV to 35kV) power cable installations (e.g., direct buried, buried conduit, duct bank, <u>underground</u> embedded raceway, <u>underground</u> cable trench, vaults, or manholes) within the scope of subsequent license renewal exposed to significant moisture.”</p> <p>The proposed changes clarify that this AMP applies to underground cable installations which aligns with the AMP goals of managing water accumulation and its effect on underground cable. Above ground cable is managed by the XI.E1 AMP.</p> <p>This change aligns XI.E3A, XI.E3B, and XI.E3C.</p>
XI.E3A-4	XI.E3A-2, Scope of Program, Line 35	Extra parenthesis; “(that” should read “that”	<p>Editorial</p> <p>Editorial – remove the stray parenthesis.</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3B-1	XI.E3B-1, Program Description, Lines 10 - 13	<p>The Program Description states that “This AMP applies to inaccessible or underground (e.g., installed in buried conduit, embedded raceway, cable trenches, cable troughs, duct banks, vaults, manholes, or direct buried installations) instrumentation and control cables within the scope of subsequent license renewal (SLR) exposed to significant moisture.”</p> <p>The AMP applies to underground cables routed either in raceway underground or directly buried. The AMP manages water accumulation and its effects on underground cable. Within this AMP cables are inspected at locations where they can be accessed such as manholes and vaults. Since manholes and vaults are confined spaces and require administrative controls for entry, they are considered inaccessible. Use of the term “inaccessible” is not needed to properly describe the cables under consideration. Also, the term “underground” in this AMP is consistent with the definition given in Table IX.D as used for mechanical components.</p>	<p>Change the scope statement to read “This AMP applies to inaccessible or underground (e.g., installed in buried conduit, <u>underground</u> embedded raceway, <u>underground</u> cable trenches, <u>underground</u> cable troughs, duct banks, vaults, manholes, or direct buried installations) instrumentation and control cables within the scope of subsequent license renewal (SLR) exposed to significant moisture.”</p> <p>The proposed changes clarify that this AMP applies to underground cable installations which aligns with the AMP goals of managing water accumulation and its effect on underground cable. Above ground cable is managed by the XI.E1 AMP.</p> <p>This change aligns XI.E3A, XI.E3B, and XI.E3C.</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3B-2	XI.E3B-1, Program Description, Lines 24 - 26	The Program Description states " ... mitigated in service, could have an adverse effect on operability, may lead to multiple random failures of the cable insulation system, and compromise system defense-in-depth."	<p>Editorial</p> <p>Regulatory link when not necessarily the case, between aging degradation and operability, multiple random failures or defense in depth.</p> <p>Operability, multiple random failures, or defense in depth; and intended functions may be related or may be separate.</p> <p>Revise as suggested:</p> <p>" ...mitigated in service, could have an adverse effect on operability <u>on performance of intended functions</u>, may lead to multiple random failures of the cable insulation system, and compromise system defense-in-depth <u>or potentially lead to failure of the cable insulation system.</u>"</p>
XI.E3B-3	XI.E3B-1, Program Description, Line 41	The Program Description states that "If required, initial testing is performed once by utilizing sampling to determine the condition of the electrical insulation." Sampling cannot determine the condition of the electrical insulation. It is used to establish the test population.	<p>Editorial</p> <p>Change the sentence to read "If required, initial testing is performed once by utilizing sampling <u>on a sample population</u> to determine the condition of the electrical insulation."</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3B-4	XI.E3B-2, Program Description, Lines 1-2	<p>New text in this AMP states: "Inaccessible instrumentation and control cables designed for continuous wetting or submergence are also included in this AMP as a one-time inspection and test."</p> <p>This is a new requirement for cables that are designed for submergence. The text, as written, requires both inspection and testing for cable designed for submergence as opposed to inspection, and testing if deemed appropriate, for cable not designed for submergence.</p>	<p>Requirements should be the same as cables that are not designed for submergence.</p> <p>Delete the referenced text and revise the text on page XI.E3B-1, Lines 10 - 13 as follows: "This AMP applies to inaccessible or underground (e.g., installed in buried conduit, embedded raceway, cable tranches, cable troughs, duct banks, vaults, manholes, or direct buried installations) instrumentation and control cables <u>(including those designed for continuous wetting or submergence)</u> within the scope of subsequent license renewal (SLR) exposed to significant moisture.."