



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 21, 2000

ORGANIZATION: Nuclear Energy Institute

SUBJECT: SUMMARY OF MEETING WITH THE NUCLEAR ENERGY INSTITUTE (NEI) ON INDUSTRY'S COMMENTS ON THE DRAFT "GENERIC AGING LESSONS LEARNED" (GALL) REPORT - STRUCTURES & COMPONENT SUPPORTS AND AUXILIARY SYSTEMS

On June 26 and 27, 2000, representatives of NEI met with the Nuclear Regulatory Commission (NRC) staff in Rockville, Maryland, regarding the industry's comments on Sections A and B of Chapter II "Containment Structures", Sections A and B of Chapter III "Structures and Component Supports" and Sections A1 and A2, of Chapter VII "Auxiliary Systems" of the draft GALL report, dated December 6, 1999. By letters dated May 1, 2000, May 15, 2000, May 25, 2000, June 8, 2000, June 9, 2000, June 12, 2000, and June 19, 2000, NEI provided their written comments for discussion at this meeting. A list of meeting attendees is enclosed.

The staff asked the industry to clarify certain NEI's comments on the draft GALL report. As a result of the discussion, NEI indicated that the industry would consider revising its comments (identified below by numbers) by taking the following actions:

Sections A1-A3 of PWR Containments Chapter II "Containment Structures"

| <u>NEI Comment Nos:</u> | <u>NEI Actions</u> |
|-------------------------|---|
| 13/16 | Verify that maintenance rule (MR) structure monitoring may be credited in addition to IWL as an aging management program for concrete containments, but not as a substitute. |
| 32 | Consider deleting "inside and/or" from "inside and/or outside containment" under the "Environment" column of the GALL report, since leaching is only evident on exterior surfaces of concrete containments above grade. |
| 37 | Develop an industry position on aging management of inaccessible areas after reviewing NUREG 1611. |
| 38 | Review the EPRI document whether inserting of a phrase "with oxygen available" is necessary for corrosion and revise it accordingly. |
| 43 | Expand Region of Interest column from Dome, Wall, and Basemat to Dome, Wall, Basemat, Ring Girder, and Buttresses. |

- 44 Consider whether ACI 349.3R can be used as guidance in developing an acceptable aging management program for settlement.
- 47 Consider whether the proposed change (i.e., "NO" under further evaluation) is still valid for settlement, as IWL alone may not be adequate to manage cracking that resulted from settlement.
- 59 Review the proposed deletion of the information provided in attribute (2) "Preventive Action" that deals with the protective coating and settlement issues and modify if necessary.
- 66 (section A1) Initial interval for the IWE inservice inspection program B should be 10 years, not 12 years.
- 66 (sections II A2 and A3) Review the proposed deletion of the dissimilar metal welds from the Region of Interest for A3.1 corrosion and modify if necessary.
- 68 Review the proposed deletion of the last sentence concerning reexamination for IWE if flaws are detected in the current inspection and confirm whether this is a requirement or not.
- 324 Confirm whether elevated temperature of the basemat has been observed (e.g., vicinity of the reactor cavity).

Sections B1-B4 "BWR Containments" under Chapter II Containment Structures

- 264 See above comment No. 37 for inaccessible areas.
- 267 Review ASME Code Section III, NC 3649 that addresses expansion bellows and associated fatigue considerations and revise comments if necessary.
- 277 Identify whether there are BWR Mark 2 containments with unbounded prestressing system and modify if necessary.
- 283 Consider deleting the comment as piles are included in Chapter III of the GALL report as Class 1 structures.

Sections A2-A9, Chapter III "Structures and Components Supports"

- 4 Review referenced document for basis of the pH value of pH 5.5 (rather than $\text{pH} < 11.5$) for corrosion of embedded steel.

Sections A1 and A2, Chapter VII "Auxiliary Systems"

8 Review Generic Letter 96-04 and its references for addressing Boraflex degradation.

The staff indicated it was revising the draft GALL report for issuance in August for public comment. The staff would consider additional NEI comments if provided by the first of week in July. Otherwise, NEI should provide its comments during the public comment period.

Also, enclosed is NEI's comments on Chapter 2 of the draft SRP License Renewal that was provided by NEI during the meeting, but it will be the subject of a separate meeting.



Peter J. Kang, Reactor Systems Engineer
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Office of Nuclear Reactor Regulation

Project No. 690

Enclosures: As stated

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Sections A1 and A2, Chapter VII "Auxiliary Systems"

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Also, enclosed is NEI's comments on Chapter 2 of the draft SRP License Renewal that was provided by NEI during the meeting, but it will be the subject of a separate meeting.

/RA/

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Sections A1 and A2, Chapter VII "Auxiliary Systems"

8 Review Generic Letter 96-04 and its references for addressing Boreflex degradation.

The staff has indicated it is revising the draft GALL report for issuance in August for public comment. The staff would consider additional NEI comments if provided by the first of week in July. Otherwise, NEI should provide its comments during the public comment period.

Also, enclosed is NEI's comments on Chapter 2 of the draft SRP for the review of License Renewal Applications, that was provided by NEI during the meeting, in which would be the subject of a separate meeting.

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| Comment No | Page No | Paragraph | Comment and Basis | Recommendation |
|------------|---------|-----------------------------|--|---|
| 1 | 2.1-1 | 2.1.1 | In the second paragraph the reviewer is directed to "confirm that there is no omission of structures and components subject to aging management review ..." This can result in an attempt by the reviewer to verify the applicant has proven the negative. The reviewer in sections 2.2 through 2.5 should focus on verifying the applicant has properly implemented a methodology that provides reasonable assurance that structures and components requiring aging management review have been identified. | Rewrite as "To verify that the applicant has properly implemented its methodology, the staff reviews the implementation results separately, following the guidance in Sections 2.2 through 2.5 of this standard review plan" |
| 2 | 2.1-1 | 2.1.1.2 | Delete "and (2)." 54.21(a)(2) is the methodology requirement | Rewrite as "The methodology used by the applicant to implement the "screening" requirements of 10CFR54.21(a)(1) is reviewed." |
| 3 | 2.1-1 | 2.1.2, 2.1.3 items 2,3, & 6 | The paragraphs are not consistent in the use of "system, structures and components." The first two times it uses structures and components, then it goes on to use system, structures, and components. In subsequent paragraphs it uses structures, system, and components. | In 2.1.2 the first and second bullets should refer to "systems, structures and components." Throughout 2.1.3 the term "systems, structures and components" should be used. |
| 4 | 2.1-2 | 2.1.3, 3 | Events not specifically identified in 50.49(b)(1)(ii) are listed – fire, floods, storms, earthquakes, tornadoes and hurricanes. The paragraph should correlate exactly with the definition in 50.49(b)(1)(ii). Additionally SSCs required for compliance with the commission's regulations for fire protection are in scope under 54.4(a)(3). | In the second sentence replace "accident" with "events." Remove the sentence beginning with "however, events such as fire, ..." and the next sentence and replace with "Design basis events are defined as conditions of normal operations, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure the functions in 54.4(a)(1). |

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| 5 | 2.1-3 | 2.1.3, 4 and 5 | The LR Rule is deterministic not probabilistic. 60FR22468: "... [T]he Commission concludes that it is inappropriate to establish a licensee renewal scoping criterion, ..., that relies on plant-specific probabilistic analyses. Therefore, within the construct of the final rule, PRA techniques are of very limited use for license renewal scoping." | Delete paragraphs 4 and 5. . Renumber the following paragraphs as "4." and "5." Also remove the example referring to the IPEEE on page 2.1-6 in 2.1.3.1.1 |
| 6 | 2.1-3 | 2.1.3, 7. | The last sentence should make it clear that an analysis in accordance with RG1.154 is not a prerequisite for a license renewal application. | Indicate that typically no SSCs will be in scope due to PTS. |
| 7 | 2.1-3 | 2.1.3.1 | In the last sentence of the first paragraph the 50.49 definition of "design basis events" is not complete. | Add "to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100." |
| 8 | 2.1-3 | 2.1.3.1 | The methodology for fulfilling the scoping requirement under 10 CFR 54.4(a)(1) may vary from plant to plant, dependent upon the plant's CLB. A plant may choose to identify its design basis events, the associated functions, and resulting SCCs required to meet the three criteria of 10 CFR 54.4(a)(1)(i), (ii), and (iii). This may not be necessary, however, because usually plants will have a list of SCCs that meet the same criteria as those in 10 CFR 54.4(a)(1)(i), (ii), and (iii) that has been used to comply with previous regulations (such as 10 CFR 50.49) that use the same scoping criteria. | Replace the second paragraph with: The methodology for fulfilling the scoping requirement under 10 CFR 54.4(a)(1) may vary from plant to plant, dependent upon the plant's CLB. A plant may choose to identify its design basis events, the associated functions, and resulting SCCs required to meet the three criteria of 10 CFR 54.4(a)(1)(i), (ii), and (iii). This may not be necessary, however, because usually plants will have a list of SCCs that meet the same criteria as those in 10 CFR 54.4(a)(1)(i), (ii), and (iii) that has been used to comply with |

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| | | | Additionally, Regulatory Guide 1.29 required that "all plant features necessary to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100" be designed for a Safe Shutdown Earthquake." Identification of SSCs that comply with regulatory guide 1.29, if applicable to a specific plant, or other applicable CLB commitments would allow for an alternative for explicitly identifying design basis events and associated functions. | previous regulations (such as 10 CFR 50.49) that use the same scoping criteria. Additionally, Regulatory Guide 1.29 required that "all plant features necessary to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100" be designed for a Safe Shutdown Earthquake." Identification of SSCs that comply with regulatory guide 1.29, if applicable to a specific plant, or other applicable CLB commitments would allow for an alternative approach to be used such as 10CFR100, Appendix A, for explicitly identifying design basis events and associated functions. |
| 9 | 2.1-4 | 2.1.3.1 | The paragraph beginning "For NRC bulletins ..." seems to have no basis in the LR Rule. The SOC (60FR22474) states "... the commission has reaffirmed its conclusion made for the previous rule that it is not necessary to compile, review, and submit a list of documents that comprise the CLB in order to perform a license renewal review." The applicant provides a methodology for scoping and screening as required by 54.21(a)(2). This paragraph is essentially forcing a methodology on an applicant. See 2.1.3 items 1,2, 3, 6 and 7. | Remove this paragraph. |

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| 10 | 2.1-5 | 2.1.3.1 | Applicants may group systems together to facilitate license renewal scoping, screening and aging management reviews. For example containment isolation valves will often be scoped, screened and evaluated as a group regardless of system. | Add a paragraph: "An applicant may take an approach in scoping and screening which combines components which are similar from various systems. For example containment isolation valves from various systems may be identified as a system for license renewal. |
| 11 | 2.1-5 | 2.1.3.1.1 | The reviewer is directed to ensure the information in the methodology is consistent with the CLB. However, the determination should be for the reviewer to verify that the methodology adequately identifies all safety related SSC's credited to accomplish the intended functions stated in 54.4(a)(1). The methodology may use various sources | Rewrite first sentence of first paragraph as follows "The applicant's methodology is reviewed to ensure that safety related systems, structures and components are identified to satisfactorily accomplish any of the intended functions identified in §54.4(a)(1)." Delete "outlined above" in second sentence and insert "(e.g., available Q-List, Maintenance Rule, direct references to Design Basis Events)" Delete "(e.g., those analyzed in the IPEEE for the facility), |
| 12 | 2.1-6 | 2.1.3.1.2 | Examples provide clarification to the reviewer concerning the determination of nonsafety-related SSCs that should be included in the scope of the rule. The examples used in the clarification could impose undue restrictions that go beyond the CLB for a plant. For example, the draft SRP states: "Seismic II/I components are those non-seismic Category I systems, structures, and components interacting with seismic Category I systems, structures, and components as described in Regulatory Position C.2 of RG 1.29." | Rewrite the paragraph beginning "In determining ..." as "In determining the nonsafety-related SSCs that are within the scope of the rule, the reviewer must evaluate the applicant's CLB to identify those SSC's that fall within the scope of the rule. For example, (1) the portion of a fire-protection system specified in the applicant's UFSAR that supplies water to the refueling floor and is relied upon in a design basis accident analysis as an alternate source of cooling water that can be used to mitigate the consequences from the loss of spent fuel pool cooling; (2) a nonsafety-related, non-seismically qualified building whose intended |

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| | | | <p>The CLB for a given licensee defines the systems, structures and components that fall within this scope of the rule and may differ from the generic guidance found in RG 1.29. As such, this statement from the SRP should be removed.</p> <p>In the same section the draft SRP states:</p> <p>“For example, the safety classification of a pipe may change throughout its course in the plant, such as at valve locations. In these instances, the applicant should identify the safety related portion of the pipe as within the scope of the scope of license renewal under 10 CFR 54.4(a)(1). However, the entire pipe run, up to and including associated piping anchors, may have been analyzed as part of the CLB to establish that it could withstand design basis event loads. If this is the case, a failure in the remainder of the pipe run or in the associated piping anchors, could render the safety related portion of the piping unable to perform its intended function under CLB design conditions. Therefore, the reviewer must verify that the applicant’s methodology would include (1) the remaining non-safety related piping up to its anchors, pipe hangers on this piping and (3) the associated piping anchors, as within the scope of license renewal under 10CFR54.4(a)(2).”</p> <p>Utilities have typically not followed this</p> | <p>function as described in the applicant’s CLB is to protect a tank that is relied upon as an alternate source of cooling water needed to mitigate the consequences of a design basis event; and (3) a segment of nonsafety related piping identified as a Seismic II/I component in the applicant’s CLB. The reviewer must also ensure that the applicant has properly identified non-safety related portions of piping systems whose failure could prevent satisfactory accomplishment of any of the functions identified in §54.4(a)(1). For example, the safety classification of a pipe may change throughout its course in the plant, such as at valve locations. In these instances, the applicant should identify the safety related portion of the pipe as within the scope of license renewal under 10 CFR 54.4(a)(1). However, the entire pipe run, up to and including associated piping anchors may have been analyzed as part of the CLB to establish that it could withstand design basis event loads. If this is the case, a failure in the remainder of the pipe run or in the associated piping anchors, could render the safety-related portion of the piping unable to perform its intended function under CLB design conditions. Therefore, the reviewer must verify that the applicant’s methodology would include (1) the remaining non-safety related piping up to its anchors, and (2) the associated piping anchors, as within the scope of license renewal under 10CFR</p> |

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| | | | approach and end the boundary of a system based upon an isolation valve or a safety related flag on a P& ID. This guidance goes beyond that methodology forcing a utility to extend the boundary of a safety related system into a non-safety related boundary. Literal compliance with this guidance would result in the inclusion of large portions of non-safety related systems and their associated piping components within the rule. | 54.4(a)(2). |
| 13 | 2.1-6 | 2.1.3.1.2 | | Sixth paragraph delete "certain" and change "failure can prevent..." to "failures are considered in the CLB and could prevent..." |
| 14 | 2.1-6 | 2.1.3.1.2 | In the seventh paragraph, the examples used do not provide accurate information to help the reviewer in determining those non-safety-related SSC's that should be considered. This could become confusing to the reviewer. | In the seventh paragraph, delete second sentence beginning with "For example..." through the end of paragraph. |
| 15 | 2.1-7 | 2.1.3.1.2 | Clarification is needed to show the functions identified in 54.4(a)(1) are part of the CLB. In the second paragraph, the examples provided could be confusing to the reviewer. | Add "...as part of CLB." to the end of last sentence of first paragraph. Insert "system" after "piping" in first sentence. Delete "For example, the safety...under 10CFR54.4(a)(2)." |
| 16 | 2.1-7 | 2.1.3.1.3 | In the second paragraph for the regulated events, additional words have been added. "[O]peration within" the regulations has never been included within §54. The regulation does not state "demonstrate compliance with and operation within the Commission's regulations...". Also "and existing engineering analysis" is not in the regulation. The words should be as noted in the previous paragraph "in safety analyses or plant evaluations." | Delete "operation within" and "operate within" in middle paragraph that begins with "Therefore, all SCCs ... Also change "and existing engineering analysis" to "safety analyses or plant evaluations" in the same paragraph. In the third paragraph, fifth sentence after "as applicable" insert "safety analyses" and replace "existing engineering" with "plant" |

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| 17 | 2.1-8 | 2.1.3.1 | In the PTS paragraph it should be made clear that an analysis relying on RG1.154 is not required of an applicant. This paragraph should note the CLB varies from plant to plant. | Insert "as specified in the applicant's CLB" after "10 CFR 50.61." Add "most applicants will not have performed an RG1.154 analysis." To the end of the paragraph. |
| 18 | 2.1-9 | 2.1.3.2.1 | The second and third paragraphs are redundant with the paragraphs above. | Remove the second and third paragraphs. |
| 19 | 2.1-9 | 2.1.3.2.2 | <p>The second paragraph indicates SCs with qualified lives or replacement intervals greater than 40 years are considered to be "long lived."</p> <p>The criteria in §54.21(a)(1)(ii) states that structures and components subject to an aging management review shall encompass those structures and components, "That are not subject to replacement based on a qualified life...."</p> <p>An interpretation of the rule has been proffered that components which are replaced based on a qualified life that is 40 years or greater can not be excluded based on the criteria of §54.21(a)(1)(ii). This interpretation can be found in Section 4.1.2 of NEI 95-10 Rev. 0 but no basis for this interpretation is offered. Excluding components that are replaced based on a qualified life from the aging management review is specifically discussed in the SOC. Upon searching the guidance provided in the SOC regarding the exclusion of components that are replaced based on a qualified life, the basis for this interpretation is absent. The SOC sections that provide guidance, 60 FR 22478]</p> | Rewrite the last sentence as: "Structures or components replaced either on a specified interval based upon the qualified life of the structure or component or periodically in accordance with a specified time period, are deemed to not be long lived." |

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| | | | <p>are repeated below.</p> <p>SOC to 10 CFR 54, Section III.f.(i)(b), “Long-lived” structures and components.</p> <p><i>The Commission recognizes that, as a general matter, the effects of aging on a structure or component are cumulative throughout its service life. One way to effectively mitigate these effects is to replace that structure or component, either (i) on a specified interval based upon the qualified life of the structure or component or (ii) periodically in accordance with a specified time period to prevent performance degradations leading to loss of intended function during the period of operation.</i></p> <p><i>Where a structure or component is replaced based upon a qualified life (appropriately determined), it follows that the replaced structure or component will not experience detrimental effects of aging sufficient to preclude its intended function. This is because the purpose of qualification of the life of a structure or component is to determine the time period for which the intended function of that structure or component can be reasonably assured.</i></p> <p><i>Where a structure or component is replaced periodically in accordance with a specified time period, the regulatory process will ensure that degraded performance of the structure or component experienced during the replacement interval will be adequately addressed and the established replacing interval will be appropriate. Thus, there is a high likelihood that the detrimental effects of aging will not accumulate during the subsequent period such that there is a loss of intended function.</i></p> <p><i>In sum, a structure or component that is not replaced either (i) on a specified interval based upon the qualified life of the structure or component or (ii) periodically in accordance with a specified time period,</i></p> | |

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| | | | <p><i>is deemed by §54.21(a)(1)(ii) of this rule to be "long-lived," and therefore subject to the §54.21(a)(3) aging management review.</i></p> <p>Unlike the rule regarding time-limited aging analyses (TLAAs), which specifically states that they "Involve time-limited assumptions <i>defined by the current operating term, for example, 40 years,</i>" the criteria in §54.21(a)(1)(ii) and the SOC guidance make no such reference related to components that are replaced based on a qualified life.</p> <p>Ocone screened-out electrical components that are replaced based on an appropriately determined qualified life via the criteria of §54.21(a)(1)(ii). This position is in agreement with the SOC guidance on the application of the "long-lived" criteria.</p> | |
| 20 | 2.1-9 | 2.1.3.2.2 | <p>The SOC permits exclusion from AMR based on performance or condition monitoring (60FR22478) "However, the Commission does not intend to preclude a license renewal applicant from providing site specific justification in a license renewal application that a replacement program on the basis of performance or condition monitoring for a passive structure or component provides reasonable assurance that the intended function of the passive structure or component will be maintained in the period of extended operation." Example may be heat exchanger tube bundles or containment hatch gaskets.</p> | <p>Replace the last sentence beginning with "However, performance ..." with "An applicant may provide site specific justification for a performance or condition monitoring program to exclude structures or components from aging management review. (60FR22478)"</p> |