</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3B-5	XI.E3B-2, Element 1, Scope of Program, Lines 18 – 21	<p>The scope of program states that “This AMP applies to inaccessible and underground (e.g., installed in buried conduit, embedded raceway, cable trenches, cable troughs, duct banks, vaults, manholes, or direct buried installations) instrumentation and control cables within the scope of SLR, exposed to significant moisture.”</p> <p>The AMP applies to underground cables routed either in raceway underground or directly buried. The AMP manages water accumulation and its effects on underground cable. Within this AMP cables are inspected at locations where they can be accessed such as manholes and vaults. Since manholes and vaults are confined spaces and require administrative controls for entry, they are considered inaccessible. Use of the term “inaccessible” is not needed to properly describe the cables under consideration. Also, the term “underground” in this AMP is consistent with the definition given in Table IX.D as used for mechanical components.</p>	<p>Change the scope statement to read “This AMP applies to inaccessible and underground (e.g., installed in buried conduit, <u>underground</u> embedded raceway, <u>underground</u> cable trenches, <u>underground</u> cable troughs, duct banks, vaults, manholes, or direct buried installations) instrumentation and control cables within the scope of SLR, exposed to significant moisture.”</p> <p>The proposed changes clarify that this AMP applies to underground cable installations which aligns with the AMP goals of managing water accumulation and its effect on underground cable. Above ground cable is managed by the XI.E1 AMP.</p> <p>This change aligns XI.E3A, XI.E3B, and XI.E3C.</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3B-6	XI.E3B-2, Element 1 Scope of Program, Lines 35-38	<p>New text in this AMP states: "Cables designed for continuous wetting or submergence are also included in this AMP as a one-time inspection and test where additional tests and periodic visual inspections are determined by the test/inspection results and industry and plant-specific aging degradation OE with the applicable cable electrical insulation."</p> <p>This is a new requirement for cables that are designed for submergence. The text, as written, requires both inspection and test for cable designed for submergence as opposed to inspection, and testing if deemed appropriate, for cable not designed for submergence.</p>	<p>Requirements should be the same as cables that are not designed for submergence.</p> <p>Delete the referenced text and revise the text on page XI.E3B-2, lines 18 - 21 as follows: "This AMP applies to inaccessible and underground (e.g., installed in buried conduit, embedded raceway, cable trenches, cable troughs, duct banks, vaults, manholes, or direct buried installations) instrumentation and control cables <u>(including those designed for continuous wetting or submergence)</u> within the scope of SLR, exposed to significant moisture."</p>
XI.E3B-7	XI.E3B-3, Element 4 Detection of Aging Effects, Lines 43-45	<p>The industry proposed visual manhole inspections for accumulation of water. If water was found affecting cables, the cables would be evaluated to determine if testing is required. If no water was found affecting cables, no further action was required until the next manhole inspection for water accumulation. The revised GALL adds a requirement to perform a visual cable inspection at least once every 6 years regardless of the effects of water.</p>	<p>The requirement for visual inspection of the cable at least every 6 years should be changed to at least every 10 years to align with similar ALE inspections in other AMPs. Periodic inspection of manholes for water accumulation will provide further opportunities for identification of potential adverse effects on cable.</p>
XI.E3B-8	XI.E3B, Element 5 Monitoring and Trending, Lines 39 - 41	<p>The last sentence of Element 5 is not consistent with Element 5 in XI.E3C. XI.E3B and XI.E3C are similar programs that are implemented in similar manners. The last sentence of Element 5 should be the same for both AMPs.</p>	<p>Revise the last sentence of Element 5 as follows:</p> <p>"However, condition monitoring cable tests and inspection results <u>that utilize the same visual or test methods</u> that are trendable and repeatable provide additional information on the rate of cable insulation degradation."</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3B-9	XI.E3B-5, Element 7 Corrective Actions, Lines 21 - 22	The scope expansion method does not align with this one-time confirmatory test portion of this AMP. The periodic man-hole inspection portion of this AMP is 100%; there is nothing to expand.	Recommend removing the 2nd paragraph in its entirety.