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| 21 | 2.1-12 | Table 2.1-1 | The LR Rule is deterministic not probabilistic. 60FR22468: ... [T]he Commission concludes that it is inappropriate to establish a licensee renewal scoping criterion, ..., that relies on plant-specific probabilistic analyses. Therefore, within the construct of the final rule, PRA techniques are of very limited use for license renewal scoping. | Remove "Probabilistic Risk Assessment summary report." |
| 22 | 2.1-12 | Table 2.1-1 | Emergency Operating Procedures are for mitigating DBE's and not for design purposes. | Delete Emergency Operating Procedures |
| 23 | 2.1-13 | Table 2.1-2 | The heading in the first column should be "Issue" rather than "Subject." The items listed here are issues, which have been resolved between NRC and the industry. | Change "Subject" to "Issue". |
| 24 | 2.1-13 | Table 2.1-2 | The guidance for Hypothetical failures is missing an important sentence from reference 8. | Add after the first sentence: "The applicant need not consider hypothetical failures that are not part of the CLB, and that have not been previously experienced." Second sentence, insert "specified in the applicant's UFSAR" between "system" and "that"; replace "failure could result..." with "intended function as described in the applicant's CLB is to protect". |
| 24 | 2.1-14 | Table 2.1-3 | The heading in the first column should be "Issue" rather than "Subject." The first row for instance is about the consumables issue and the resolution deals with, among others, structural sealants which may be long lived and therefore not consumable. | Change "Subject" to "Issue." |
| 25 | 2.1-14 | Table 2.1-3 | The "Consumables" guidance description does not correspond with the write-up on Table 2.1-5. | Rewrite the fourth sentence to begin "Thus, for category (a)..." Insert the following after the fourth sentence |

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| | | | | "For category (b), structural sealants may perform functions without moving parts or change in configuration and are not typically replaced. Thus it is expected that the applicant's structural aging management program will address these items with respect to an aging management review program on a plant specific basis." |
| 26 | 2.1-14 | Table 2.1-3 | Although heat transfer is an intended function, it is not necessarily the primary safety function of a heat exchanger. Additionally, "programs" are now described as "activities" | Revise to read "...may be an intended function" and replace "programs" and "procedures" with "activities" |
| 27 | 2.1-14 | Table 2.1-3 | Multiple Functions are not described in the rule. | Delete "Multiple Functions" from Table 2.1-3. |
| 28 | 2.1-14 | Table 2.1-3 | The Issue "Piece-parts" describes two different sub-sets of bolting and as such it is not clear concerning the differences associate with "piece part bolting" and "pressure boundary bolting". | Create two separate Issues, one for Piece-parts and the second as Pressure Boundary Bolting. The Guidance for Piece-parts should read "An applicant does not have to perform a renewal review of structures and components at a piece part level. However, if bolting contributes to the performance of component intended function with moving parts, or with a change in configuration or properties, the bolting is not subject to an aging management review for renewal. Degradation of such bolting would be revealed through the active performance of the component, for example, bolting to assemble a pump impeller." The Guidance for a new category "Pressure Boundary Bolting" should read; "If bolting contributes to the performance of a component intended function without moving parts, or without a |

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| | | | | change in configuration or properties, the bolting is subject to an aging management review for renewal. Examples are: bolting on a pressurizer manway cover, valve bonnet-to-body bolting, bolting on a pump support, and diesel generator embedment plate anchors. |
| 29 | 2.1-16 | Table 2.1-4 | This table is different than NEI 95-10 table 4.1-1 in several respects - it has 7 less items, it is not formatted by components and structures like NEI 95-10, it has slightly different wording for 3 of the items and it contains one extra electrical function that NEI 95-10 does not have. | Replace Table 2.1-4 with Table 4.1-1 from NEI 95-10, revision 1. |
| 30 | 2.1-16 | Table 2.1-4 | "Provide insulation resistance to preclude shorts, grounds and unacceptable leakage" is a design feature of insulated electrical cable or is a function of a cable piece-part - the insulation, but it is not the function of a cable. | Revise last entry under "Components" to read "...deliver voltage, current or signals" |
| 31 | 2.1-16 | Table 2.1-4 | Heat transfer is also recognized as a component intended function of heat exchangers | Add "Provide heat transfer" as a Component. |
| 32 | 2.1-17 to 2.1-24 | Table 2.1-5 | Each block under category should be completed. For item 121, (Thermocouple RTD) the last column should say "(PB only)." Line item 130 is missing. NEI 95-10 Appendix B indicates terminal blocks are no passive. | Complete the category column. For item 121 change last column to "(PB only)." Insert line 130 or indicate it is not used. Remove terminal blocks from item 141, add a new terminal blocks item and indicate "no" in the last column. |
| 33 | 2.1-17 to 2.1-24 | Table 2.1-5 | The table lists electrical components as several examples of many different commodity groups. The electrical components listed in the table are not organized and not all electrical component | Organize the list of electrical components by commodity groups and include the components identified in the table as examples under each group. The |

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| | | | <p>commodity groups that have been reviewed by the staff are represented. For those that are represented and have several examples listed, the examples do not represent all the specific examples that are installed in nuclear power plants. Components in many of the commodity groups are installed in electrical (i.e., power), instrumentation and control applications, so all electrical component commodity groups should be under a single category of "Electrical and I&C".</p> <p>Table A below correlates the SRP Table 2.1-5 Item numbers to electrical component commodity groups and the component functions used as the basis for forming the commodity groups.</p> | <p>commodity groups should be formed based on components with common functions. All electrical component commodity groups should be included in the list. For ease of reference the electrical component commodity groups should be grouped together in the table under the category "Electrical and I&C" and should be put in alphabetical order.</p> |
| 34 | 2.1-17 to 2.1-24 | Table 2.1-5 | <p>Electrical and I&C penetration assemblies are split for the aging management review with the structural portions and parts supporting the essentially leak-tight containment barrier reviewed under structures and the electrical portions (cables and connections) reviewed under electrical components.</p> | <p>Include the electrical portions of Electrical and I&C Penetration Assemblies in the Cable and Connections commodity group under the Electrical and I&C category.</p> |
| 35 | 2.1-17 to 2.1-24 | Table 2.1-5 | <p>The §54.21(a)(1)(i) determination for RTDs and Thermocouples does not match the determinations documented during the processing of the Oconee license renewal application. As clarifies the Oconee findings:</p> <p>A telephone conference took place between Duke personnel and NRC staff on January 7, 1999 to discuss RAIs 2.6-6 and 2.6-7. The discussion lead to an inconsistency within</p> | <p>Change the table to indicate that RTDs and Thermocouples do not meet the criteria of §54.21(a)(1)(i) unless there is an associated pressure boundary.</p> |

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|-------------|------------------|-------------|---|---|
| | | | NEI 95-10 Rev. 0 Appendix B concerning thermocouples, RTDs and temperature sensors. Temperature sensors are identified in NEI 95-10 Rev. 0 Appendix B (Item #93) as "Yes (PB only)" which means that the only "passive" intended function of a temperature sensor is that of a mechanical system pressure boundary. Thermocouples and RTDs are essentially types of temperature sensors. Thermocouples and RTDs are identified in NEI 95-10 Rev. 0 Appendix B (Item #121) as "Yes." The determination reached by the NRC staff during the conference call was that thermocouples and RTDs perform the same function as temperature sensors and to resolve the RAIs Oconee should identify thermocouples and RTDs as meeting the criteria of §54.21(a)(1)(i) for "PB only" and explain in an RAI response where the mechanical pressure boundary intended functions are addressed. Duke agreed with this determination was to pursue incorporating this change into the next revision to NEI 95-10. This resolution is documented in the response to RAIs 2.6-6 and 2.6-7 [Reference 13, Attachment 3]. The RAI response resolved the issue and RTDs and thermocouples were excluded from the Oconee aging management review because they do not meet the criteria of §54.21(a)(1)(i). | |
| 36 | 2.1-17 to 2.1-24 | Table 2.1-5 | Communication equipment, high-voltage insulators, high-voltage surge arresters and regulators are electrical component commodity groups that are installed at nuclear power | Add communication equipment, high-voltage insulators, high-voltage surge arresters and regulators to Table 2.1-5 and indicate that high-voltage insulators meet |

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| | | | <p>plants but are not represented in SRP Table 2.1-5.</p> <p>High-voltage insulators meet the criteria of §54.21(a)(1)(i) as documented in the response to Oconee RAI 2.6-1 [Reference 13, Attachment 3].</p> <p>Communication equipment, high-voltage surge arresters and regulators do not meet the criteria of §54.21(a)(1)(i) as documented in the response to Oconee RAI 2.6-1 [Reference 13, Attachment 3]. Based on the RAI response, communication equipment, high-voltage surge arresters and regulators were excluded from the Oconee aging management review because they do not meet the criteria of §54.21(a)(1)(i).</p> | §54.21(a)(1)(i) and communication equipment, high-voltage surge arresters and regulators do not meet §54.21(a)(1)(i). |
| 36 | 2.1-17 to 2.1-24 | Table 2.1-5 | Some types of sensors and elements are shown with "Yes (PB only)" in the right column. This implies that all such type sensors and elements have a pressure boundary, which is not true. | <p>Revise the column for applicable components to be more explicit, such as:</p> <p align="center">No</p> <p align="center">Yes for a PB if applicable</p> |
| 37 | 2.1-26 | Table 2.1-5 | Subcomponents and consumables are addressed in Table 2.1-3 | Delete "Subcomponent" and "Consumable" and associated footnotes from Table 2.1-5. |
| 38 | 2.2-1 | 2.2.1 | The second paragraph states that "An applicant would list all plant level systems and structures." The rule does not require that all systems and structures be listed. Only those SCs subject to AMR are required to be listed. This should be rewritten to be consistent with NEI 95-10. This also applies to the first sentence of the fourth paragraph on page 2.2-3, the first sentence of the third paragraph on page 2.3-1, the first sentence of the third | Rewrite as "An applicant will provide a list of all the plant systems and structures identifying those that are within the scope of license renewal. If the list exists elsewhere, such as in the UFSAR, it is acceptable to merely identify that linkage. The license renewal rule does not require the identification of all plant systems and structures. However, providing such a list may make the NRC's review more efficient." |

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| | | | paragraph on page 2.4-1 and the first sentence of the third paragraph on page 2.5-1. | |
| 39 | 2.2-1 | 2.2.1 | The second paragraph states that "Based on the Design Basis Events...for license renewal." This is not necessary for results review and should be omitted from this section. | Delete the statement "Based on the Design Basis Events (DBEs) in the plant's current licensing basis (CLB) and other CLB information...and structures for license renewal." |
| 40 | 2.2-1 | 2.2.1 | The last sentence of third paragraph states "and auxiliary feedwater systems." AFW systems are only associated with PWRs and should be indicated as such. | After last sentence of third paragraph add "(PWR)". |
| 41 | 2.2-1 | 2.2.1 | In the last sentence of the second paragraph the reviewer is directed to "confirm that there is no omission of systems and structures within the scope of license renewal." This can result in an attempt by the reviewer to verify the applicant has proven the negative. The reviewer should focus on verifying the applicant has properly implemented a methodology that provides reasonable assurance that systems and structures within the scope of license renewal have been identified. | Rewrite as "To verify that the applicant has properly implemented its scoping methodology, the staff reviews the implementation results separately, following the guidance in Section 2.2.3.1. of this standard review plan." |
| 42 | 2.2-2 | 2.2.2 | In the last sentence of the acceptance criteria is "is no omission of systems and structures within the scope of license renewal." This can result in an attempt by the reviewer to verify the applicant has proven the negative. The reviewer should focus on verifying the applicant has properly implemented a methodology which provides reasonable assurance that systems and structures within the scope of license renewal have been identified. Inspection Procedure 71002, in the | Rewrite as "... the staff should find the applicant has properly implemented the methodology for scoping, in accordance with guidance provided the reviewer in Inspection Procedure 71002." |

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| | | | NRC Inspection Manual, specifically requires the inspector to "...review approximately 25% of the on-site documentation ... to verify ... [t]he scoping process, including identification of systems and structures and the applicable system-/structural-level functions, was implemented consistent with the applicant's methodology ..." Having the staff reviewer attempt this without the on-site documentation appears wasteful. | |
| 43 | 2.2-3 | 2.2.3.1 | The third paragraph and the four examples do not focus on verifying the applicant scoped as described in the methodology. | Insert "a sample of" between "select" and "systems" in the second sentence. |
| 44 | 2.2-3 | 2.2.3.1 | The last sentence of the second paragraph is superfluous in nature . | Delete last sentence "The branch responsible for electrical engineering may be requested to assist the review regarding electrical system scoping" |
| 45 | 2.2-3 | 2.2.3.1 | Last paragraph states "An applicant should submit a list of all plant level systems and structures, identifying those that are within the scope of license renewal." The rule does not require that all systems and structures be listed. Only those SCs subject to AMR are required to be listed. This should be rewritten to be consistent with NEI 95-10. | Rewrite the first and second sentence to read "From the list of plant level systems and structures, the reviewer validates the methodology by selecting a sample of systems and structures that the applicant did identify as within scope of license renewal." |
| 46 | 2.2-3 | 2.2.3.1, example one | The example is negative. | Change "does not identify its" to "identifies a " |
| 47 | 2.2-4 | 2.2.3.1, example three | The example is negative. | Change "does not identify its" to "identifies a " |

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| 48 | 2.2-4 | 2.2.3.1, example four | The example is negative. | Last sentence; change "525kV switchyard..." to "applicant has included the appropriate SSC's and their intended functions." |
| 49 | 2.2-4 | 2.2.3.1 | In the paragraph beginning "The reviewer should find ..." | Change "no omissions" to "sufficient information supplied". |
| 50 | 2.2.6 | 2.2-5 | Regulatory Guide 1.29 is already in reference section 2.1.6 | Delete this reference |
| 51 | 2.3-1 | 2.3.1 | The second paragraph focuses on omissions rather than verification that the methodology has been implemented properly. | Rewrite the last sentence as: "The staff should focus its review to verify the applicant has implemented their methodology such that there is reasonable assurance that the applicant has identified mechanical system components which require aging management review." |
| 52 | 2.3-1 | 2.3.1 | The third paragraph reiterates information already provided in section 2.2. This section is addressing components requiring aging management review, therefore, this paragraph is not needed for the reviewer. | Remove the third paragraph as system level scoping is addressed in section 2.2. |
| 53 | 2.3-2 | 2.3.1 | The second paragraph states "The applicant identifies this particular..." This does not allow for other options to identify systems. | Rewrite this sentence to "The applicant may identify this particular portion of the system in marked-up piping and instrument diagrams (P&IDs) or other media. |
| 54 | 2.3-2 | 2.3.1.1 | This paragraph may lead to the incorrect assumption that a license renewal application would list components within the scope of license renewal. The requirement is to identify SCs subject to AMR, not within the scope of license renewal. | Remove the paragraph. Scoping results are not required in a license renewal application. |
| 55 | 2.3-2 | 2.3.2 | In the last sentence of the acceptance criteria is "no omission mechanical system components that are subject to aging management review." | Rewrite as "... the staff should find the applicant has properly implemented the methodology for screening." |

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| | | | This can result in an attempt by the reviewer to verify the applicant has proven the negative. The reviewer should focus on verifying the applicant has properly implemented a methodology which provides reasonable assurance that mechanical system components that are subject to aging management review have been identified. Inspection Procedure 71002, in the NRC Inspection Manual, specifically requires the inspector to "...review approximately 25% of the on-site documentation for the SSCs within the inspection plan used to document the scope of SSCs requiring an aging management review ..." Having the staff reviewer attempt this without the on-site documentation appears wasteful. | |
| 56 | 2.3-3 | 2.3.2.1 | Components within scope of license renewal results are not required by the application | Remove section 2.3.2.1 and renumber 2.3.2.2. |
| 56 | 2.3-3 | 2.3.3.1 | Structures and components within the scope of license renewal are not required to be listed in a license renewal application. | This section was combined with 2.3.3.2 and re-written. Please see mark-up. |
| 57 | 2.3-7 | Table 2.3-1 | The third example should make it clear that the function is described in the applicant's CLB. | Add "as described in the applicant's CLB" between "standpipe" and "ensures" in the first sentence of the third disposition. |
| 58 | 2.4-1 | 2.4.1 | The third paragraph focuses on omissions rather than verification that the methodology has been implemented properly. | Rewrite the last sentence as: "... the staff focuses its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified structural components which require aging management review." |
| 59 | 2.4-1 | 2.4.1 | The fourth paragraph reiterates information | Remove the fourth paragraph as system level |

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| | | | already provided in section 2.2. This section is addressing components requiring aging management review, therefore, this paragraph is not needed for the reviewer. | scoping is addressed in section 2.2. |
| 60 | 2.4-2 | 2.4.1 | The last sentence of the first paragraph focuses on omissions rather than verification that the methodology has been implemented properly. | Rewrite the last sentence as: "... the staff focuses its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified structural components which require aging management review." |
| 61 | 2.4-2 | 2.4.2 | In the last sentence of the acceptance criteria is "no omission of structural components that are subject to aging management review." This can result in an attempt by the reviewer to verify the applicant has proven the negative. The reviewer should focus on verifying the applicant has properly implemented a methodology which provides reasonable assurance that mechanical system components that are subject to aging management review have been identified. Inspection Procedure 71002, in the NRC Inspection Manual, specifically requires the inspector to "...review approximately 25% of the on-site documentation for the SSCs within the inspection plan used to document the scope of SSCs requiring an aging management review ..." Having the staff reviewer attempt this without the on-site documentation appears wasteful. | Rewrite as "... the staff should find the applicant has properly implemented the methodology for screening." |
| 62 | 2.4-3 | 2.4.2.1 | Components within scope of license renewal results are not required by the application | Remove section 2.4.2.1 |

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| 63 | 2.4-3 | 2.4.3.1 | The second paragraph asks the reviewer to attempt to assemble the applicant's design basis. The focus should be on verifying the applicant has screened as described in their methodology. | The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use. |
| 64 | 2.4-3 | 2.4.3.1 | Changes to suit sample review to provide reasonable assurance. | Fourth paragraph, insert "selected" between "that" and "structural" in the first sentence. Insert "were included in" between "components" and "scope" in the first sentence. Fifth paragraph third sentence, change "Applicant" to "The applicant". |
| 65 | 2.4-4 | 2.4.3.1 | The second paragraph focuses on omissions rather than verification that the methodology has been implemented properly. | Second paragraph, first sentence: change "find no omissions of" to "validate the applicant's methodology for identifying". |
| 66 | 2.4-4 | Bulleted list, 2.4.3 | Complex assemblies and heat exchanger intended functions are not relevant to structures. | These should be deleted. |
| 67 | 2.5-1 | 2.5.1 | The second paragraph focuses on omissions rather than verification that the methodology has been implemented properly. | Rewrite the last sentence as: "... the staff focuses its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified electrical and I&C components which require aging management review." |
| 68 | 2.5-1 | 2.5.1 | The fourth paragraph indicates the spaces approach would be used by an applicant. The plant spaces approach is not mandatory. An applicant may use other means to evaluate electrical and I&C systems. | Indicate an applicant may use the spaces approach. |
| 69 | 2.5-2, 2.5-4 | 2.5.1, 2.5.3.1 | There is a typographical error in the paragraph at the top of 2.5-2. | Change "these equipment" to "this equipment." |
| 70 | 2.5-2 | 2.5.2 | In the last sentence of the acceptance criteria is "no omission of electrical and I&C components | Rewrite as "the staff should find the applicant has properly implemented the |