XI.E3C-1	XI.E3C-1, Program Description, Lines 12- 15	<p>The scope of program states that “This AMP applies to all inaccessible and underground (e.g., installed in buried conduit, embedded raceway, cable trenches, cable troughs, duct banks, vaults, manholes, or direct buried installations) low-voltage power cables within the scope of subsequent license renewal (SLR) exposed to significant moisture.”</p> <p>The AMP applies to underground cables routed either in raceway underground or directly buried. The AMP manages water accumulation and its effects on underground cable. Within this AMP cables are inspected at locations where they can be accessed such as manholes and vaults. Since manholes and vaults are confined spaces and require administrative controls for entry, they are considered inaccessible. Use of the term “inaccessible” is not needed to properly describe the cables under consideration. Also, the term “underground” in this AMP is consistent with the definition given in Table IX.D as used for mechanical components.</p>	<p>Change the scope statement to read “This AMP applies to all inaccessible and underground (e.g., installed in buried conduit, <u>underground</u> embedded raceway, <u>underground</u> cable trenches, <u>underground</u> cable troughs, duct banks, vaults, manholes, or direct buried installations) low-voltage power cables within the scope of subsequent license renewal (SLR) exposed to significant moisture.</p> <p>The proposed changes clarify that this AMP applies to underground cable installations which aligns with the AMP goals of managing water accumulation and its effect on underground cable. Above ground cable is managed by the XI.E1 AMP.</p> <p>This change aligns XI.E3A, XI.E3B, and XI.E3C.</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3C-2	XI.E3C-1, Program Description, Lines 23 - 26 :	The Program Description states " ... such as submergence represents an aging mechanism that if not anticipated in design or mitigated in service, could have an adverse effect on operability, may lead to multiple random failures of the cable insulation system, and compromise system defense-in-depth."	<p>Editorial</p> <p>Regulatory link when not necessarily the case, between aging degradation and operability, multiple random failures or defense in depth.</p> <p>Operability, multiple random failures, or defense in depth; and intended functions may be related or may be separate.</p> <p>Revise as suggested:</p> <p>" ...such as submergence represents an aging mechanism that if not anticipated in design or mitigated in service, could have an adverse effect on operability, on performance of intended functions, may lead to multiple random failures of the cable insulation system, and compromise system defense-in-depth <u>or potentially lead to failure of the cable insulation system.</u>"</p>
XI.E3C-3	XI.E3C-1, Program Description, Line 40	The Program Description states that "If required, initial testing is performed once by utilizing sampling to determine the condition of the electrical insulation." Sampling cannot determine the condition of the electrical insulation. It is used to establish the test population.	<p>Editorial</p> <p>Change the sentence to read "If required, initial testing is performed once by utilizing sampling on a sample population to determine the condition of the electrical insulation."</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3C-4	XI.E3C-1, Program Description, Lines 42-44	<p>New text in this AMP states: "Inaccessible low-voltage power cables designed for continuous wetting or submergence are also included in this AMP as a one-time inspection and test."</p> <p>This is a new requirement for cables that are designed for submergence. The text, as written, requires both inspection and testing for cable designed for submergence as opposed to inspection, and testing if deemed appropriate, for cable not designed for submergence.</p>	<p>Requirements should be the same as cables that are not designed for submergence.</p> <p>Delete the referenced text and revise the text on page XI.E3C-1, Lines 12 - 15 as follows: "This AMP applies to inaccessible or underground (e.g., installed in buried conduit, embedded raceway, cable tranches, cable troughs, duct banks, vaults, manholes, or direct buried installations) low-voltage power cables <u>(including those designed for continuous wetting or submergence)</u> within the scope of subsequent license renewal (SLR) exposed to significant moisture.."</p>

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XI.E3C-5	XI.E3C-2, Element 1, Scope of Program, Lines 16 - 19	<p>The scope of program states that “This AMP applies to inaccessible and underground (e.g., installed in buried conduit, embedded raceway, cable trenches, cable troughs, duct banks, vaults, manholes, or direct buried installations) low-voltage power cables within the scope of SLR exposed to significant moisture.”</p> <p>The AMP applies to underground cables routed either in raceway underground or directly buried. The AMP manages water accumulation and its effects on underground cable. Within this AMP cables are inspected at locations where they can be accessed such as manholes and vaults. Since manholes and vaults are confined spaces and require administrative controls for entry, they are considered inaccessible. Use of the term “inaccessible” is not needed to properly describe the cables under consideration. Also, the term “underground” in this AMP is consistent with the definition given in Table IX.D as used for mechanical components.