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| | | | that are subject to aging management review.” This can result in an attempt by the reviewer to verify the applicant has proven the negative. The reviewer should focus on verifying the applicant has properly implemented a methodology which provides reasonable assurance that mechanical system components that are subject to aging management review have been identified. Inspection Procedure 71002, in the NRC Inspection Manual, specifically requires the inspector to “...review approximately 25% of the on-site documentation for the SSCs within the inspection plan used to document the scope of SSCs requiring an aging management review ...” Having the staff reviewer attempt this without the on-site documentation appears wasteful. | methodology for screening.” |
| 71 | 2.5-4 | 2.5.3.1 | Structures and components within the scope of license renewal are not required to be listed in a license renewal application. | This section was combined with 2.5.3.2 and re-written. Please see mark-up. |
| 72 | 2.5-7 | Table 2.5-1 | Second Example | First sentence; replace “outside of” with “inside of”. Second sentence; insert “verify the applicant’s methodology utilized in scoping the electrical and I&C components within the buildings.” After “should”, delete rest of sentence. |
| 73 | 2.5-7 | Table 2.5-1 | The last example calls for a plant not using the spaces approach to submit marked-up drawings. There is no requirement for an | Delete this example. |

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| | | | applicant to submit drawings. An applicant may use an approach other than the spaces approach and provide reasonable assurance that all electrical and I&C SSCs have been properly scoped and screened. An important consideration is the lack of a requirement for an LRA to contain information about components not subject to aging management review. | |

TABLE A
SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS

| SRP-LR Item Number | Electrical Component Commodity Groups | Component Functions |
|-------------------------------|---|--|
| 104 | Alarm Units (e.g., fire detection devices) | To sense a parameter and provide an output at a predetermined (threshold) level. |
| 97 | Analyzers (e.g., gas analyzers, conductivity analyzers) | To examine the item being analyzed and determine its constituent parts. |
| 115 | Annunciator (e.g., lights, buzzers, alarms) | To audibly and visually alert operators of a plant condition or occurrence. |
| 134 | Batteries | To store energy. |

TABLE A
SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS

| | | |
|---------------|---|---|
| 16, 141, 142 | Cables and Connections, Bus, electrical portions of Electrical and I&C Penetration Assemblies (e.g., electrical penetration assembly cables and connections, connectors, electrical splices, terminal blocks, power cables, control cables, instrument cables, insulated cables, communication cables, uninsulated ground conductors, transmission conductors, isolated-phase bus, nonsegregated-phase bus, segregated-phase bus, switchyard bus) | To electrically connect specified sections of an electrical circuit to deliver voltage, current or signals. |
| 109, 110, 135 | Chargers, Converters, Inverters (e.g., converters-voltage/current, converters-voltage/pneumatic, battery chargers/inverters, motor-generator sets) | To convert energy from one form into another form. |
| 128 | Circuit Breakers (e.g., air circuit breakers, molded case circuit breakers, oil-filled circuit breakers) | To connect or disconnect an electrical circuit in a controlled manner. |

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TABLE A

SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS

| SRP-LR Item Number | Electrical Component Commodity Groups | Component Functions |
|-----------------------|--|---|
| N/A | Communication Equipment (e.g., telephones, video or audio recording or playback equipment, intercoms, computer terminals, electronic messaging, radios, transmission line traps and other power-line carrier equipment) | To permit the interchange of information. |
| 139, 140 | Electric Heaters, Heat Tracing | To generate heat. |
| 138 | Electrical Controls and Panel Internal Component Assemblies (may include internal devices such as, but not limited to, switches, breakers, indicating lights, etc.) (e.g., main control board internal component assemblies, HVAC control board internal component assemblies) | To provide an operator/plant equipment and system control and monitoring interface. |
| 86, 88, 93, 120, 121 | Elements, RTDs, Sensors, Thermocouples, Transducers (e.g., conductivity elements, flow elements, temperature sensors, watt transducers, thermocouples, RTDs, vibration probes, amp transducers, frequency transducers, power factor transducers, speed transducers, var transducers, vibration transducers, voltage transducers) | To convert a measured physical parameter into a proportional electrical output or parameter change. |

TABLE A

SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS

| | | |
|-----------------|---|--|
| 145 | Fuses | To disconnect an electrical circuit at a predetermined current and duration. |
| 56, 65, 66, 136 | Generators, Motors (e.g., emergency diesel generators, ECCS and emergency service water pump motors, small motors, motor-generator sets, steam turbine generators, combustion turbine generators, fan motors, pump motors, valve motors, air compressor motors) | To convert mechanical energy into electrical energy or electrical energy into mechanical energy. |
| N/A | High-voltage Insulators (e.g., porcelain switchyard insulators, transmission line insulators) | To insulate and support an electrical conductor. |

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TABLE A

SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS

| SRP-LR Item Number | Electrical Component Commodity Groups | Component Functions |
|-------------------------------|--|--|
| N/A | High-voltage Surge Arresters (e.g., switchyard surge arresters, lightning arresters, surge suppressers, surge capacitors, protective capacitors) | To limit surge voltages or currents on an electrical circuit. |
| 76, 80, 102, 105, 117, 118 | Indicators (e.g., differential pressure indicators, pressure indicators, flow indicators, level indicators, speed indicators, temperature indicators, analog indicators, digital indicators, LED bar graph indicators, LCD indicators) | To indicate or represent the value of a parameter being measured. |
| 112 | Isolators (e.g., transformer isolators, optical isolators, isolation relays, isolating transfer diodes) | To isolate part of an electrical circuit from the undesired influence of other parts of the circuit. |
| 166 | Light Bulbs (e.g., indicating lights, emergency lighting, incandescent light bulbs, fluorescent light bulbs) | To illuminate. |

TABLE A

SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS

| | | |
|----------------------------|--|---|
| 101, 103, 107, 111, 119 | Loop Controllers (e.g., differential pressure indicating controllers, flow indicating controllers, temperature controllers, controllers, speed controllers, programmable logic controller, single loop digital controller, process controllers, manual loader, selector station, hand/auto station, auto/manual station) | To measure the value of a variable and correct or limit deviation from a reference value. |
| 116 | Meters (e.g., ammeters, volt meters, frequency meters, var meters, watt meters, power factor meters, watt-hour meters) | To measure (and indicate) the value of a parameter. |
| 108 | Power Supplies | To convert input power to a prescribed voltage. |
| 94, 95, 96 | Radiation Monitors (includes radiation sensors and radiators transmitters) (e.g., area radiation monitors, process radiation monitors) | To measure the amount of radiation. |
| 114 | Recorders (e.g., chart recorders, digital recorders, events recorders) | To record input data for later reference or retrieval. |

COMMENTS ON SRP CHAPTER 2 JUNE 21, 2000

TABLE A

**SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS**

| SRP-LR Item Number | Electrical Component Commodity Groups | Component Functions |
|-------------------------------|--|--|
| N/A | Regulators (e.g., voltage regulators) | To vary or prevent variation in a desired characteristic. |
| 129 | Relays (e.g., protective relays, control/logic relays, auxiliary relays) | To open and close electrical contacts in a specified manner based on electrical, mechanical, thermal or other type of input. |
| 113 | Signal Conditioners | To maintain a signal within specified parameters. |
| 75 | Solenoid Operators | To move an armature in a reciprocating motion. |
| 127 | Solid-State Devices (e.g., transistors, circuit boards, computers) | To control current using electric or magnetic phenomena in solids. |

TABLE A

**SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS**

| | | |
|---|---|--|
| 77, 78, 81, 82, 84, 87, 89, 91, 92, 98, 99, 100, 106, 131, 132, 133 | Switches (e.g., differential pressure indicating switches, differential pressure switches, pressure indicator switches, pressure switches, flow switches, conductivity switches, level indicating switches, temperature indicating switches, temperature switches, moisture switches, position switches, vibration switches, level switches, control switches, automatic transfer switches, manual transfer switches, manual disconnect switches, current switches, limit switches, knife switches) | To open, close or change the connections of an electrical circuit. |
| 123, 124, 125, 126, 137 | Switchgear, Load Centers, Motor Control Centers and Distribution Panel Internal Component Assemblies (may include internal devices such as, but not limited to, switches, breakers, indicating lights, etc.) (e.g., 4.16 kV switchgear, 480V load centers, 480V motor control centers, 250 VDC motor control centers, 6.9 kV switchgear units, 240/125V power distribution panels) | To provide the means in a consolidated enclosure to connect or disconnect electrical loads in a controlled manner from a common bus. |

COMMENTS ON SRP CHAPTER 2 JUNE 21, 2000

TABLE A

SRP TABLE 2.1-5 ITEM NUMBERS CORRELATED TO ELECTRICAL COMPONENT COMMODITY GROUPS
AND THE COMPONENT FUNCTIONS USED AS THE BASIS FOR FORMING THE COMMODITY GROUPS

| SRP-LR Item Number | Electrical Component Commodity Groups | Component Functions |
|-----------------------|--|---|
| 122, 143, 144 | Transformers (e.g., instrument transformers, load center transformers, small distribution transformers, large power transformers, isolation transformers, coupling capacitor voltage transformers) | To induce a voltage in a separate electrical circuit. |
| 79, 83, 85, 90 | Transmitters (e.g., differential pressure transmitters, pressure transmitters, flow transmitters, level transmitters, static pressure transmitters) | To send (output) an electrical signal. |

2.1. SCOPING AND SCREENING METHODOLOGY

Review Responsibilities

Primary - Branch responsible for quality assurance

Secondary - Branches responsible for systems, as appropriate

2.1.1 Areas of Review

This review plan section addresses the scoping and screening methodology for license renewal. As part of the integrated plant assessment specified in 10 CFR 54.21(a), an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify structures and components subject to an aging management review for license renewal. These are "passive," "long-lived" structures and components, as described in 10 CFR 54.21(a)(1), that are in systems, structures, and components (SSCs) within the scope of license renewal, as defined in 10 CFR 54.4(a). The identification of the systems, structures, and components within the scope of license renewal is called "scoping." For those systems, structures, and components within the scope of license renewal, the identification of "passive," "long-lived" structures and components that are subject to an aging management review is called "screening."

~~To verify that the applicant has properly implemented its methodology, the staff reviews the implementation results separately, the guidance in section 2.2 through 2.5 of this standard review plan, to confirm that there is no omission of the structures and components subject to an aging management review, following the guidance in Sections 2.2 through 2.5 of this standard review plan. To verify that the applicant has properly implemented its methodology, the staff reviews the implementation results separately following the guidance in sections 2.2 thru 2.5 of this standard review plan for license renewal.~~

The following areas relating to the applicant's scoping and screening methodology are reviewed:

2.1.1.1 Scoping

The methodology used by the applicant to implement the scoping requirements of 10 CFR 54.4, "Scope," is reviewed.

2.1.1.2 Screening

The methodology used by the applicant to implement the "screening" requirements of 10 CFR 54.21(a)(1) and (2) is reviewed.

2.1.2 Acceptance Criteria

The acceptance criteria for the areas of review are based on the following regulations:

- 10 CFR 54.4(a) as it relates to the identification of plant systems, structures and components within the scope of the rule.

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- 10 CFR 54.4(b) as it relates to the identification of the planned functions of plant systems, structures, and components determined to be within scope of the rule.
- 10 CFR 54.21(a)(1) and (a)(2) as it relates to the methods utilized by the applicant to identify plant structures and components subject to aging management review. Specific criteria necessary to meet the relevant requirements of §54.4(a), §54.4(b), §54.21(a)(1), and §54.21(a)(2) are as follows:

2.1.2.1 Scoping

The scoping methodology utilized by the applicant should be consistent with the process described in Section 3.0, "Identify the SSCs Within the Scope of License Renewal and Their Intended Functions," of NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 1 (Ref. 1) or the justification provided by the applicant for any exceptions should be found to be acceptable by the reviewer.

2.1.2.2 Screening

The "screening" methodology utilized by the applicant should be consistent with the process described in Section 4.1, "Identification of Structures and Components Subject to an Aging Management Review and Intended Functions," of NEI 95-10, Revision 1.

2.1.3 Review Procedures

Preparation for the review of the scoping and screening methodology employed by the applicant should include the following:

1. Review of the Commission's Safety Evaluation Report that was issued upon receipt of the operating license for the facility. This review is conducted for the purpose of familiarization with the principal design criteria for the facility and its current licensing basis (CLB), as defined in §54.3(a).
2. Review of Chapters 1 through 12 of the Updated Final Safety Analysis Report (UFSAR) and the facility's technical specifications for the purposes of familiarization with the facility design and the nomenclature that is applied to ~~structures, systems, structures,~~ and components within the facility (including the bases for such nomenclature). During this review, the ~~structures, systems, structures,~~ and components that are relied upon to remain functional during and after design bases events, as defined in §50.49(b)(1)(ii), for which the facility was designed to ensure that the functions described in §54.4(a)(1) are successfully accomplished should be identified. This review should also yield information regarding seismic Category I ~~structures, systems, and components~~ systems, structures, and components as defined in Regulatory Guide 1.29, "Seismic Design Classification" (Ref. 2). For a newer vintage plant, this information is typically contained in Section 3.2.1, "Seismic Classification," of the plant's UFSAR consistent with the Standard Review Plan (NUREG-0800) (Ref. 3).

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3. Review of Chapter 15 (or equivalent) of the UFSAR to identify the anticipated operational occurrences and postulated accidents that are explicitly evaluated in the accident analysis for the facility. During this review, the ~~structures, systems, and components~~ structures, systems, and components that are relied upon to remain functional during and after design basis ~~accidents~~ events for which the facility was designed to ensure that the functions described in §54.4(a)(1) are successfully accomplished should be identified. ~~However, events such as fire, floods, storms, earthquakes, tornadoes, or hurricanes are not explicitly considered in the review of anticipated operational occurrences and postulated accidents in Chapter 15 of the UFSAR, even though their effect could result in potential offsite exposures comparable to the applicable guideline exposures set forth in §50.34(a)(1) or §100.11. Therefore, information pertaining to these events and the structures, systems, and components relied upon to mitigate or cope with their effects will be found in other chapters of the UFSAR. Design basis events are defined as conditions of normal operation, including anticipated operational occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure the functions in 54.4(a)(1).~~

4. ~~Review of the facility's Probabilistic Risk Analysis (PRA) Summary Report that was prepared by the licensee in response to Generic Letter (GL) 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities—10 CFR 50.54(f)," dated November 23, 1988 (Ref. 4). This review should yield additional information regarding the impact of the Individual Plant Examination (IPE) on the CLB for the facility.~~

5. ~~Review of the results of facility's Individual Plant Examination of External Events (IPEEE) study conducted as a follow-up to the IPE performed as a result of GL 88-20.~~

46. Review of the facility's CLB records to assess the impact of any NRC orders, exemptions, or license conditions on the classification of the facility's systems, structures, ~~systems~~, and components.

57. Review of the applicant's docketed correspondence related to the following regulations: (a) 10 CFR 50.48, "Fire Protection" (FP), (b) 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants" (EQ), 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events" (PTS), 10 CFR 50.62, "Requirements for Reduction of Risk from Anticipated Transients without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants" (ATWS), and 10 CFR 50.63, "Loss of All Alternating Current Power" (SBO). PTS is only applicable to pressurized water reactor (PWR) plants and, as specified in the regulation, an evaluation in accordance with RG 1.154 (Ref. 5) for boiling water reactor (BWR) ~~plants is not required. plants is not required. no SSCs will be in scope due to PTS.~~ Typically, no SSC's fall within the scope of 10CFR54 due to PTS.

2.1.3.1 Scoping

Once the information delineated above has been gathered, the reviewer reviews the applicant's methodology to determine whether its depth and breadth is sufficiently comprehensive to identify the systems, structures, and components within the scope of license renewal and the structures and components requiring an aging management review in a manner consistent with the facility's CLB. Because "[t]he

CLB represents the evolving set of requirements and commitments for a specific plant that are modified as necessary over the life of a plant to ensure continuation of an adequate level of safety" (60 FR22465), the systems, structures and components that make up an applicant's current licensing basis (CLB) should be considered as the initial input into the scoping process. To determine the safety-related systems, structures and components that are required under 10 CFR 54.4 (a)(1), an applicant needs to identify those systems, structures and components that are relied upon to remain functional during and following a design-basis event, consistent with the CLB of the facility. §50.49 defines design-basis events as conditions of normal operation, including anticipated operational occurrences, design-basis accidents, external events and natural phenomena for which the plant must be designed to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100.-

~~Typically, events for which the plant must be designed include those functions, and the associated systems, structures, and components relied upon to fulfill the requirements of regulations, orders, license conditions, exemptions, and technical specifications. This includes all plant specific design bases (as defined in §50.2, "Definitions.") information found throughout the UFSAR, and is not limited to the Accident Analysis Chapter of the UFSAR. Therefore, to fulfill the scoping requirement under 10 CFR 54.4(a)(1), an applicant needs to identify the design basis events, the associated functions, and the resulting systems, structures, and components within its UFSAR, applicable NRC regulations, license conditions, Commission orders, and exemptions (that are in effect) that are relied upon to remain functional during and following design basis events for which the plant must be designed to ensure the functions under 10 CFR 54.4 (a)(1)(i), (ii), and (iii).~~

The methodology for fulfilling the scoping requirement under 10 CFR 54.4(a)(1) may vary from plant to plant, dependent upon the plant's CLB. A plant may choose to identify its design basis events, the associated functions, and resulting SCCs required to meet the three criteria of 10 CFR 54.4(a)(1)(i), (ii), and (iii). This may not be necessary, however, because usually plants will have a list of SCCs that meet the same criteria as those in 10 CFR 54.4(a)(1)(i), (ii), and (iii) that has been used to comply with previous regulations (such as 10 CFR 50.49) that use the same scoping criteria. Additionally, Regulatory Guide 1.29 required that "all plant features necessary to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100" be designed for a Safe Shutdown Earthquake." Identification of SCCs that comply with Regulatory Guide 1.29, if applicable to a specific plant, or other applicable CLB commitments would allow for an alternative approach to be used such as 10CFR100, Appendix A, for explicitly identifying design basis events and associated functions.

With respect to technical specifications, the Commission states (60 FR 22467) the following:

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"The Commission believes that there is sufficient experience with its policy on technical specifications to apply that policy generically in revising the license renewal rule consistent with the Commission's desire to credit existing regulatory programs. Therefore, the Commission concludes that the technical specification limiting conditions for operation scoping category is unwarranted and has deleted the requirement that identifies systems, structures, and components with operability requirements in technical specifications as being within the scope of the license renewal review."

Therefore, an applicant need not consider its technical specifications, and applicable limiting conditions of operation when scoping for license renewal. This is not to say that the events, functions and systems, structures, or components within the applicant's technical specifications can be excluded from the scope of license renewal solely based on its inclusion in the technical specifications. Those systems, structures, and components within an applicant's technical specifications that are relied upon to remain functional during a design basis event as identified within the applicant's UFSAR, applicable NRC regulations, license conditions, Commission orders, and exemptions may need to be included within the scope of license renewal.

~~For NRC bulletins, generic letters, enforcement actions, licensee commitments, staff safety evaluations, and license event reports that make up the remainder of an applicant's CLB, many of the associated systems, structures, and components need not be considered under license renewal. Generic communications, safety evaluations, and other documents found on the docket are not typically considered regulatory requirements, and commitments made by licensee to address any associated safety concerns are not typically considered design requirements. However, any generic communication, safety evaluation, or licensee commitment that specifically identifies or describes a function associated with a system(s), structure(s), and/or component(s) necessary to fulfill the requirement of a particular regulation, order, license condition, and/or exemption may need to be considered when scoping for license renewal. For example, NRC Bulletin 88-11, "Pressurizer Surge Line Thermal Stratification," states the following:~~

~~"The licensing basis according to 10 CFR 50.55a for all PWRs requires that the licensee meet the American Society of Mechanical Engineers Boiler and Pressure Vessel Code Sections III and XI and to reconcile the pipe stresses and fatigue evaluation when any significant differences are observed between measured data and the analytical results for the hypothesized conditions. Staff evaluation indicates that the thermal stratification phenomenon could occur in all PWR surge lines and may invalidate the analyses supporting the integrity of the surge line. The staff's concerns include unexpected bending and thermal striping (rapid oscillation of the thermal boundary interface along the piping inside surface) as they affect the overall integrity of the surge line for its design life (e.g., the increase of fatigue)."~~

~~Therefore, this bulletin specifically describes the requirements associated with 10 CFR 50.55a and function(s) specifically related to this regulation that needs to be considered in the scoping process for license renewal.~~

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An applicant may take an approach in scoping and screening which combines components which are similar with other systems. For example containment isolation valves from various systems may be identified as a system for license renewal.

Staff from branches responsible for systems may be requested to assist in reviewing the plant design basis and intended function(s), as necessary.

The reviewer should verify that the applicant's scoping and screening methods document the actual information sources used (e.g., those identified in Table 2.1-1).

Tables 2.1-2 and 2.1-3 contain specific staff guidance on certain subjects of scoping and screening, respectively.

2.1.3.1.1 Safety-Related

~~The reviewer needs to ascertain how, and to what extent, the information in the GLB for the facility was incorporated by the applicant in its methodology~~ applicant's methodology is reviewed to ensure that safety related systems, structures and components are identified to satisfactorily accomplish any of the intended functions identified in §54.4(a)(1). Specifically, the reviewer needs to review the application as well as all other relevant sources of information ~~outlined above (e.g., available O-List, Maintenance Rule, direct references to Design Basis Events)~~ to identify the set of plant-specific conditions of normal operation (including anticipated operational occurrences), design basis accidents (typically described in Chapter 15 of the UFSAR), external events (e.g., ~~those analyzed in the IPEEE for the facility~~), and natural phenomena (e.g., earthquakes, tornados, floods, etc.) for which the plant must be designed to ensure the following functions:

- (i) The integrity of the reactor coolant pressure boundary;
- (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- (iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in §50.34(a)(1) or §100.11 of this chapter, as applicable.

2.1.3.1.2 Non-Safety-Related

The applicant's methodology is reviewed to ensure that non-safety related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in §54.4(a)(1) are identified as within the scope of license renewal.

The scoping criterion under 10 CFR 54.4(a)(2), in general, is intended to identify those non-safety-related SSCs that support safety related functions. More specifically, this scoping criterion requires an applicant to identify all non-safety-related SSCs whose failure could prevent satisfactory accomplishments of the applicable functions of the SSCs identified under 10 CFR 54.4(a)(1). The SOC (60FR22467), Section III.c (iii) contains a clarification of the Commission's intent for this requirement in the following statement:

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"The inclusion of non-safety-related systems, structures, and components whose failure could prevent other systems, structures, and components from accomplishing a safety function is intended to provide protection against safety function failure in cases where the safety-related structure or component is not itself impaired by age-related degradation but is vulnerable to failure from the failure of another structure or component that may be so impaired."

In addition, the SOC, Section III.c (iii) provides the following guidance to assist an applicant in determining the extent to which failures need to be considered when applying this scoping criterion:

"Consideration of hypothetical failures that could result from system interdependencies, that are not part of the current licensing bases and that have not been previously experienced is not required. . . . However, for some license renewal applicants, the Commission cannot exclude the possibility that hypothetical failures that are part of the CLB may require consideration of second-, third-, or fourth-level support systems."

Therefore, to satisfy the scoping criterion under 10 CFR 54.4(a)(2), an applicant needs to identify those nonsafety-related SSCs (including ~~certain~~ second-, third-, or fourth-level support systems) whose failures ~~can be~~ are considered in the CLB and could prevent the satisfactory accomplishment of the safety-related function identified under 10 CFR 54.4(a)(1). In order to identify such systems, an applicant would consider those failures identified in (1) the documentation that makes up its CLB, (2) plant-specific operating experience, and (3) industry-wide operating experience that is specifically applicable to its facility. The applicant need not consider hypothetical failures that are not part of the CLB, and that have not been previously experienced.

In determining the nonsafety-related SSCs that are within the scope of the rule, the reviewer must evaluate the applicant's CLB to identify those SSC's that fall within the scope of the rule. ~~an applicant, For example, needs to consider including such SSCs as the following: (1) the portion of a fire protection system specified in the applicant's UFSAR that supplies water to the refueling floor (even if not required by the FP Plan) that and is relied upon in a design basis accident analysis as an alternate source of cooling water that can be used to mitigate the consequences from the loss of spent fuel pool cooling; (2) a nonsafety related, non-seismically qualified building whose intended function as described in the applicant's CLB is to protect failure could result in the failure of a tank that is relied upon as an alternate source of cooling water needed to mitigate the consequences of a design basis event; and (3) a segment of nonsafety related piping identified as a Seismic II/I component in the applicant's CLB. and (3) a segment of nonsafety related piping identified as a Seismic II/I component in the applicant's CLB. [Seismic II/I components are those non-seismic Category I systems, structures, and components interacting with seismic Category I systems, structures, and components as described in Regulatory Position C.2 of RG 1.29 (Ref. 2).]~~

The reviewer must also ensure that the applicant has properly identified non-safety related portions of piping system or systems whose failure could prevent satisfactory accomplishment of any of the functions identified in §54.4(a)(1) as part of CLB. For

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~~example, the safety classification of a pipe may change throughout its course in the plant, such as at valve locations. In these instances, the applicant should identify the safety-related portion of the pipe as within the scope of license renewal under 10 CFR 54.4(a)(1). However, the entire pipe run, up to and including associated piping anchors may have been analyzed as part of the CLB to establish that it could withstand design basis event loads. If this is the case, a failure in the remainder of the pipe run or in the associated piping anchors, could render the safety-related portion of the piping unable to perform its intended function under CLB design conditions. Therefore, the reviewer must verify that the applicant's methodology would include (1) the remaining non-safety-related piping up to its anchors, and (2) the associated piping anchors, as within the scope of license renewal under 10 CFR 54.4(a)(2).~~

On the basis of the staff's experience to date, it is important to clarify that the scoping criterion under 10 CFR 54.4(a)(2) specifically applies to those functions "identified in paragraphs (a)(1)(i), (ii), and (iii)" of 10 CFR 54.4. An applicant need not extend this requirement to the scoping criteria under 10 CFR 54.4(a)(3), as is discussed below.

2.1.3.1.3 "Regulated Events"

The applicant's methodology is reviewed to ensure that systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the requirements of the fire protection (FP), environmental qualification (EQ), pressurized thermal shock (PTS), anticipated transients without scram (ATWS), and station blackout (SBO) regulations are identified. The reviewer should review the applicant's docketed correspondence associated with compliance of the facility with these regulations.

The scoping criteria under 10 CFR 54.4(a)(3) states that an applicant must consider *"[a]ll systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the [specified] Commission regulations[.]"* In addition, the SOC, Section III.c(iii) states that the Commission intended to limit the potential for unnecessary expansion of the review for SSCs that meet the scoping criteria under 10 CFR 54.4(a)(3), and provides additional guidance that qualifies what is meant by *"those SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission regulations. . ."* in the following statement:

"[T]he Commission intends that this [referring to 10 CFR 54.4(a)(3)] scoping category include all systems, structures, and components whose function is relied upon to demonstrate compliance with these Commission's regulations. An applicant for license renewal should rely on the plant's current licensing bases, actual plant-specific experience, industry-wide operating experience, as appropriate, and existing engineering evaluations to determine those systems, structures, and components that are the initial focus of license renewal."

Therefore, all SSCs that are relied upon in the plant's CLB (as defined in 10 CFR 54.3), plant-specific experience, industry-wide experience (as appropriate) and existing engineering analysis safety analyses or plant evaluations to perform a function that demonstrates compliance with ~~and operation within~~ the Commission's regulations identified under 10 CFR 54.4(a)(3) are required to be included within the scope of the rule. For example, if a nonsafety-related diesel generator is required for

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safe shutdown under the fire protection plan, the diesel generator and all SSCs specifically required for that diesel to comply with ~~and operate within the~~ Commission's regulations based on the applicant's design specifications for that diesel shall be included within the scope of license renewal under 10 CFR 54.4 (a)(3). This may include, but should not be limited to the cooling water system or systems required for operability, the diesel support pedestal, and any applicable power supply cable specifically required for safe shutdown in the event of a fire.

In addition, the last sentence of the second paragraph in the SOC, Section III.c (iii) provides the following guidance for limiting the application of the scoping criteria under 10 CFR 54.4(a)(3) as it applies to the use of hypothetical failures:

"Consideration of hypothetical failures that could result from system interdependencies, that are not part of the current licensing bases and that have not been previously experienced is not required."

The SOC does not provide any additional guidance relating to the use of hypothetical failures or the need to consider second-, third-, or fourth-level support systems for scoping under 10 CFR 54.4(a)(3). Therefore, in the absence of this guidance, an applicant need not consider hypothetical failures or second-, third-, or fourth-level support systems in determining the SSCs within the scope of the rule required by the applicable Commission regulations. For example, if a nonsafety-related diesel generator is only relied upon to remain functional to demonstrate compliance with the Commission regulations, an applicant may not need to consider the following SSCs: (1) an alternate/backup cooling water system, (2) the diesel generator non-seismically qualified building walls, or (3) an overhead segment of non-seismically qualified piping (in a Seismic II/I configuration). This guidance is not intended to exclude any support system (identified by an applicant's CLB, actual plant-specific experience, industry-wide experience, as applicable, safety analysis or existing engineering plant evaluations) that is specifically required for compliance with or operation within the applicable Commission regulation. For example, if a nonsafety-related diesel generator (required to demonstrate compliance with an applicable Commission regulation) specifically requires a second cooling system to cool the diesel generator Jacket Water Cooling System for the diesel to be operable, then both cooling systems must be included within the scope of the rule under 10 CFR 54.4(a)(3).

The applicant is required to identify the systems, structures, and components whose functions are relied on to demonstrate compliance with these regulated events (that is, whose functions were credited in the analysis or evaluation). Mere mention of a system, structure, or component in the analysis or evaluation does not constitute support of an intended function as required by the regulation.

For EQ, the reviewer verifies that the applicant has indicated that the EQ equipment is that equipment already identified by the licensee under 10 CFR 50.49(b). That is, equipment relied upon in safety analyses or plant evaluations to demonstrate compliance with the Commission's regulations for environmental qualification (§50.49).

The PTS regulation is only applicable to pressurized water reactors (PWRs). If the renewal application is for a PWR and the applicant relies on a Regulatory Guide 1.154 analysis to satisfy 10 CFR 50.61 as specified in the applicant's CLB, the reviewer

verifies that the applicant's methodology would include systems, structures, and components relied on in that analysis as within the scope of license renewal. Most applicants will not have performed an RG 1.154 analysis.

For SBO, the reviewer verifies that the applicant's methodology would include those systems, structures, and components relied upon during the "coping duration" phase of an SBO event (Ref. 6).

2.1.3.2 Screening

Once the systems, structures, and components within the scope of license renewal have been identified, the next step in the process is the determination of which structures and components are subject to an aging management review, i.e., "screening (Ref. 1). Note that the phrase "structures and components" applies to matters involving the integrated plant assessment (IPA) required by §54.21(a) because the aging management review required by the IPA should be a component and structure level review rather than a more general system level review (60FR22462 Footnote No. 1).

2.1.3.2.1 "Passive"

The reviewer reviews the applicant's methodology to ensure that "passive" structures and components are identified as those that perform their intended functions without moving parts or a change in configuration or properties in accordance with §54.21(a)(1)(i). The reviewer verifies that the applicant's proposed screening methodology includes consideration of structures and component intended function(s) as typified in Table 2.1-4 of this review plan section.

~~The license renewal rule focuses on "passive" structures and components because structures and components that have passive functions generally do not have performance and condition characteristics that are as readily "observable" as those that perform active functions. "Passive" structures and components, for the purpose of the license renewal rule, are those that perform an intended function, as described in 10 CFR 54.4, without moving parts or without a change in configuration or properties (Ref. 7). The description of "passive" may also be interpreted to include structures and components that do not display "a change in state." 10 CFR 54.21(a)(1)(i) provides specific examples of structures and components that meet and not meet the criterion in 10 CFR 54.21(a)(1)(i).~~

~~For example, a pump or valve has moving parts or an electrical relay can change its configuration. Therefore, the performance or condition of these components is readily monitored and would not be captured by this description. The description of "passive" may also be interpreted to include structures and components that do not display "a change in state", e.g., a battery can change its electrical properties when discharging thus demonstrating a "change in state." Batteries, therefore, would not be screened in under this criterion. Table 2.1-5 provides a list of typical structures and components identifying whether they meet 10 CFR 54.21(a)(1)(i).~~

~~Intended functions are delineated for license renewal in 10 CFR 54.4(b). Table 2.1-4 is a list of typical "passive" structure and component intended functions.~~

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~~Table 2.1-5 is a list of typical structures and components, identifying whether they meet 10 CFR 54.21(a)(1)(i).~~

10 CFR 54.21(a)(1)(i) explicitly excludes instrumentation, such as pressure transmitters, pressure indicators, and water level indicators, from an aging management review. If an applicant determines that certain structures and components listed in Table 2.1-5 as meeting 10 CFR 54.21(a)(1)(i) do not meet that requirement for its plant, the reviewer reviews the applicant's basis for that determination.

2.1.3.2.2 "Long-Lived"

The applicant's methodology is reviewed to ensure that "long-lived" structures and components are identified as those that are not subject to periodic replacement based on a qualified life or on a specified time period. Passive structures and components that are not replaced based on a qualified life or on specified time period are considered for an aging management review.

Replacement programs may be based on vendor recommendations, plant experience, or any means, which establishes a specific replacement frequency under a controlled program. ~~Structures and components with qualified lives or replacement intervals greater than or equal to 40 years are considered to be "long-lived."~~ Structures or components replaced either on a specified interval based upon the qualified life of the structure or component or periodically in accordance with a specified time period, are deemed to not be long lived.

A qualified life does not necessarily have to be based on calendar time. A qualified life based on run time or cycles are examples of qualified life references that are not based on calendar time (Ref. 6).

Structures and components that are replaced based on performance or condition are not generically excluded from an aging management review. ~~However, performance or condition monitoring may be evaluated later in the IPA as programs to ensure functionality during the period of extended operation.~~ An applicant may provide site specific justification for a performance or condition monitoring program to exclude structures or components from aging management review. [Reference 60CFR22.478]

2.1.4 Evaluation Findings

When the review of the information in the license renewal application is complete and the reviewer has determined that it is satisfactory and in accordance with the acceptance criteria in Subsection 2.1.2 above, a statement of the following type should be included in the staff's safety evaluation report:

The staff evaluation concludes that there is reasonable assurance that the applicant's methodology for identifying the systems, structures, and components within the scope of license renewal and the structures and components requiring an aging management review is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.1.5 Implementation

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Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.1.6 References

1. NEI 95-10, Rev. 1, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Nuclear Energy Institute, January 2000.
2. Regulatory Guide 1.29, Rev. 2, "Seismic Design Classification," September 1978.
3. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," July 1981.
4. Generic Letter (GL) 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities- 10 CFR 50.54(f)," dated November 23, 1988.
5. Regulatory Guide 1.154, "Format and Content of Plant-Specific Pressurized Thermal Shock Safety Analysis Reports for Pressurized Water Reactors," January 1987.
6. Letter from Dennis M. Crutchfield of NRC to Charles H. Cruse of Baltimore Gas and Electric Company dated April 4, 1996.
7. ANS-9, "Glossary of Terms in Nuclear Science and Technology," American Nuclear Society, 1986.
8. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated August 5, 1999.
9. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated March 10, 2000.
10. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated November 19, 1999.
- ~~2.1-11 Draft 4/21/00~~
11. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated September 19, 1997.
12. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated April 27, 1999.
13. February 17, 1999. Letter from Duke Energy Corporation (signed by W. McCollum) forwarding responses to RAIs regarding license renewal for Oconee Nuclear Station, Units 1, 2 and 3.

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Table 2.1-1. Sample Listing of Potential Information Sources

| |
|---|
| • Verified databases (A database that is subject to administrative controls to assure and maintain the integrity of the stored data or information) |
| • Master equipment lists (including NSSS vendor listings) |
| • Q-lists |
| • Updated Final Safety Analysis Reports |
| • Piping and instrument diagrams (P&IDs) |
| • Electrical one line or schematic drawings |
| • NRC Orders, Exemptions, or License Conditions for the facility |
| • Operations and training handbooks |
| • Design basis documents |
| • General arrangement or structural outline drawings |
| • Quality Assurance plan or program |
| • Probabilistic Risk Assessment summary report |
| • Maintenance Rule compliance documentation |
| • Design Basis Event evaluations (including plant-specific 10 CFR 50.59 evaluation procedures) |
| • Emergency operating procedures |
| • Docketed correspondence |
| • System interaction commitments |
| • Technical Specifications |
| • Environmental Qualification program documents |
| • Regulatory compliance reports (Including Safety Evaluation Reports) |

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Table 2.1-2. Specific Staff Guidance on Scoping

| Subject Issue | Guidance |
|-----------------------|---|
| Commodity groups | The applicant may also group like structures and components into commodity groups. Examples of commodity groups are pipe supports and cable trays. The basis for grouping structures and components can be determined by such characteristics as similar design, similar materials of construction, similar aging management practices, and similar environments. If the applicant uses commodity groups, the reviewer verifies that the applicant has described the basis for the groups. |
| Complex assemblies | There are some structures and components that, when combined, are considered a complex assembly (for example, diesel generator starting air skids or heating, ventilating, and air conditioning refrigerant units). For purposes of performing an aging management review, it is important to clearly establish the boundaries of review. An applicant should establish the boundaries for such assemblies by identifying each structure and component that makes up the complex assembly and determining whether or not each structure and component is subject to an aging management review (Ref. 1). |
| Hypothetical failures | For 10 CFR 54.4(a)(2), an applicant should consider those failures identified in (1) the documentation that makes up its CLB, (2) plant-specific operating experience, and (3) industry-wide operating experience that is specifically applicable to its facility. <u>The applicant need not consider hypothetical failures that are not part of the CLB and that have not been previously experienced.</u> For example, an applicant should consider including: (1) the portion of a fire-protection system <u>specified in the applicant's UFSAR</u> that supplies water to the refueling floor <u>(even if not required by its Fire Protection Plan)</u> that is relied upon in a design basis accident analysis as an alternate source of cooling water that can be used to mitigate the consequences from the loss of spent fuel pool cooling, (2) a non-safety-related, non-seismically qualified building whose <u>intended function as described in the applicant's CLB is to protect</u> failure could result in the failure of a tank that is relied upon as an alternate source of cooling water needed to mitigate the consequences of a DBE, and (3) a segment of non-safety-related piping identified as a Seismic II/I component in the applicant's CLB (Ref. 8). |
| Cascading | For 10 CFR 54.4(a)(3), an applicant need not consider hypothetical failures or second-, third, or fourth-level support systems. For example, if a non-safety related diesel generator is only relied upon to remain functional to demonstrate compliance with the Commission regulations, an applicant may not need to consider: (1) an alternate/backup cooling water system, (2) the diesel generator non-seismically qualified building walls, or (3) an overhead segment of non-seismically qualified piping (in a Seismic II/I configuration). An applicant may not exclude any support system (identified by its CLB, actual plant-specific experience, industry-wide experience, as applicable, or existing engineering evaluations) that is specifically required for compliance with or operation within applicable Commission regulation. For example, if a non safety-related diesel generator (required to demonstrate compliance with an applicable Commission regulation) specifically requires a second cooling system to cool the diesel generator Jacket Water Cooling System for the diesel to be operable, then both cooling systems must be included within the scope of the rule (Ref. 8). |