</p>	<p>Change the scope statement to read “This AMP applies to inaccessible and underground (e.g., installed in buried conduit, <u>underground</u> embedded raceway, <u>underground</u> cable trenches, <u>underground</u> cable troughs, duct banks, vaults, manholes, or direct buried installations) low-voltage power cables within the scope of SLR exposed to significant moisture.</p> <p>The proposed changes clarify that this AMP applies to underground cable installations which aligns with the AMP goals of managing water accumulation and its effect on underground cable. Above ground cable is managed by the XI.E1 AMP.</p> <p>This change aligns XI.E3A, XI.E3B, and XI.E3C.</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E3C-6	XI.E3C-2, Element 1 Scope of Program, Lines 28-32	<p>New text in this AMP states: "Cables designed for continuous wetting or submergence are also included in this AMP as a one-time inspection and test where additional tests and periodic visual inspections are determined by the test/inspection results and industry and plant-specific aging degradation OE with the applicable cable electrical insulation."</p> <p>This is a new requirement for cables that are designed for submergence. The text, as written, requires both inspection and test for cable designed for submergence as opposed to inspection, and testing if deemed appropriate, for cable not designed for submergence.</p>	<p>Requirements should be the same as cables that are not designed for submergence.</p> <p>Delete the referenced text and revise the text on page XI.E3C-2, lines 16 - 19 as follows: "This AMP applies to inaccessible and underground (e.g., installed in buried conduit, embedded raceway, cable trenches, cable troughs, duct banks, vaults, manholes, or direct buried installations) low-voltage power cables <u>(including those designed for continuous wetting or submergence)</u> within the scope of SLR, exposed to significant moisture."</p>
XI.E3C-7	XI.E3C-4, Element 4 Detection of Aging Effects, Lines 38 - 39	<p>The industry proposed visual manhole inspections for accumulation of water. If water was found affecting cables, the cables would be evaluated to determine if testing is required. If no water was found affecting cables, no further action was required until the next manhole inspection for water accumulation. The revised GALL adds a requirement to perform a visual cable inspection at least once every 6 years regardless of the effects of water.</p>	<p>The requirement for visual inspection of the cable at least every 6 years should be changed to at least every 10 years to align with similar ALE inspections in other AMPs. Periodic inspection of manholes for water accumulation will provide further opportunities for identification of potential adverse effects on cable</p>
XI.E3C-8	XI.E3C-5, GALL, XI.E3C, Corrective Actions, Lines 14 - 15	<p>The scope expansion method does not align with this one-time confirmatory test portion of this AMP. The periodic man-hole inspection portion of this AMP is 100%; there is nothing to expand.</p>	<p>Recommend removing the 2nd paragraph in its entirety.</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E4-1	XI.E4-4, Element 7, Corrective Actions, Lines 17 - 20	<p>The standard phrase in the Corrective Action element does not align with the MEB AMP methods:</p> <p>"The engineering evaluation considers the significance of the calibration, surveillance, inspection or test results, the operability of the component, the reportability of the event; the extent of the concern, the potential root causes for not meeting the acceptance criteria, the corrective actions required, and the likelihood of recurrence."</p>	<p>Editorial</p> <p>Regulatory link when not necessarily the case, between aging degradation and operability or reportability.</p> <p>Recommend:</p> <p>The engineering evaluation considers the significance of the calibration, surveillance, inspection or test results, the operability of the component, the reportability of the event; <u>on performance of intended functions</u>, the extent of the concern, the potential root causes for not meeting the acceptance criteria, the corrective actions required, and the likelihood of recurrence.</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E5-1	XI.E5-1, Program Description, Lines 30 - 36	The comment on this section from the December draft was that the insulating material for fuse holders in stand-alone equipment that were subject to an ALE, but not frequently manipulated, may not be managed under E5. The insulating material for these fuse holders should be managed under E1. The request was to clarify this relationship between the AMPs.	<p>Suggest the following changes to the wording in the February, 2017 draft to remove ambiguity with scope of electrical insulation visual inspections:</p> <p>Fuse holders within the scope of SLR <u>this AMP for potential aging effects to metallic clips as described above</u> are <u>also</u> visually inspected to provide an indication of the condition of the electrical insulation portion of the fuse holders. Fuse holders are visually inspected for electrical insulation surface anomalies indicating signs of reduced insulation resistance due to thermal/thermooxidative degradation of organics, radiolysis and photolysis [ultraviolet (UV) sensitive materials only] of organics, radiation-induced oxidation, and moisture intrusion as indicated by signs of embrittlement, discoloration, cracking, melting, swelling, or surface contamination. <u>Electrical insulation for fuse holders in active components or with metallic clamps that are not subject to AMR are managed with other electrical insulation, in adverse localized environments, by the aging management program for electrical insulation for cables and connections not subject to the EQ program.