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Table 2.1-3. Specific Staff Guidance on Screening

| Subject Issue | Guidance |
|--------------------------------------|---|
| Consumables | Consumables may be divided into the following four categories for the purpose of license renewal: (a) packing, gaskets, component seals, and O-rings; (b) structural sealants; (c) oil, grease, and component filters; and (d) system filters, fire extinguishers, fire hoses, and air packs. The consumables in both categories (a) and (b) are considered as subcomponents and are not explicitly called out in the scoping and screening procedures. Rather, they are implicitly included at the component level (i.e., if a valve is identified as being in scope, a seal in that valve would also be in scope as a subcomponent of that valve). Thus, <u>for category (a) these consumables are to be considered in the aging management review as part of the associated component. For category (b), structural sealants may perform functions without moving parts or change in configuration and are not typically replaced. Thus it is expected that the applicant's structural aging management program will address these items with respect to an aging management review program on a plant specific basis.</u> The consumables in categories (c) are short-lived and periodically replaced and can be excluded from an aging management review on that basis. Likewise, the consumables that fall within category (d) are typically replaced based on condition and may be excluded on a plant-specific basis, subject to justification by the applicant (Ref. 9). |
| Heat exchanger intended functions | Both the pressure boundary and heat transfer functions for heat exchangers should be considered, because heat transfer may be an <u>primary-intended</u> safety function of these components. There may be a unique aging effect associated with different materials in the heat exchanger parts that are associated with the heat transfer function and not the pressure boundary function. The staff would expect that the <u>programs-activities</u> that effectively manage aging effects of the pressure boundary function can, in conjunction with the <u>procedures-activities</u> for monitoring heat exchanger performance, effectively manage aging effects applicable to the heat transfer function (Ref. 10). |
| Multiple functions | Structures and components may have multiple functions, but only the intended function(s) as delineated in 10 CFR 54.4(b) are to be reviewed for license renewal. Further, some functions of "active" components may meet the criteria of the "passive" description. For example, although a pump or a valve has some moving parts, a pump casing or valve body performs a pressure retaining function without moving parts. A pump casing or a valve body meets this description and would therefore be considered for an aging management review. However, the moving parts of the pump, such as the pump impeller, would not be subject to the aging management review. The reviewer verifies that the applicant has considered multiple functions in identifying structure and component intended function(s). |
| Piece-parts | An applicant does not have to perform a renewal review of structures and components at a piece part level. <u>HoweverFor example, if bolting contributes to the performance of component intended function with moving parts, or with a change in configuration or properties, the bolting is not subject to an aging management review for renewal. Degradation of such bolting would be revealed through the active performance of the component, for example, bolting to assemble a pump impeller.</u> |
| Piece-partsPressure Boundary Bolting | An applicant does not have to perform a renewal review of structures and components at a piece part level. However, there are instances where an aging management review should be considered for certain components. Bolting is an example. If bolting contributes to the performance of a component intended function without moving parts, or without a change in configuration or properties, the bolting is subject to an aging management |

| | |
|--|---|
| | <p>review for renewal. Examples are: bolting on a pressurizer manway cover, valve bonnet-to-body bolting, bolting on a pump support, and diesel generator embedment plate anchors. However, if bolting contributes to the performance of component intended function with moving parts, or with a change in configuration or properties, the bolting is not subject to an aging management review for renewal. Degradation of such bolting would be revealed through the active performance of the component, for example, bolting to assemble a pump impeller.</p> |
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Table 2.1-4. Typical "Passive" Structure and Component Intended Functions

| | |
|--|--|
| Components | |
| Provide pressure-retaining boundary so that sufficient flow at adequate pressure is delivered | |
| Provide filtration | |
| Provide flow restriction (throttle) | |
| Provide structural support to safety-related components | |
| Provide electrical connections to specified sections of an electrical circuit to deliver system voltage, and current or signals | |
| Provide heat transfer | |
| Structures | |
| Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant | |
| Provide shelter/protection to safety-related components | |
| Provide structural and / or functional support to safety-related equipment | |
| Provide flood protection barrier (internal and external flooding event) | |
| Provide pressure boundary or essentially leak tight barrier to protect public health and safety in the event of any postulated design basis events. | |
| Provide spray shield or curbs for directing flow (e.g. safety injection flow to containment sump) | |
| Provide shielding against radiation | |
| Provide missile barrier (internally or externally generated) | |
| Provide shielding against high energy line breaks | |
| Provide structural support to nonsafety-related components whose failure could prevent satisfactory accomplishment of any of the required safety-related functions | |
| Provide pipe whip restraint | |
| Provide path for release of filtered and unfiltered gaseous discharge | |
| Provide source of cooling water for plant shutdown. | |
| Provide heat sink during SBO or design basis accidents. | |

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Table 2.1-5. Typical Structures, Components, and Commodity Groups, and 10 CFR 54.21(a)(1)(i) Determinations for Integrated Plant Assessment

| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|--|---|---|
| 1 | Structures | Category I Structures | Yes |
| 2 | Structures | Primary Containment Structure | Yes |
| 3 | Structures | Intake Structures | Yes |
| 4 | Structures | Intake Canal | Yes |
| 5 | Structures | Other Non-Category I Structures Within the Scope of License Renewal | Yes |
| 6 | Structures | Equipment Supports and Foundations | Yes |
| 7 | Structures | Structural Bellows | Yes |
| 8 | Structures | Controlled Leakage Doors | Yes |
| 9 | Structures | Penetration Seals | Yes |
| 10 | Structures | Compressible Joints and Seals | Yes |
| 11 | Structures | Fuel Pool and Sump Liners | Yes |
| 12 | Structures | Concrete Curbs | Yes |
| 13 | Structures | Offgas Stack and Flue | Yes |
| 14 | Structures | Fire Barriers | Yes |
| 15 | Structures | Pipe Whip Restraints and Jet Impingement Shields | Yes |
| 16 | Structures | Electrical and Instrumentation and Control Penetration Assemblies | Yes |
| 17 | Structures | Instrument Racks, Frames, Panels, and Enclosures | Yes |
| 18 | Structures | Electrical Panels, Racks, Cabinets, and Other Enclosures | Yes |
| 19 | Structures | Cable Trays and Supports | Yes |
| 20 | Structures | Conduit | Yes |
| 21 | Structures | Tube Track | Yes |
| 22 | Structures | Reactor Vessel Internals | Yes |
| 23 | Structures | ASME Class 1 Hangers and Supports | Yes |
| 24 | Structures | Non-ASME Class 1 Hangers and Supports | Yes |
| 25 | Structures | Snubbers | No |
| 26 | Reactor Coolant Pressure Boundary Components (Note: the components of the RCPB are | ASME Class 1 Piping | Yes |

| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|---|--|--|
| | defined by each plant's CLB and site specific documentation) | | |
| 27 | <u>Reactor Coolant Pressure Boundary Components</u> | Reactor Vessel | Yes |
| 28 | <u>Reactor Coolant Pressure Boundary Components</u> | Reactor Coolant Pumps | Yes (Casing) |
| 29 | <u>Reactor Coolant Pressure Boundary Components</u> | Control Rod Drives | No |
| 30 | <u>Reactor Coolant Pressure Boundary Components</u> | Control Rod Drive Housing | Yes |
| 31 | <u>Reactor Coolant Pressure Boundary Components</u> | Steam Generators | Yes |
| 32 | <u>Reactor Coolant Pressure Boundary Components</u> | Pressurizers | Yes |
| 33 | <u>Non-Class 1 Piping Components</u> | Underground Piping | Yes |
| 34 | <u>Non-Class 1 Piping Components</u> | Piping in Low Temperature Demineralized Water Service | Yes |
| 35 | <u>Non-Class 1 Piping Components</u> | Piping in High Temperature Single Phase Service | Yes |
| 36 | <u>Non-Class 1 Piping Components</u> | Piping in Multiple Phase Service | Yes |
| 37 | <u>Non-Class 1 Piping Components</u> | Service Water Piping | Yes |
| 38 | <u>Non-Class 1 Piping Components</u> | Low Temperature Gas Transport Piping | Yes |
| 39 | <u>Non-Class 1 Piping Components</u> | Stainless Steel Tubing | Yes |
| 40 | <u>Non-Class 1 Piping Components</u> | Instrument Tubing | Yes |
| 41 | <u>Non-Class 1 Piping Components</u> | Expansion Joints | Yes |
| 42 | <u>Non-Class 1 Piping Components</u> | Ductwork | Yes |
| 43 | <u>Non-Class 1 Piping Components</u> | Sprinklers Heads | Yes |

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| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|---|---|--|
| 44 | <u>Non-Class 1 Piping Components</u> | Miscellaneous Appurtenances (includes fittings, couplings, reducers, elbows, thermowells, flanges, fasteners, welded attachments, etc.) | Yes |
| 45 | <u>Pumps</u> | ECCS Pumps | Yes (Casing) |
| 46 | <u>Pumps</u> | Service Water and Fire Pumps | Yes (Casing) |
| 47 | <u>Pumps</u> | Lube Oil and Closed Cooling Water Pumps | Yes (Casing) |
| 48 | <u>Pumps</u> | Condensate Pumps | Yes (Casing) |
| 49 | <u>Pumps</u> | Borated Water Pumps | Yes (Casing) |
| 50 | <u>Pumps</u> | Emergency Service Water Pumps | Yes (Casing) |
| 51 | <u>Pumps</u> | Submersible Pumps | Yes (Casing) |
| 52 | <u>Turbines</u> | Turbine Pump Drives (excluding pumps) | Yes (Casing) |
| 53 | <u>Turbines</u> | Gas Turbines | Yes (Casing) |
| 54 | <u>Turbines</u> | Controls (actuator and overspeed trip) | No |
| 55 | <u>Engines</u> | Fire Pump Diesel Engines | No |
| 56 | <u>Emergency Diesel Generators</u> | Emergency Diesel Generators | No |
| 57 | <u>Heat Exchangers</u> | Condensers | Yes |
| 58 | <u>Heat Exchangers</u> | HVAC Coolers | Yes |
| 59 | <u>Heat Exchangers</u> | Primary Water System Heat Exchangers | Yes |
| 60 | <u>Heat Exchangers</u> | Treated Water System Heat Exchangers | Yes |
| 61 | <u>Heat Exchangers</u> | Closed Cooling Water System Heat Exchangers | Yes |
| 62 | <u>Heat Exchangers</u> | Lubricating Oil System Heat Exchangers | Yes |
| 63 | <u>Heat Exchangers</u> | Raw Water System Heat Exchangers | Yes |
| 64 | <u>Heat Exchangers</u> | Containment Atmospheric System Heat Exchangers | Yes |
| 65 | <u>Motors</u> | ECCS and Emergency Service Water Pump Motors | No |
| 66 | <u>Motors</u> | Small Motors | No |
| 67 | <u>Miscellaneous Process Components</u> | Gland Seal Blower | No |
| 68 | <u>Miscellaneous</u> | Recombiners | * |

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| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|---|--|---|
| | <u>Process Components</u> | | |
| 70 | <u>Miscellaneous Process Components</u> | Strainers | Yes |
| 71 | <u>Miscellaneous Process Components</u> | Rupture Disks | Yes |
| 72 | <u>Miscellaneous Process Components</u> | Steam Traps | Yes |
| 73 | <u>Miscellaneous Process Components</u> | Restricting Orifices | Yes |
| 74 | <u>Miscellaneous Process Components</u> | Air Compressor | No |
| 75 | <u>Electrical and I&C Instrumentation</u> | <u>Alarm Units</u> (e.g., fire detection devices) <u>Solenoid Operator</u> | No |
| 76 | <u>Electrical and I&C Instrumentation</u> | <u>Analyzers</u> (e.g., gas analyzers, conductivity analyzers) <u>Differential Pressure Indicators</u> | No |
| 77 | <u>Electrical and I&C Instrumentation</u> | <u>Annunciator</u> (e.g., lights, buzzers, alarms) <u>Differential Pressure Indicating Switches</u> | No |
| 78 | <u>Electrical and I&C Instrumentation</u> | <u>Batteries</u> <u>Differential Pressure Switches</u> | No |
| 79 | <u>Electrical and I&C Instrumentation</u> | <u>Cables and Connections, Bus, electrical portions of Electrical and I&C Penetration Assemblies</u> (e.g., electrical penetration assembly cables and connections, connectors, electrical splices, terminal blocks, power cables, control cables, instrument cables, insulated cables, communication cables, uninsulated ground conductors, transmission conductors, isolated-phase bus, nonsegregated-phase bus, segregated-phase bus, switchyard bus) <u>Differential Pressure Transmitters</u> | NoYes |

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| <u>Item</u> | <u>Category</u> | <u>Structure, Component, or Commodity Group</u> | <u>Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No)</u> |
|-------------|---|--|--|
| 80 | <u>Electrical and I&C Instrumentation</u> | <u>Chargers, Converters, Inverters</u> (e.g., <u>converters-voltage/current,</u> <u>converters-voltage/pneumatic,</u> <u>battery chargers/inverters,</u> <u>motor-generator sets</u>) <u>Pressure</u> <u>Indicators</u> | No |
| 81 | <u>Electrical and I&C Instrumentation</u> | <u>Circuit Breakers</u> (e.g., <u>air circuit breakers, molded</u> <u>case circuit breakers, oil-filled circuit</u> <u>breakers</u>) <u>Pressure-Indicator</u> <u>Switches</u> | No |
| 82 | <u>Electrical and I&C Instrumentation</u> | <u>Communication Equipment</u> (e.g., <u>telephones, video or audio</u> <u>recording or playback equipment,</u> <u>intercoms, computer terminals,</u> <u>electronic messaging, radios,</u> <u>transmission line traps and other</u> <u>power-line carrier</u> <u>equipment</u>) <u>Pressure-Switches</u> | No (Ref. 13)No |
| 83 | <u>Electrical and I&C Instrumentation</u> | <u>Electric Heaters, Heat</u> <u>Tracing</u> <u>Pressure Transmitters</u> | No (Ref. 11)No |
| 84 | <u>Electrical and I&C Instrumentation</u> | <u>Electrical Controls and Panel</u> <u>Internal Component Assemblies</u> (may include internal devices such as, but not limited to, switches, breakers, indicating lights, etc.) (e.g., <u>main control board, HVAC</u> <u>control board</u>) <u>Flow-Switches</u> | No |
| 85 | <u>Electrical and I&C Instrumentation</u> | <u>Elements, RTDs, Sensors,</u> <u>Thermocouples, Transducers</u> (e.g., <u>conductivity elements, flow</u> <u>elements, temperature sensors, watt</u> <u>transducers, thermocouples, RTDs,</u> <u>vibration probes, amp transducers,</u> <u>frequency transducers, power factor</u> <u>transducers, speed transducers, var.</u> <u>transducers, vibration transducers,</u> <u>voltage transducers</u>) <u>Flow</u> <u>Transmitters</u> | No Yes for a PB if applicable (Ref. 13)No |
| 86 | <u>Electrical and I&C Instrumentation</u> | <u>Fuses</u> <u>Conductivity Elements</u> | No (Ref. 12)Yes (PB only) |

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| <u>Item</u> | <u>Category</u> | <u>Structure, Component, or Commodity Group</u> | <u>Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No)</u> |
|-------------|---|---|--|
| 87 | <u>Electrical and I&C Instrumentation</u> | <u>Generators, Motors</u> (e.g., emergency diesel generators, ECCS and emergency service water pump motors, small motors, motor- generator sets, steam turbine generators, combustion turbine generators, fan motors, pump motors, valve motors, air compressor motors) <u>Conductivity Switches</u> | No |
| 88 | <u>Electrical and I&C Instrumentation</u> | <u>High-voltage Insulators</u> (e.g., porcelain switchyard insulators, transmission line insulators) <u>Flow Element</u> | <u>Yes (Ref. 13)</u> Yes (PB-only) |
| 89 | <u>Electrical and I&C Instrumentation</u> | <u>High-voltage Surge Arresters</u> (e.g., switchyard surge arresters, lightning arresters, surge suppressers, surge capacitors, protective capacitors) <u>Level Indicating Switches</u> | <u>No (Ref. 13)</u> No |
| 90 | <u>Electrical and I&C Instrumentation</u> | <u>Indicators</u> (e.g., differential pressure indicators, pressure indicators, flow indicators, level indicators, speed indicators, temperature indicators, analog indicators, digital indicators, LED bar graph indicators, LCD indicators) <u>Level Transmitters</u> | No |
| 91 | <u>Electrical and I&C Instrumentation</u> | <u>Isolators</u> (e.g., transformer isolators, optical isolators, isolation relays, isolating transfer diodes) <u>Temperature Indicating Switches</u> | No |
| 92 | <u>Electrical and I&C Instrumentation</u> | <u>Light Bulbs</u> (e.g., indicating lights, emergency lighting, incandescent light bulbs, fluorescent light bulbs) <u>Temperature Switches</u> | <u>No (Ref. 11)</u> No |
| 93 | <u>Electrical and I&C Instrumentation</u> | <u>Loop Controllers</u> (e.g., differential pressure indicating controllers, flow indicating controllers, temperature controllers, controllers, speed controllers, programmable logic controller, single loop digital controller, process controllers, manual loader, selector station, hand/auto station, auto/manual station) <u>Temperature Sensors</u> | No <u>Yes (PB-only)</u> |

| <u>Item</u> | <u>Category</u> | <u>Structure, Component, or Commodity Group</u> | <u>Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No)</u> |
|-------------|---|--|--|
| 94 | <u>Electrical and I&C Instrumentation</u> | <u>Meters</u> (e.g., ammeters, volt meters, frequency meters, var meters, watt meters, power factor meters, watt-hour meters) <u>Radiation Sensors</u> | NoYes (PB-only) |
| 95 | <u>Electrical and I&C Instrumentation</u> | <u>Power Supplies</u> <u>Radiation Monitors</u> | No |
| 96 | <u>Electrical and I&C Instrumentation</u> | <u>Radiation Monitors (includes radiation sensors and radiators transmitters)</u> (e.g., area radiation monitors, process radiation monitors) <u>Radiation Transmitter</u> | No Yes for a PB if applicableNo |
| 97 | <u>Electrical and I&C Instrumentation</u> | <u>Recorders</u> (e.g., chart recorders, digital recorders, events recorders) <u>Gas Analyzer/Transmitter</u> | No |
| 98 | <u>Electrical and I&C Instrumentation</u> | <u>Regulators</u> (e.g., voltage regulators) <u>Moisture Switch</u> | No (Ref. 13)No |
| 99 | <u>Electrical and I&C Instrumentation</u> | <u>Relays</u> (e.g., protective relays, control/logic relays, auxiliary relays) <u>Position Switch</u> | No |
| 100 | <u>Electrical and I&C Instrumentation</u> | <u>Signal Conditioners</u> <u>Vibration Switch</u> | No |
| 101 | <u>Electrical and I&C Instrumentation</u> | <u>Solenoid Operators</u> <u>Differential Pressure Indicating Controller</u> | No |
| 102 | <u>Electrical and I&C Instrumentation</u> | <u>Solid-State Devices</u> (e.g., transistors, circuit boards, computers) <u>Flow Indicator</u> | No |
| 103 | <u>Electrical and I&C Instrumentation</u> | <u>Switches</u> (e.g., differential pressure indicating switches, differential pressure switches, pressure indicator switches, pressure switches, flow switches, conductivity switches, level indicating switches, temperature indicating switches, temperature switches, moisture switches, position switches, vibration switches, level switches, control switches, automatic transfer switches, manual transfer switches, manual disconnect switches, current switches, limit switches, knife switches) <u>Flow Indicating Controller</u> | No |
| 104 | <u>Electrical and I&C Instrumentation</u> | <u>Switchgear, Load Centers, Motor Control Centers, Distribution Panel</u> <u>Internal Component Assemblies (may</u> | No |

| <u>Item</u> | <u>Category</u> | <u>Structure, Component, or Commodity Group</u> | <u>Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No)</u> |
|-------------|---|---|--|
| | | include internal devices such as, but not limited to, switches, breakers, indicating lights, etc.) (e.g., 4.16 kV switchgear, 480V load centers, 480V motor control centers, 250 VDC motor control centers, 6.9 kV switchgear units, 240/125V power distribution panels)Alarm Unit | |
| 105 | <u>Electrical and I&C Instrumentation</u> | Transformers (e.g., instrument transformers, load center transformers, small distribution transformers, large power transformers, isolation transformers, coupling capacitor voltage transformers)Level Indicator | No (Ref. 11)No |
| 106 | <u>Electrical and I&C Instrumentation</u> | Transmitters (e.g., differential pressure transmitters, pressure transmitters, flow transmitters, level transmitters, static pressure transmitters)Level Switch | No |
| 107 | <u>Instrumentation</u> | Temperature Controller | No |
| 108 | <u>Instrumentation</u> | Power Supply | No |
| 109 | <u>Instrumentation</u> | Converter Voltage/Current | No |
| 110 | <u>Instrumentation</u> | Converter Voltage/Pneumatic | No |
| 111 | <u>Instrumentation</u> | Controller | No |
| 112 | <u>Instrumentation</u> | Isolator | No |
| 113 | <u>Instrumentation</u> | Signal Conditioner | No |
| 114 | <u>Instrumentation</u> | Recorder | No |
| 115 | <u>Instrumentation</u> | Annunciators | No |
| 116 | <u>Instrumentation</u> | Ammeters | No |
| 117 | <u>Instrumentation</u> | Speed Indicators | No |
| 118 | <u>Instrumentation</u> | Temperature Indicators | No |
| 119 | <u>Instrumentation</u> | Speed Controllers | No |
| 120 | <u>Instrumentation</u> | Watt Transducers | No |
| 121 | <u>Instrumentation</u> | Thermocouple, RTD | YesYes(PB Only) |
| 122 | <u>Instrumentation</u> | Instrument Transformer | No (Ref. 11) |
| 123 | <u>Electrical Components</u> | 4.16 kV Switchgear Unit | No |
| 124 | <u>Electrical Components</u> | 480V Load Centers | No |
| 125 | <u>Electrical Components</u> | 480V Motor Control Centers | No |
| 126 | <u>Electrical Components</u> | 250 VDC Motor Control Centers | No |

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| <u>Item</u> | <u>Category</u> | <u>Structure, Component, or Commodity Group</u> | <u>Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No)</u> |
|-------------|----------------------------------|---|--|
| 127 | <u>Electrical Components</u> | Transistors | No |
| 128 | <u>Electrical Components</u> | Circuit Breakers | No |
| 129 | <u>Electrical Components</u> | Protective Relays | No |
| 130 | <u>Not Used</u> | <u>Not Used</u> | <u>Not Used</u> |
| 131 | <u>Electrical Components</u> | Control Switches | No |
| 132 | <u>Electrical Components</u> | Automatic Transfer Switches | No |
| 133 | <u>Electrical Components</u> | Manual Transfer and Disconnect Switches | No |
| 134 | <u>Electrical Components</u> | Batteries | No |
| 135 | <u>Electrical Components</u> | Battery Chargers/Inverters | No |
| 136 | <u>Electrical Components</u> | Motor-Generator Sets | No |
| 137 | <u>Electrical Components</u> | Distribution Panel Internal Component Assemblies (includes internal devices including switches, breakers, indicating lights, etc.) | No |
| 138 | <u>Electrical Components</u> | Electrical Controls and Panel Internal Component Assemblies (includes internal devices including switches, breakers, indicating lights, etc.) | No |
| 139 | <u>Electrical Components</u> | Heat Tracing | No (Ref. 11) |
| 140 | <u>Electrical Components</u> | Electric Heaters | No (Ref. 11) |
| 141 | <u>Electrical Components</u> | Connectors, Electrical Splices, Terminal Blocks | Yes |
| 142 | <u>Electrical Components</u> | Power, Control, and Instrumentation Cables | Yes |
| 143 | <u>Electrical Components</u> | Load Center Transformers. | No (Ref. 11) |
| 144 | <u>Electrical Components</u> | Small Distribution Transformers | No (Ref. 11) |
| 145 | <u>Electrical Components</u> | Fuses | No (Ref. 12) |
| 146107 | <u>Electrical</u> | Terminal Blocks | No |

| <u>Item</u> | <u>Category</u> | <u>Structure, Component, or Commodity Group</u> | <u>Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No)</u> |
|---------------|----------------------|---|--|
| | <u>Components</u> | | |
| <u>108146</u> | <u>Valves</u> | Hydraulic Operated Valves | Yes (Bodies) |
| <u>109148</u> | <u>Valves</u> | Explosive Valves | Yes (Bodies) |
| <u>110149</u> | <u>Valves</u> | Manual Valves | Yes (Bodies) |
| <u>111150</u> | <u>Valves</u> | Small Valves | Yes (Bodies) |
| <u>112151</u> | <u>Valves</u> | Motor-Operated Valves | Yes (Bodies) |
| <u>113152</u> | <u>Valves</u> | Air-Operated Valves | Yes (Bodies) |
| <u>114153</u> | <u>Valves</u> | Main Steam Isolation Valves | Yes (Bodies) |
| <u>115154</u> | <u>Valves</u> | Small Relief Valves | Yes (Bodies) |
| <u>116155</u> | <u>Valves</u> | Check Valves | Yes (Bodies) |
| <u>117156</u> | <u>Valves</u> | Safety Relief Valves | Yes (Bodies) |
| <u>118157</u> | <u>Valves</u> | Dampers | No |
| <u>119158</u> | <u>Tanks</u> | Air Accumulators | Yes |
| <u>120159</u> | <u>Tanks</u> | Discharge Accumulators (Dampers) | Yes |
| <u>121160</u> | <u>Tanks</u> | Boron Acid Storage Tanks | Yes |
| <u>122161</u> | <u>Tanks</u> | Above Ground Oil Tanks | Yes |
| <u>123162</u> | <u>Tanks</u> | Underground Oil Tanks | Yes |
| <u>124163</u> | <u>Tanks</u> | Demineralized Water Tanks | Yes |
| <u>125164</u> | <u>Tanks</u> | Neutron Shield Tank | Yes |
| <u>126165</u> | <u>Fans</u> | Ventilation Fans | No |
| <u>127166</u> | <u>Fans</u> | Other Fans | No |
| <u>128167</u> | <u>Miscellaneous</u> | Emergency Lighting | No |
| <u>129168</u> | <u>Miscellaneous</u> | Hose Stations | Yes |
| <u>169168</u> | <u>Subcomponent</u> | Packing, Gaskets, Components Seals, and O-rings | Yes ¹ (Ref. 9) |
| <u>170169</u> | <u>Subcomponent</u> | Structural Sealants | Yes ² (Ref. 9) |
| <u>171170</u> | <u>Consumable</u> | Oil, Grease, and Component Filters | No ³ (Ref. 9) |
| <u>171172</u> | <u>Consumable</u> | System Filters, Fire Extinguishers, Fire Hoses, and Air Paeks | Yes ⁴ (Ref. 9) |

*The applicant should identify the intended function(s) and apply the IPA process to determine whether the structure, component, or commodity grouping meets 10 CFR 54.21(a)(1)(i).

~~1- These subcomponents would not necessarily be called out explicitly in the scoping and screening procedures. Instead they would be implicitly addressed at the component level. The applicant will be able to exclude these subcomponents utilizing a clear basis such as the example of ASME Section III not being relied upon for pressure boundary.~~

~~2- These subcomponents would not necessarily be called out explicitly in the scoping and screening procedures. Instead they would be implicitly addressed at the component level. Structural sealants may perform functions without moving parts or change in configuration and they are not typically replaced. It is expected that the applicant's structural aging management~~

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program will address these items with respect to an aging management review program on a plant specific basis.

3 For these commodities, the screening process would be expected to exclude these materials because they are short lived and are periodically replaced.

4 These components may be excluded, on a plant specific basis, from an aging management review under 10 CFR 54.21(a)(1)(ii) in that they are replaced on condition. The application should identify the standards that are relied on for replacement as part of the methodology description, for example, NFPA standards for fire protection equipment.

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2.2. PLANT LEVEL SCOPING RESULTS

Review Responsibilities

Primary - Branches responsible for systems

Secondary - Branch responsible for electrical engineering

2.2.1 Areas of Review

This review plan section addresses the plant level scoping results for license renewal. An applicant is required by 10 CFR 54.21(a)(1) to identify and list structures and components subject to an aging management review. These are "passive," "long-lived" structures and components that are within the scope of license renewal. In addition, an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify these structures and components. The staff reviews the applicant's methodology separately following the guidance in Section 2.1 of this standard review plan.

~~An applicant would list all plant level systems and structures. An applicant will provide a list of all the plant system and structures identifying those that are within the scope of license renewal. If the list exists elsewhere, such as in the UFSAR, it is acceptable to merely identify that linkage. The license renewal rule does not require the identification of all plant systems and structures. However, providing such a list may make the NRC's review more efficient. Based on the Design Basis Events (DBEs) in the plant's current licensing basis (CLB) and other CLB information relating to non-safety-related systems and structures and certain regulated events, the applicant would identify those plant level systems and structures within the scope of license renewal, as defined in 10 CFR 54.4(a). This is "scoping" of the plant level systems and structures for license renewal. To verify that the applicant has properly implemented its scoping methodology, the staff focuses its review on the implementation results separately to confirm that there is no omission of plant level systems and structures within the scope of license renewal following the guidance in section 2.2.3.1 of this standard review plan.~~

Examples of plant systems are the reactor coolant system, containment spray, standby gas treatment (BWR), emergency core cooling, open and closed cycle cooling water, compressed air, chemical and volume control (PWR), standby liquid control (BWR), main steam, feedwater, condensate, steam generator blowdown (PWR), and auxiliary feedwater systems (PWR).

Examples of plant structures are the primary containment, secondary containment (BWR), control room envelope, auxiliary building, fuel storage building, radwaste building, and ultimate heat sink cooling tower.

Examples of components are the reactor vessel, reactor vessel internals, steam generator (PWR), and light and heavy load handling cranes. Some applicants may have categorized such components as plant "systems" for their convenience.

After the plant level scoping, an applicant would identify the portion of the system or structure that performs intended function(s), as defined in 10 CFR 54.4(b). Then, the applicant would identify those structures and components that are "passive" and "long-lived" in accordance with 10 CFR 54.21(a)(1)(i) and (ii). These "passive," "long-lived" structures and components are those that are subject to an aging management review. The staff reviews these results separately following the guidance in Sections 2.3 through 2.5 of this standard review plan.

An applicant has the flexibility to determine the set of systems and structures for which it considers as within the scope of license renewal, provided that this set encompasses the systems and structures for which the Commission has determined as within the scope of license renewal. Therefore, the reviewer must verify that the applicant has properly implemented its methodology ensuring that it complies with 10 CFR 54.4(a)(1) through (3). ~~Therefore, the reviewer should not review systems and structures that the applicant has identified as within the scope of license renewal, because it is an applicant's option to include more systems and components than those required by 10 CFR 54.4.~~

The following area relating to the methodology implementation results for the plant level systems and structures are reviewed:

2.2.1.1 Systems and Structures Within the Scope of License Renewal

The reviewer verifies the applicant's identification of plant level systems and structures that are within the scope of license renewal.

2.2.2 Acceptance Criteria

The acceptance criteria for the area of review define methods for meeting the requirements of the Commission regulations in 10 CFR 54.4. For the applicant's implementation of its methodology in 10 CFR 54.21(a)(2) to be acceptable, the staff should find the applicant has properly implemented the methodology for scoping, in accordance with guidance provided the reviewer in Inspection Procedure 71002. ~~no omission of plant level systems and structures within the scope of license renewal.~~

2.2.2.1 Systems and Structures Within the Scope of License Renewal

Systems and structures are within the scope of license renewal as delineated in 10 CFR 54.4(a) if they are:

1. Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events [as defined in 10 CFR 50.49(b)(1)] to ensure the following functions:

(i) The integrity of the reactor coolant pressure boundary,

(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition, or

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(iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1) or 10 CFR 100.11, as applicable.

2. Non-safety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in 10CFR 54.4(a)(1) above.

3. Systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

2.2.3 Review Procedures

For the area of review, the following review procedures are to be followed:

2.2.3.1 Systems and Structures Within the Scope of License Renewal

The reviewer should determine whether the applicant has properly identified the plant level systems and structures within the scope of license renewal. The license renewal rule does not require the identification of all plant systems and structures. However, providing such a list may make the NRC's review more efficient. A plant may choose to identify its design basis events, the associated functions, and resulting SCCs required to meet the three criteria of 10 CFR 54.4(a)(1)(i), (ii), and (iii). This may not be necessary, however, because usually plants will have a list of SCCs that meet the same criteria as those in 10 CFR 54.4(a)(1)(i), (ii), and (iii) that has been used to comply with previous regulations (such as 10 CFR 50.49) that use the same scoping criteria. Additionally, Regulatory Guide 1.29 required that "all plant features necessary to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100 be designed for a Safe Shutdown Earthquake." Identification of SSCs that comply with Regulatory Guide 1.29, if applicable to a specific plant, or other applicable CLB commitments would allow for an alternative approach to be used such as 10CFR100, Appendix A, for explicitly identifying design basis events and associated functions.

~~To make that determination, the reviewer should review selected systems and structures that the applicant did not identify as within the scope of license renewal to verify that they do not have any intended functions. To make that determination, The reviewer should verify that the applicant has implemented the methodology to make the staff finding that there is reasonable assurance that the applicant has identified the plant level systems and structures within the scope of license renewal. The branch responsible for electrical engineering may be requested to assist the review regarding electrical system scoping.~~

~~The reviewer should use the plant Updated Final Safety Analysis Report (UFSAR), orders, applicable regulations, exemptions, and license conditions to determine the design basis for the systems, structures, and components (if components are identified as "systems" by the applicant). The design basis determines the intended~~

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~~function(s) of a system, structure, or component, which in turn, determines whether the system, structure, or component is within the scope of license renewal.~~

This review plan section addresses scoping at a plant level. Thus, if any portion of a system or structure performs an intended function as defined in 10 CFR 54.4(b), the system or structure is within the scope of license renewal. The review of the individual portions of systems and structures that are within the scope of license renewal are addressed separately in Sections 2.3 through 2.5 of this standard review plan.

~~An applicant should submit a~~From the list of all plant level systems and structures, identifying those that are within the scope of license renewal. ~~The reviewer should validates the methodology by selecting a sample of~~ systems and structures that the applicant did not identify as within the scope of license renewal. The following are a few examples:

1. An applicant ~~does not identify~~ its a radiation monitoring system as within the scope of license renewal. The reviewer may review the UFSAR to verify that this particular system does not perform any intended functions at the applicant's plant.
2. An applicant ~~does not identify~~ its polar crane as within the scope of license renewal. The reviewer may review the plant's UFSAR to verify that this particular structure for the applicant's plant is not "seismic II over I," denoting a non-seismic Category I structure interacting with seismic Category I structure, ~~as described in Position C.2 of Regulatory Guide 1.29, "Seismic Design Classification" (Ref. 1).~~
3. An applicant ~~does not identify~~ its fire protection pump house as within the scope of license renewal. The reviewer may review the plant's commitments to the fire protection regulation (10 CFR 50.48) to verify that this particular structure does not perform any intended functions at the applicant's plant.
4. An applicant uses the "spaces" approach for scoping electrical equipment and elects to include all electrical equipment on site to be within the scope of license renewal, with the exception of the 525kV switchyard and the 230kV transmission lines. The reviewer may review the plant's UFSAR and commitments to the station blackout regulation (10 CFR 50.63) to verify that the applicant has included the appropriate SSC's and their intended functions. ~~525kV switchyard and the 230kV transmission lines do not perform any intended functions at the applicant's plant.~~

Table 2.2-1 of this review plan section contains additional examples based on lessons learned from the review of the initial license renewal applications, including a discussion of the plant-specific basis for disposition, of determining whether a system or structure is within the scope of license renewal.

An applicant may choose to group similar components and structures together in commodity groups for separate analyses. It is acceptable for an applicant to identify a particular system or structure as not within the scope of license renewal, if the only portion of the system or structure that has any intended functions is addressed separately in specific commodity groups.

The reviewer should find ~~no omissions~~ sufficient information supplied by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the plant level systems and structures within the scope of license renewal.

Section 2.1 of this standard review plan contains additional guidance on the following:

- commodity groups
- complex assemblies
- hypothetical failure
- cascading

2.2.4 Evaluation Findings

The reviewer verifies that sufficient and adequate information has been provided to satisfy the provision of this standard review plan and that the staff's evaluation supports conclusions of the following type, to be included in the staff's safety evaluation report:

The staff evaluation concludes that there is reasonable assurance that the applicant has appropriately identified the systems and structures within the scope of license renewal in accordance with 10 CFR 54.4.

2.2.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specific portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.2.6 References

None

- ~~1. Regulatory Guide 1.29, Rev. 2, "Seismic Design Classifications," September 1978.~~

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Table 2.2-1. Examples of System and Structure Scoping and Basis for Disposition

| Example | Disposition |
|--|---|
| Recirculation cooling water system | One function of the recirculation cooling water system is to remove decay heat from the stored fuel in the spent fuel pool. However, the fuel handling accident for the plant assumes that the spent fuel pool cooling, thus the recirculation cooling water system, is not functional during or following such an event. Thus, the recirculation cooling water system is not within the scope of license renewal because of this function. |
| Station blackout diesel generator building | The UFSAR indicates that certain structural components of the station blackout diesel generator building for the plant are designed to preclude seismic failure and subsequent impact of the structure on the adjacent safety-related emergency diesel generator building. In addition, the UFSAR indicates that certain equipments on the building have been anchored to resist tornado wind loads. Thus, the station blackout diesel generator building is within the scope of license renewal. |

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2.3. SYSTEM SCOPING AND SCREENING RESULTS: MECHANICAL

Review Responsibilities

Primary - Branches responsible for systems

Secondary - None

2.3.1 Areas of Review

This review plan section addresses the mechanical systems scoping and screening results for license renewal. Typical mechanical systems consist of the following:

Reactor Coolant System (such as reactor vessel and internals, coolant pressure boundary, coolant system and connected lines, and steam generators).

Engineered Safety Features (such as containment spray and isolation systems, standby gas treatment system, emergency core cooling system, and fan cooler system).

Auxiliary Systems (such as new and spent fuel storage, spent fuel cooling and cleanup, suppression pool cleanup, load handling, open and closed cycle cooling water, ultimate heat sink, compressed air system, chemical and volume control system, standby liquid control system, reactor water cleanup, coolant storage/refueling water, shutdown water, ventilation, diesel generator, fire protection, and liquid waste disposal).

Steam and Power Conversion System (such as turbines, main and extraction steam, feedwater, condensate, steam generator blowdown, and auxiliary feedwater).

An applicant is required by 10 CFR 54.21(a)(1) to identify and list structures and components subject to an aging management review. These are "passive," "long-lived" structures and components that are within the scope of license renewal. In addition, an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify these structures and components. The staff reviews the applicant's methodology separately following the guidance in Section 2.1 of this standard review plan. ~~To verify that the applicant had properly implemented its methodology, the staff should focus its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified mechanical system components which require aging management review, on the implementation results to confirm that there is no omission of mechanical system components that are subject to an aging management review.~~

~~An applicant will provide a list of all the plant system and structures identifying those that are within the scope of license renewal. If the list exists elsewhere, such as in the UFSAR, it is acceptable to merely identify that linkage. An applicant will provide a list of all the plant system and structures identifying those that are within the scope of license renewal. If the list exists elsewhere, such as in the UFSAR, it is acceptable to merely identify that linkage would list all plant level systems and structures. The reviewer should determine whether the applicant has properly identified the plant level systems and structures within the~~

~~scope of license renewal. The license renewal rule does not require the identification of all plant systems and structures. However, providing such a list may make the NRC's review more efficient. Based on the Design Basis Events (DBEs) in the plant's current licensing basis (CLB) and other CLB information relating to non-safety-related systems and structures and certain regulated events, the applicant would identify those plant level systems and structures within the scope of license renewal, as defined in 10 CFR 54.4(a). This is "scoping" of the plant level systems and structures for license renewal. The staff reviews the applicant's plant level "scoping" results separately following the guidance in Section 2.2 of this standard review plan.~~

For a mechanical system that is within the scope of license renewal, an applicant would identify the portion of the system that performs intended function(s), as defined in 10 CFR 54.4(b). The applicant ~~may identifies~~identify this particular portion of the system in marked-up piping and instrument diagrams (P&IDs) ~~or other media~~. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

For the mechanical components within this particular portion of the system, an applicant would identify those that are "passive" and "long-lived" in accordance with 10 CFR 54.21(a)(1)(i) and (ii). These "passive," "long-lived" mechanical components are those that are subject to an aging management review. This is "screening" of mechanical components in a system to identify those that are "passive" and "long-lived."