</u></p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E5-2	XI.E5-2, Element 1, Scope of Program, Lines 4 - 10	<p>The comment on this section from the December draft was that the insulating material for fuse holders in stand-alone equipment that were subject to an ALE, but not frequently manipulated, may not be managed under E5. The insulating material for these fuse holders should be managed under E1. The request was to clarify this relationship between the AMPs.</p>	<p>Suggest the following changes to the revised wording in the February, 2017 draft to remove ambiguity with scope of electrical insulation visual inspections.</p> <p>This AMP manages in-scope fuse holders outside of active devices that are considered susceptible to the following aging effects: increased resistance of connection due to chemical contamination, corrosion, and oxidation or fatigue caused by ohmic heating, thermal cycling, electrical transients, frequent removal and replacement, or vibration. as well as <u>It also manages degradation of electrical insulation for the fuse holders with metallic clamps, susceptible to the aging effects identified.</u> Fuse holders inside an active device (e.g. switchgears, power supplies, inverters, battery chargers, and circuit boards) <u>and not susceptible to the aging effects identified</u> are not within the scope of this AMP.</p>
XI.E6-1	XI.E6, page XI.E6-2, Lines 3-4	<p>The Program Description states “A sample of cable connections within the scope of license renewal are tested on a one-time test basis or at least once every 10 years, or once every 5 years if only a visual inspection is used to...”</p> <p>The phrase “or at least once every 10 years” adds confusion to the sentence. The need for 10 year inspections due to findings of the initial one time inspection is clearly stated in the sentence that follows (Lines 5 – 6).</p>	<p>Editorial</p> <p>Revise the Program Description statement as follows: “A sample of cable connections within the scope of license renewal are tested on a one-time test basis or at least once every 10 years, or <u>periodically</u> once every 5 years if only visual inspection is used to provide an indication of the integrity of the cable connections.”</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E6-2	XI.E6-3, Element 5 Monitoring and Trending, Lines 31 - 37	<p>Element 5 states “Where practical, degradation is projected until the next scheduled inspection. Results are evaluated against acceptance criteria to confirm that the sampling bases (e.g., selection, size, frequency) will maintain the components’ intended functions throughout the subsequent period of extended operation based on the projected rate and extent of degradation.”</p> <p>It is not practical to project degradation until the next scheduled inspection for a one-time confirmatory AMP.</p>	<p>Recommend to restore the original wording:</p> <p>“Trending actions are not included as part of this AMP, because the ability to trend visual inspection and test results is dependent on the specific test or visual inspection program selected.”</p>
XI.E6-3	XI.E6-3, Element 6 Acceptance Criteria,	The standard phrase used in other electrical AMPs defining “unacceptable indication” is missing.	<p>Editorial</p> <p>Recommend adding:</p> <p>“An unacceptable indication is defined as a noted condition or situation that, if left unmanaged, could potentially lead to a loss of intended function.”</p>

Comment #	Location of Change	Description of Change	Justification for Change
XI.E6-4	XI.E6-4, Element 7 Corrective Actions, Lines 8 - 17	<p>Element 7 includes the new paragraph “Additional inspections are conducted if one of the inspections does not meet the acceptance criteria due to current or projected degradation (i.e., trending). The number of increased inspections is determined in accordance with the site’s corrective action process; however, there are no fewer than two additional inspections for each inspection that did not meet the acceptance criteria. The additional inspections are completed within the interval (e.g., refueling outage interval, 10-year inspection interval) in which the original inspection was conducted. Additional samples are inspected for any recurring degradation to ensure corrective actions appropriately address the associated causes. At multi-unit sites, the additional inspections include inspections at all of the units with the same material, environment, and aging effect combination.”</p> <p>This scope expansion method does not align with a one-time confirmatory AMP.</p>	<p>Recommend retaining the GALL Rev 2 wording: “If acceptance criteria are not met, the corrective action program is used to perform an evaluation that considers the extent of the condition, the indications of aging effect, and changes to the one-time testing program or alternative inspection program. Corrective actions may include, but are not limited to, sample expansion, increased inspection frequency, and replacement or repair of the affected cable connection components.”</p>
XI.E7-1	XI.E7-1, Program Description, Line 13	<p>The Program Description includes the phrase “ ... more rapidly than expected when installed in a harmful environment.”</p> <p>The environment should be stated in aging terms.</p>	<p>Editorial Reword as follows: “...more rapidly than expected when installed in an <u>harmful</u> environment <u>conductive to aging</u>.”</p>