The applicant has the flexibility to determine the set of structures and components for which an aging management review is performed, provided that this set encompasses the structures and components for which the Commission has determined an aging management review is required. This is based on the statements of consideration for the license renewal rule (60 FR 22478). Therefore, the reviewer should ~~not~~ review components that the applicant has identified as subject to an aging management review to verify that the applicant has implemented a methodology that produces results consistent with 10CFR54.21(a)(1), ~~because it is an applicant's option to include more components than those required by 10 CFR 52.21(a)(1).~~

The following areas relating to the methodology implementation results for the mechanical systems are reviewed:

~~2.3.1.1 Components Within the Scope of License Renewal~~

~~The applicant's identification of mechanical system components that are within the scope of license renewal is reviewed. (Scoping)~~

~~2.3.1.2 Components Subject to an Aging Management Review~~

~~The applicant's identification of mechanical system components within the scope of license renewal that are "passive" and "long-lived" is reviewed. (Screening)~~

2.3.31.1 Components Subject to an Aging Management Review

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For each of the systems within the scope of license renewal, an applicant should identify those "passive," "long-lived" components that have intended functions as requiring aging management review.

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.

The reviewer should select functions described in the UFSAR to verify that selected mechanical components were properly scoped and screened. For example, if the UFSAR indicates that a diesel engine is required to mitigate design basis events and that the jacket water heat exchanger, diesel fuel oil and air start systems are noted in the UFSAR as required for the diesel to operate, the reviewer should verify that passive long lived components in these systems have been identified as requiring aging management review.

Only components that are "passive" and "long-lived" are subject to aging management review. Table 2.1-5 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain components are "passive." The applicant should justify omitting a component that is within the scope of license renewal at their facility and is listed as "passive" on Table 2.1-5.

The applicant should also identify the components' intended functions. Table 2.1-4 in Section 2.1 of this standard review plan provides typical "passive" component intended functions.

The reviewer should validate the applicant's methodology for identifying components subject to aging management review to make the staff finding that there is reasonable assurance that the applicant has identified the components subject to an aging management review.

The staff has developed additional scoping/screening guidance. For example, there are some components that may be grouped together as a commodity, such as carbon steel containment isolation valves with an air internal environment, and there are some components that are considered consumable materials, such as sealants. Additional guidance on these and others are contained in Section 2.1 of this standard review plan for the following:

- commodity groups
- hypothetical failure
- easeading
- consumables
- multiple functions
- piece-parts

Table 2.3-1 provides examples of components scoping/screening lessons learned from the review of initial license renewal applications and basis for disposition.

2.3.2 Acceptance Criteria

The acceptance criteria for the areas of review define methods for meeting the requirements of the Commission's regulations in 10 CFR 54.21(a)(1). For the applicant's implementation of its methodology in 10 CFR 54.21(a)(2) to be acceptable, the staff should find the applicant has properly implemented the methodology for screening ~~no omission of mechanical system components that are subject to an aging management review.~~

~~2.3.2.1 Components Within the Scope of License Renewal~~

~~Mechanical components are within the scope of license renewal as delineated in 10 CFR 54.4(a) if they are:~~

~~1. Safety-related systems, structures, and components which are those relied upon to remain functional during and following design basis events (as defined in 10 CFR 50.49(b)(1)) to ensure the following functions--~~

~~(i) The integrity of the reactor coolant pressure boundary;~~

~~(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or~~

~~(iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1) or 10 CFR 100.11, as applicable.~~

~~2. All nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1)(i), (ii), or (iii).~~

~~3. All systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).~~

~~2.3.2.2 Components Subject to Aging Management Review~~

Mechanical components are subject to an aging management review if they are within the scope of license renewal and perform an intended function as defined in 10 CFR 54.4(b) without a change in configuration or properties ("passive"), and are not subject to replacement based on a qualified life or specified time period ("long-lived") (10 CFR 54.21(a)(1)(i) and (ii)).

2.3.3 Review Procedures

For each area of review, the following review procedures are to be followed:

2.3.3.1 Components Within the Scope of License Renewal

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This step determines whether the applicant has properly identified the components within the scope of license renewal. The reviewer should review selected components that the applicant ~~did not identify~~ as within the scope of license renewal to verify that ~~they did not omit~~ components with intended functions were properly selected.

~~The reviewer should use the plant Updated Final Safety Analysis Report (UFSAR), orders, applicable regulations, exemptions, and license conditions to determine the design basis for the systems, structures, and components. The design basis determines the system intended function(s), which in turn determines the components within that system that are required for the system to perform its intended functions. The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.~~

An applicant ~~should~~ may provide plant marked-up drawings (P&IDs) indicating marking the portion of the system that is within the scope of license renewal. The reviewer should focus the review on those components that are ~~not~~ identified as being within the scope of license renewal, especially verifying the accuracy of boundary points and major system components, to ensure the applicant has not omitted and validating that the ~~components identified within the scope of 10CFR 54(a)(10 through (3) that are required for the system to perform its intended functions. Portions of the system identified as being within the scope of license renewal by the applicant do not have to be identified by the reviewer because the applicant has the option of including more components than the rule requires to be in the scope.~~

~~For example, if a portion of a system does not perform an intended function, is not identified as being within the scope of license renewal, and is isolated from the portion of the system that is identified as being within the scope of license renewal by a boundary valve, the reviewer should verify that this particular boundary valve is identified as being within the scope of license renewal, or that the valve does not have an intended function (that is, the valve is not required for the system to perform its intended function). Another example, the reviewer should sample the system function of piping runs and components that are not identified as being within the scope of license renewal to ensure they do not meet the requirement of 10 CFR 54.4.~~

Further, the reviewer should select functions described in the UFSAR to verify that the applicant has properly implemented the methodology for screening selected components in mechanical systems. ~~that components having intended functions were not omitted from the scope of the rule. The reviewer should find no omissions of components within the scope of license renewal by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the components within the scope of license renewal for the mechanical systems.~~

Section 2.1 of this standard review plan contains additional guidance on the following:

- commodity groups
- complex assemblies
- seeping events
- hypothetical failure
- cascading

Table 2.3-1 provides examples of mechanical components scoping lessons learned from the review of the initial license renewal applications and basis for disposition.

At the completion of this review step, the reviewer has confidence that the applicant has identified the components within the scope of license renewal.

2.3.3.2 Components Subject to an Aging Management Review

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use. ~~This step determines whether the applicant has properly identified the components subject to an aging management review from among those identified in the previous step, that is, Subsection 2.3.3.1 of this review plan section. The reviewer should review selected components that the applicant has identified as within the scope of license renewal to verify that the applicant has identified these components as subject to an aging management review if they perform intended functions without moving parts or without a change in configuration or properties and are not subject to replacement on the basis of a qualified life or specified time period.~~

~~Starting with the boundary verified in Subsection 2.3.3.1 of this review plan, the reviewer should sample components that are within the scope of license renewal for that system, but were not identified by the applicant as subject to an aging management review. Only components that are "passive" and "long-lived" are subject to an aging management review. Table 2.1-2 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain components are "passive." Applicant should justify omitting a component that is within the scope of license renewal at their facility and is listed as "passive" on Table 2.1-2.~~

For example, an applicant has marked a boundary of a certain system that is within the scope of license renewal. The marked-up P&ID shows that there are piping, valves, and air compressors within this boundary. The applicant has identified piping and valve bodies as subject to an aging management review. The reviewer verifies that Table 2.1-2 of Section 2.1 of this standard review plan indicates air compressors are not subject to an aging management review.

~~The reviewer should find no omissions of components subject to an aging management review by the applicant~~ verify that the applicant has properly implemented the screening methodology for components in mechanical systems to make the staff finding that there is reasonable assurance that the applicant has identified the components subject to an aging management review for the mechanical systems.

Section 2.1 of this standard review plan contains additional guidance on screening the following:

- consumables
- heat exchanger intended functions
- multiple functions
- piece-parts

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Table 2.3-2 provides examples of mechanical components screening lessons learned from the review of the initial license renewal applications and basis for disposition.

The applicant should ~~also identify the intended functions which are the basis for the components being in the scope of license renewal, component intended functions required to be managed by 10 CFR 54.4. Table 2.3-3 provides examples of mechanical component intended functions.~~

At the completion of the review step, the reviewer has confidence that the applicant has identified the "passive," "long-lived" components subject to an aging management review.

2.3.4 Evaluation Findings

The reviewer verifies that sufficient and adequate information has been provided to satisfy the provision of this review plan section and that the staff's evaluation supports conclusions of the following type, to be included in the staff's safety evaluation report:

The staff evaluation concludes that there is a reasonable assurance that the applicant has appropriately identified the mechanical system components subject to an aging management review to meet the requirements stated in 10 CFR 54.21(a)(1).

2.3.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specific portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.3.6 References

None

Table 2.3-1. Examples of Mechanical Components Scoping and Basis for Disposition

| Example | Disposition |
|---|--|
| Piping segment that provides structural support | The safety-related/non-safety-related boundary along a pipe run may occur at a valve location. The piping segment between this valve and the next seismic anchor provides structural support in a seismic event. This <u>This</u> piping segment is-is within the scope of license renewal. |
| Containment heating and ventilation system ductwork downstream of the fusible links providing cooling to the steam generator compartment and reactor vessel annulus | This non-safety-related ductwork provides cooling to support the applicant's environmental qualification (EQ) program. However, the failure of the cavity cooling system ductwork will not prevent the satisfactory completion of any critical safety function during and following a design basis accident. Thus, this ductwork is not within the scope of license renewal. |
| Standpipe installed inside the fuel oil storage tank | The standpipe <u>as described in the applicant's CLB</u> ensures that there is sufficient fuel oil reserve for the emergency diesel generator to operate for the specified number of days in the plant technical specifications following design basis events. Therefore, this standpipe is within the scope of license renewal. |
| Insulation on boron injection tank | The temperature is high enough that insulation is not necessary to prevent boron precipitation. Technical specifications require periodic verification of the tank temperature. Thus the insulation is not relied on to ensure the function of the emergency system and is not within the scope of license renewal. |
| Pressurizer spray head | The spray head is not credited for the mitigation of any accidents addressed in the UFSAR accident analyses. The function of the pressurizer spray is to reduce reactor coolant system pressure during normal operating conditions. Therefore, the spray head is not within the scope of license renewal. |

Table 2.3-2. Examples of Mechanical Components Screening and Basis for Disposition

| Example | Disposition |
|---|---|
| Diesel engine jacket water heat exchanger, and portions of the diesel fuel oil system and starting air system supplied by a vendor on a diesel generator skid | These are "passive," "long-lived" components having intended functions. They are subject to an aging management review for license renewal even though the diesel generator is considered "active." |
| Fuel assemblies | The fuel assemblies are replaced at regular intervals based on the fuel cycle of the plant. They are not subject to an aging management review. |
| Valve internals (such as disk and seat) | 10 CFR 54.21(a)(1)(i) excludes valves, other than the valve body, from aging management review. The statements of consideration of the license renewal rule provide the basis for excluding structures and components that perform their intended functions with moving parts or with a change in configuration or properties. Although the valve body is subject to an aging management review, valve internals are not. |

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Table 2.3-3. Examples of Mechanical Component Intended Functions

| Component | Intended Function* |
|--------------------------|--|
| Piping | Pressure boundary |
| Valve body | Pressure boundary |
| Pump casing | Pressure boundary |
| Orifice | Pressure boundary Flow restriction |
| Heat exchanger | Pressure boundary Heat transfer |
| Reactor vessel internals | Structural support of fuel assemblies, control rods, and incore instrumentation, to maintain core configuration and flow distribution |

*The component intended function(s) are those that support the system intended function(s). For example, a heat exchanger in the spent fuel cooling system has a pressure boundary intended function, but may not have a heat transfer function. Similarly, not all orifices have flow restriction as an intended function.

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2.4. STRUCTURE SCOPING AND SCREENING RESULTS

Review Responsibilities

Primary - Branch responsible for plant systems

Secondary - None

2.4.1 Areas of Review

This review plan section addresses the scoping and screening results of structures and structural components for license renewal. Typical structures include the following:

- The primary containment structure
- Building structures, such as the intake structure, diesel generator building, auxiliary building, and turbine building.
- Component supports, such as cable trays, pipe hangers, elastomer vibration isolators, equipment frames and stanchions, and HVAC ducting supports.
- Non-safety-related structures whose failure could prevent safety-related systems, structures, and components from performing their intended functions (that is, seismic Category II over I structures).

Typical structural components include the following: liner plates, walls, floors, roofs, foundations, doors, beams, columns, and frames.

An applicant is required by 10 CFR 54.21(a)(1) to identify and list structures and components subject to an aging management review. These are "passive," "long-lived" structures and components that are within the scope of license renewal. In addition, an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify these structures and components. The staff reviews the applicant's methodology separately following the guidance in Section 2.1 of this standard review plan. ~~To verify that the applicant had properly implemented its methodology, the~~ The staff should focus its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified structures and components which require aging management review, on the implementation results to confirm that there is no omission of structural components that are subject to an aging management review by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the structural components subject to an aging management review.

~~An applicant should list all plant level systems and structures. Based on the Design Basis Events (DBEs) in the plant's current licensing basis (CLB) and other CLB information relating to non-safety-related systems and structures and certain regulated events, the applicant would identify those plant level systems and structures within the scope of license renewal, as defined in 10 CFR 54.4(a). This is "scoping" of the plant level systems and structures for license renewal. The staff reviews the~~

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~~applicant's plant level "scoping" results separately following the guidance in Section 2.2 of this standard review plan.~~

For structures that are within the scope of license renewal, an applicant should identify the structural components that are "passive" and "long-lived" in accordance with 10 CFR 54.21(a)(1)(i) and (ii). These "passive," "long-lived" structural components are those that are subject to an aging management review ("screening"). The applicant's methodology implementation results for identifying structural components subject to an aging management review is the area of review.

The applicant has the flexibility to determine the set of structures and components for which an aging management review is performed, provided that this set encompasses the structures and components for which the Commission has determined that an aging management review is required. This flexibility is described in the statements of consideration for the license renewal rule (60 FR 22478). Therefore, the reviewer should ~~not~~ focus the review on structural components that the applicant has already identified as subject to an aging management review, ~~because it is an applicant's option to include more structural components than those required by 10 CFR 54.21(a)(1).~~ Rather the reviewer should focus on those structural components that are not included by the applicant as subject to an aging management review to ensure that they do not perform an intended function as defined in 10 CFR 54.4(b) or are not "passive" and "long-lived." The staff focuses its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified structural components which require aging management review.

2.4.2 Acceptance Criteria

The acceptance criteria for the areas of review define methods for meeting the requirements of the Commission's regulations in 10 CFR 54.21(a)(1). For the applicant's implementation of its methodology in 10 CFR 54.21(a)(2) to be acceptable, the staff should find the applicant has properly implemented the methodology for screening, ~~confirm there is no omission of structural components that are subject to an aging management review by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the structural components subject to an aging management review.~~

~~2.4.2.1 Structural Components Subject to Aging Management Review~~

~~Structural components are within the scope of license renewal as delineated in 10 CFR 54.4(a) if they are:~~

~~1. Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events [as defined in 10 CFR 50.49(b)(1)] to ensure the following functions—~~

~~(i) The integrity of the reactor coolant pressure boundary;~~

~~(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or~~

~~(iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1) or 10 CFR 100.11, as applicable.~~

~~2. All nonsafety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1)(i), (ii), or (iii).~~

~~3. All systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).~~

~~Structural components are subject to an aging management review if they are within the scope of license renewal and perform an intended function as defined in 10 CFR 54.4(b) without a change in configuration or properties ("passive"), and are not subject to replacement based on a qualified life or specified time period ("long-lived") [10 CFR 54.21(a)(1)(i) and (ii)].~~

2.4.3 Review Procedures

For each area of review, the following review procedures are to be followed:

2.4.3.1 Structural Components Subject to Aging Management Review

For each of the plant level structures within the scope of license renewal, an applicant should identify those "passive," "long-lived" structural components that have intended functions. ~~For example, the applicant may identify that its auxiliary building is within the scope of license renewal. For this auxiliary building, the applicant may identify the structural components of beams, concrete walls, blowout panels, etc., are subject to an aging management review. The reviewer should focus on such a structure, one at a time, to confirm that the "passive," "long-lived" structural components that have intended functions have been identified by the applicant.~~

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use. ~~The reviewer should use the plant Updated Final Safety Analysis Report (UFSAR), orders, applicable regulations, exemptions, and license conditions to determine the design basis for the structures and structural components. The design basis determines the structure's intended function(s), which in turn, determines the structural components within that structure that are required for the structure to perform its intended function.~~

The reviewer should focus the review on those structural components that are not identified as being within the scope of license renewal. ~~For example, for a building within the scope of license renewal, if an applicant did not identify the building roof as subject to an aging management review, the reviewer should verify that this particular roof has no intended functions, such as a "Seismic II over I" concern in accordance with the plant's CLB. The reviewer should not review structural components that have been identified as subject to an aging management review by the applicant because~~

~~the applicant has the option of including more structural components than the rule requires to be subject to an aging management review.~~

Further, ~~the reviewer should select functions described in the UFSAR to verify that selected structural components were included in having intended functions were not omitted from the scope of the rule.~~ For example, if the UFSAR indicates that a dike within the fire pump house prevents a fuel oil fire from spreading to the electrically driven fire pump, the reviewer should verify that this dike has been identified as within the scope of license renewal.

Only structural components that are "passive" and "long-lived" are subject to aging management review. Table 2.1-5 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain structures and structural components are "passive." ~~The a~~Applicant should justify omitting a structure or structural component that is within the scope of license renewal at their facility and is listed as "passive" on Table 2.1-5.

The applicant should also identify the structural components intended functions. Table 2.1-4 in Section 2.1 of this standard review plan provides typical "passive" structural component intended functions.

The reviewer should ~~find no omissions of~~ validate the applicant's methodology for identifying structural components subject to aging management review ~~by the applicant~~ to make the staff finding that there is reasonable assurance that the applicant has identified the structural components subject to an aging management review.

The staff has developed additional scoping/screening guidance. For example, there are some structural components that may be grouped together as a commodity, such as pipe hangers, and there are some structural components that are considered consumable materials, such as sealants. Additional guidance on these and others are contained in Section 2.1 of this standard review plan for the following:

- commodity groups
- ~~complex assemblies~~
- hypothetical failure
- cascading
- consumables
- ~~heat exchanger intended functions~~
- multiple functions
- piece-parts

Table 2.4-1 provides examples of structural components scoping/screening lessons learned from the review of initial license renewal applications and basis for disposition.

2.4.4 Evaluation Findings

The reviewer verifies that sufficient and adequate information has been provided to satisfy the provision of this review plan section and that the staff's evaluation supports conclusions of the following type, to be included in the staff's safety evaluation report:

The staff evaluation concludes that there is a reasonable assurance that the applicant has appropriately identified the structural components subject to an aging management review to meet the requirements stated in 10 CFR 54.21(a)(1).

2.4.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specific portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.4.6 References

None.

Table 2.4-1. Examples of Structural Components Scoping/Screening and Basis for Disposition

| Example | Disposition |
|---|--|
| Turbine building roof | An applicant indicates that degradation or loss of its turbine building roof will not result in the loss of any intended functions. The turbine building contains safety-related systems, structures, and components in the basement, which would remain sheltered and protected by several reinforced concrete floors if the turbine building roof was to degrade. Because this roof does not perform an intended function, it is not within the scope of license renewal. |
| Post-tensioned containment tendon gallery | The intended function of the post-tensioning system is to impose compressive forces on the concrete containment structure to resist the internal pressure resulting from a design-basis accident with no loss of structural integrity. Although the tendon gallery is not relied on to maintain containment integrity during design basis events, operating experience indicates that water infiltration and high humidity in the tendon gallery can contribute to a significant aging effect on the vertical tendon anchorages that could potentially result in loss of the ability of the post-tensioning system to perform its intended function. However, containment inspections provide reasonable assurance that the aging effects of the tendon anchorages, including those in the gallery, will continue to perform their intended functions. Because the tendon gallery does not perform an intended function, it is not within the scope of license renewal |
| Water-stops | Ground water in-leakage into the auxiliary building could occur as a result of degradation to the water-stops. This leakage may cause flooding of equipment within the scope of license renewal. (The plant's UFSAR discusses the effects of flooding.) The water-stops perform their functions without moving parts or change in configuration and they are not typically replaced. Thus, the water-stops are subject to an aging management review. However, they need not be called out explicitly in the scoping/screening results if they are included as parts of structural components that are subject to an aging management review. |

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2.5. SYSTEM SCOPING AND SCREENING RESULTS: ELECTRICAL AND INSTRUMENTATION AND CONTROLS

Review Responsibilities

Primary - Branch responsible for electrical and Instrumentation and Controls engineering

Secondary - None

2.5.1 Areas of Review

This review plan section addresses the electrical and instrumentation and controls (I&C) scoping and screening results for license renewal. Typical electrical and I&C components consist of the following: electrical penetrations, electrical cables and connections, motors, diesel generators, air compressors, pressure transmitters, pressure indicators, water level indicators, switchgear, cooling fans, transistors, batteries, breakers, relays, switches, power inverters, circuit boards, battery chargers, and power supplies.

An applicant is required by 10 CFR 54.21(a)(1) to identify and list structures and components subject to an aging management review. These are "passive," "long-lived" structures and components that are within the scope of license renewal. In addition, an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify these structures and components. The staff reviews the applicant's methodology separately following the guidance in Section 2.1 of this standard review plan. To verify that the applicant has properly implemented its methodology, the staff focuses its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified on the implementation results to confirm that there is no omission of electrical and I&C components which require that are subject to an aging management review.

An applicant would list all plant level systems and structures. Based on the Design Basis Events (DBEs) in the plant's current licensing basis (CLB) and other CLB information relating to non-safety-related systems and structures and certain regulated events, the applicant would identify those plant level systems and structures within the scope of license renewal, as defined in 10 CFR 54.4(a). This is "scoping" of the plant level systems and structures for license renewal. The staff reviews the applicant's plant level "scoping" results separately following the guidance in Section 2.2 of this standard review plan.

For an electrical and I&C system that is within the scope of license renewal, an applicant would not identify the specific electrical and I&C components that are subject to an aging management review. For example, an applicant would not "tag" each specific length of cable that is "passive," "long-lived," and performs an intended function as defined in 10 CFR 54.4(b). Instead, an applicant ~~would~~ may use the so-called "plant spaces" approach (Ref. 1). The "plant spaces" approach provides efficiencies in aging management review of electrical equipment located within the same plant space environment.

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Under the "plant spaces" approach, an applicant would identify all "passive," "long-lived" electrical equipment within a specified plant space as subject to an aging management review, regardless of whether these components perform any intended functions. For example, an applicant could identify all "passive," "long-lived" electrical equipment located within the turbine building ("plant space") to be subject to an aging management review for license renewal. In the subsequent aging management review, the applicant would evaluate the environment of the turbine building to determine the appropriate aging management activities for these equipment. The applicant has options to further refine this encompassing scope on an as-needed basis. For the above example, if the applicant identified elevated temperatures in a particular area within the turbine building, the applicant may elect to identify only those "passive," "long-lived" electrical equipment that perform an intended function in this particular area as subject to an aging management review.

10 CFR 54.21(a)(1)(i) provides many examples of electrical and I&C components that are not considered to be "passive" and are not subject to an aging management review for license renewal. Therefore, an applicant is expected to identify only a few electrical and I&C components, such as electrical penetrations, cables, and connections, that are "passive" and subject to an aging management review. However, the time-limited aging analysis (TLAA) evaluation requirements in 10 CFR 54.21(c) apply to environmental qualification (EQ) of electrical equipment that is not limited to "passive."

~~An applicant has the flexibility to determine the set of structures and components for which an aging management review is performed, provided that this set encompasses the structures and components for which the Commission has determined an aging management review is required. This is based on the statements of consideration for the license renewal rule (60 FR 22478). Therefore, the reviewer should not review components that the applicant has identified as subject to an aging management review, because it is an applicant's option to include more components than those required by 10 CFR 54.21(a)(1).~~

The following areas relating to the methodology implementation results for the electrical and I&C systems are reviewed:

~~2.5.1.1 Components Within the Scope of License Renewal~~

~~The applicant's identification of electrical and I&C system components that are within the scope of license renewal is reviewed. (Scoping)~~

~~2.5.1.2 Components Subject to an Aging Management Review~~

The applicant's identification of electrical and I&C system components within the scope of license renewal that are "passive" and "long-lived." (Screening)

2.5.2 Acceptance Criteria

The acceptance criteria for the areas of review define methods for meeting the requirements of the Commission's regulations in 10 CFR 54.21(a)(1). ~~For the applicant's implementation of its methodology in 10 CFR 54.21(a)(2) to be acceptable, the staff should find no omission of electrical and I&C system components~~

~~that are subject to an aging management review~~ The staff should find the applicant has properly implemented the methodology for screening.

2.5.2.1 Components Within the Scope of License Renewal

Electrical and I&C components are within the scope of license renewal as delineated in 10 CFR 54.4(a) if they are:

1. Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49(b)(1)) to ensure the following functions --

(i) The integrity of the reactor coolant pressure boundary;

(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

(iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1) or 10 CFR 100.11, as applicable.

2. All non-safety related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in 1. above.

3. All systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

2.5.2.2 Components Subject to Aging Management Review

Electrical and I&C components are subject to an aging management review if they are within the scope of license renewal and perform an intended function as defined in 10 CFR 54.4(b) without moving parts or without a change in configuration or properties ("passive"), and are not subject to replacement based on a qualified life or specified time period ("long-lived") (10 CFR 54.21(a)(1)(i) and (ii)).

2.5.3 Review Procedures

The reviewer should verify that an applicant has identified in the license renewal application the electrical and I&C components that are subject to an aging management review for its plant. The review procedures are presented below assuming an applicant has performed "scoping" and "screening" of electrical and I&C system components in that sequence. However, an applicant may elect to perform "screening" before "scoping" and that is acceptable because, regardless of the sequence, the end result should encompass the electrical and I&C components that are subject to an aging management review.

The scope of 10 CFR 50.49 electric equipment to be included within 10 CFR 54.4(a)(3) is that "long-lived" (qualified life of 40-years or greater) equipment already

identified by licensees under 10 CFR 50.49(b) which specifies certain electric equipment important to safety. Licensees may rely upon their listing of EQ equipment, as required by 10 CFR 50.49(d), for purposes of satisfying 10 CFR 54.4(a)(3) with respect to equipment within the scope of 10 CFR 50.49 (60 FR 22466). However, the license renewal rule has a requirement (10 CFR 54.21(c)) on the evaluation of TLAAs, including EQ (10 CFR 50.49). EQ equipment is not limited to "passive." An applicant may identify EQ equipment separately for TLAA evaluation and not include them as equipment subject to an aging management review under 10 CFR 54.21(a)(1). The EQ equipment identified for TLAA evaluation would encompass the "passive" EQ equipment subject to an aging management review. The TLAA evaluation would ensure that the EQ equipment would be functional for the period of extended operation. The staff reviews the applicant's EQ TLAA evaluation separately following the guidance in Section 4.4 of this standard review plan.

For each area of review, the following review procedures are to be followed:

~~2.5.3.1 Components Within the Scope of License Renewal~~

2.5.3.1 Components Subject to an Aging Management Review

For each of the systems within the scope of license renewal, an applicant should identify those "passive," "long-lived" components that have intended functions as requiring aging management review.

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.

The reviewer should select functions described in the UFSAR to verify that selected electrical components were properly scoped and screened. For example, if the UFSAR indicates that a diesel generator is required to mitigate design basis events and that the power from the diesel is carried by buried cables, as noted in the UFSAR, the reviewer should verify that these buried cables are identified as requiring aging management review.

Only components that are "passive" and "long-lived" are subject to aging management review. Table 2.1-5 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain components are "passive." The applicant should justify omitting a component that is within the scope of license renewal at their facility and is listed as "passive" on Table 2.1-5.

The applicant should also identify the components' intended functions. Table 2.1-4 in Section 2.1 of this standard review plan provides typical "passive" component intended functions.

The reviewer should validate the applicant's methodology for identifying components subject to aging management review to make the staff finding that there is reasonable assurance that the applicant has identified the components subject to an aging management review.

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The staff has developed additional scoping/screening guidance which is contained in Section 2.1 of this standard review plan for the following:

- consumables
- multiple functions
- piece-parts

Table 2.5-1 provides examples of components scoping/screening lessons learned from the review of initial license renewal applications and basis for disposition.

This step determines whether the applicant has properly identified the components within the scope of license renewal. The reviewer should review selected components that the applicant did not identify as within the scope of license renewal to verify that they did not omit components with intended functions. Staff focuses its review to verify the applicant has implemented the methodology such as there is reasonable assurance that the applicant has identified electrical and I&G system components which require aging management review.

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use. The reviewer should use the plant Updated Final Safety Analysis Report (UFSAR), orders, applicable regulations, exemptions, and license conditions to determine the design basis for the systems, structures, and components. The design basis determines the system intended function(s), which in turn, determines the components within that system that are required for the system to perform its intended function(s).

An applicant may use the "plant spaces" approach in scoping electrical and I&G components for license renewal. In the "plant spaces" approach, an applicant may indicate that all electrical and I&G components located within a particular plant area ("plant space"), such as the containment and auxiliary building, are within the scope of license renewal. The applicant may also indicate that all electrical and I&G components located within a particular plant area ("plant space"), such as the warehouse, are not within the scope of license renewal. Table 2.5-1 contains some examples of this "plant spaces" approach and the corresponding review procedures.

An applicant would use the "plant spaces" approach for the subsequent aging management review of the electrical and I&G components. The applicant would may evaluate the environment of the "plant spaces" to determine the appropriate aging management activities for these equipment. The applicant has options to further refine this encompassing scope on an as-needed basis. For example, if the applicant identified elevated temperatures in a particular area within a building ("plant space"), the applicant may elect to identify only those "passive," "long-lived" electrical and I&G components that perform an intended function in this particular area as subject to an aging management review. This approach to further narrow the "plant spaces" is consistent with the "plant spaces" approach. In this case, the reviewer verifies that the applicant has specifically identified the electrical and I&G components that are within the scope of license renewal in these narrow "plant spaces." The reviewer should

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verify that the electrical and I&C components that the applicant has elected to further exclude indeed do not have any intended functions as defined in 10 CFR 54.4(b). The reviewer should verify the applicant's methodology for evaluating electrical and I&C components that are within the scope of license renewal and no omissions of components within the scope of license renewal by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the components within the scope of license renewal for the electrical and I&C systems. Section 2.1 of this standard review plan contains additional guidance on scoping the following:

- commodity groups
- complex assemblies
- scoping events
- hypothetical failure
- cascading

At the completion of this review step, the reviewer has confidence that the applicant's identification has encompassed all electrical and I&C components within the scope of license renewal.

2.5.3.2 Component Subject to an Aging Management Review

This step determines whether the applicant has properly identified the components subject to an aging management review from among those identified in the previous step, that is, Subsection 2.5.3.1 of this review plan section. The reviewer should review selected components that the applicant has identified as within the scope of license renewal to verify that the applicant has identified these components as subject to an aging management review if they perform intended functions without moving parts or without a change in configuration or properties and are not subject to replacement on the basis of a qualified life or specified time period. The description of "passive" may also be interpreted to include structures and components that do not display "a change in state."

Only components that are "passive" and "long-lived" are subject to an aging management review. Table 2.1-2 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain components are "passive." The reviewer should verify that electrical and I&C components identified as "passive" in Table 2.1-2 of Section 2.1 of this standard review plan have been included by the applicant as subject to an aging management review, as appropriate. An applicant should justify omitting a component that is within the scope of license renewal at their facility and is listed as "passive" in Table 2.1-2.

The reviewer should verify the applicant's methodology for evaluating electrical and I&C components that are subject to aging management review and no omissions of components subject to an aging management review by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the components subject to an aging management review for the electrical and I&C systems.

~~Section 2.1 of this standard review plan contains additional guidance on screening of the following:~~

- ~~• consumables~~
- ~~• multiple intended functions~~
- ~~• piece parts~~

~~At the completion of this review step, the reviewer has confidence that the applicant has identified the "passive," "long-lived" components subject to an aging management review.~~

2.5.4 Evaluation Findings

The reviewer verifies that sufficient and adequate information has been provided to satisfy the provision of this review plan section and that the staff's evaluation supports conclusions of the following type, to be included in the staff's safety evaluation report:

The staff evaluation concludes that there is a reasonable assurance that the applicant has appropriately identified the electrical and instrumentation and controls system components subject to an aging management review to meet the requirements stated in 10 CFR 54.21(a)(1).

2.5.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specific portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.5.6 References

1. SAND96-0344, "Aging Management Guideline for Commercial Nuclear Power Plants-Electrical Cable and Terminations," Sandia National Laboratories, September 1996, page 6- 11.

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Table 2.5-1. Examples of "Plant Spaces" Approach for Electrical and I&C Scoping And Corresponding Review Procedures

| Example | Review Procedures |
|--|--|
| An applicant indicates all electrical and I&C components on site are within the scope of license renewal. | This is acceptable and a staff review is not necessary, because all electrical and I&C components are included without exception and would encompass those required by the rule. |
| An applicant indicates all electrical and I&C components located in 7 specific buildings (containment, auxiliary building, turbine building, etc.) are within the scope of license renewal. | The reviewer should review in areas outside of <u>inside of</u> these 7 buildings ("plant spaces"). The reviewer should <u>verify the applicant's methodology utilized in scoping the electrical and I&C components within the buildings.</u> verify that the applicant has included any direct-buried cables in trenches between these building as within the scope of license renewal if they perform an intended function. The reviewer should also select buildings other than the 7 specific building (for example, the radwaste facility), to verify that they do not contain any electrical and I&C components that perform any intended functions. |
| An applicant indicates that all electrical and I&C components located on site, except for the 525kV switchyard, 230kV transmission lines, radwaste facility, and 44kV substation, are within the scope of license renewal. | The reviewer should select the specifically excluded "plant spaces" (that is, the 525kV switchyard, 230kV transmission lines, radwaste facility, and 44kV substation) to verify that they do not contain any electrical and I&C components that perform any intended functions. |
| An applicant indicates that all electrical and I&C components associated with the systems specifically identified as within the scope of license renewal are themselves within the scope of license renewal. | This is not strictly the "plant spaces" approach for seoping. The applicant should may provide marked-up electrical one-line drawings identifying those system components that are within the scope of license renewal. The reviewer should review the UFSAR to select electrical and I&C components that the applicant did not identify as within the scope of the rule to verify that they do not perform any intended functions as defined in 10 CFR 54.4(b). For example, if an applicant indicates that all electrical and I&C components of the reactor protection system are within the scope of license renewal, the reviewer should review drawings to verify that all reactor protection system electrical and I&C components have been included. The reviewer should also verify that electrical and I&C components not identified as within the scope of license renewal do not perform an intended function associated with the reactor protection system. |

2.1. SCOPING AND SCREENING METHODOLOGY

Review Responsibilities

Primary - Branch responsible for quality assurance

Secondary - Branches responsible for systems, as appropriate

2.1.1 Areas of Review

This review plan section addresses the scoping and screening methodology for license renewal. As part of the integrated plant assessment specified in 10 CFR 54.21(a), an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify structures and components subject to an aging management review for license renewal. These are "passive," "long-lived" structures and components, as described in 10 CFR 54.21(a)(1), that are in systems, structures, and components (SSCs) within the scope of license renewal, as defined in 10 CFR 54.4(a). The identification of the systems, structures, and components within the scope of license renewal is called "scoping." For those systems, structures, and components within the scope of license renewal, the identification of "passive," "long-lived" structures and components that are subject to an aging management review is called "screening."

To verify that the applicant has properly implemented its methodology, the staff reviews the implementation results separately. To verify that the applicant has properly implemented its methodology, the staff reviews the implementation results separately following the guidance in sections 2.2 thru 2.5 of this standard review plan for license renewal.

The following areas relating to the applicant's scoping and screening methodology are reviewed:

2.1.1.1 Scoping

The methodology used by the applicant to implement the scoping requirements of 10 CFR 54.4, "Scope," is reviewed.

2.1.1.2 Screening

The methodology used by the applicant to implement the "screening" requirements of 10 CFR 54.21(a)(1) is reviewed.

2.1.2 Acceptance Criteria

The acceptance criteria for the areas of review are based on the following regulations:

- 10 CFR 54.4(a) as it relates to the identification of plant systems, structures and components within the scope of the rule.
- 10 CFR 54.4(b) as it relates to the identification of the planned functions of plant systems, structures, and components determined to be within scope of the rule.
- 10 CFR 54.21(a)(1) and (a)(2) as it relates to the methods utilized by the applicant to identify plant structures and components subject to aging management review.

Specific criteria necessary to meet the relevant requirements of §54.4(a), §54.4(b), §54.21(a)(1), and §54.21(a)(2) are as follows:

2.1.2.1 Scoping

The scoping methodology utilized by the applicant should be consistent with the process described in Section 3.0, "Identify the SSCs Within the Scope of License Renewal and Their Intended Functions," of NEI 95-10, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Revision 1 (Ref. 1) or the justification provided by the applicant for any exceptions should be found to be acceptable by the reviewer.

2.1.2.2 Screening

The "screening" methodology utilized by the applicant should be consistent with the process described in Section 4.1, "Identification of Structures and Components Subject to an Aging Management Review and Intended Functions," of NEI 95-10, Revision 1.

2.1.3 Review Procedures

Preparation for the review of the scoping and screening methodology employed by the applicant should include the following:

1. Review of the Commission's Safety Evaluation Report that was issued upon receipt of the operating license for the facility. This review is conducted for the purpose of familiarization with the principal design criteria for the facility and its current licensing basis (CLB), as defined in §54.3(a).

2. Review of Chapters 1 through 12 of the Updated Final Safety Analysis Report (UFSAR) and the facility's technical specifications for the purposes of familiarization with the facility design and the nomenclature that is applied to systems, structures, and components within the facility (including the bases for such nomenclature). During this review, the systems, structures, and components that are relied upon to remain functional during and after design bases events, as defined in §50.49(b)(1)(ii), for which the facility was designed to ensure that the functions described in §54.4(a)(1) are successfully accomplished should be identified. This review should also yield information regarding seismic Category I systems, structures, and components as defined in Regulatory Guide 1.29, "Seismic Design Classification" (Ref. 2). For a newer vintage plant, this information is typically contained in Section 3.2.1, "Seismic Classification," of the plant's UFSAR consistent with the Standard Review Plan (NUREG-0800) (Ref. 3).

3. Review of Chapter 15 (or equivalent) of the UFSAR to identify the anticipated operational occurrences and postulated accidents that are explicitly evaluated in the accident analysis for the facility. During this review, the systems, structures, and components that are relied upon to remain functional during and after design bases events for which the facility was designed to ensure that the functions described in §54.4(a)(1) are successfully accomplished should be identified. Design basis events are defined as conditions of normal operation, including anticipated operational

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occurrences, design basis accidents, external events, and natural phenomena for which the plant must be designed to ensure the functions in 54.4(a)(1).

46. Review of the facility's CLB records to assess the impact of any NRC orders, exemptions, or license conditions on the classification of the facility's systems, structures, , and components.

57. Review of the applicant's docketed correspondence related to the following regulations: (a) 10 CFR 50.48, "Fire Protection" (FP), (b) 10 CFR 50.49, "Environmental Qualification of Electric Equipment Important to Safety for Nuclear Power Plants" (EQ), 10 CFR 50.61, "Fracture Toughness Requirements for Protection Against Pressurized Thermal Shock Events" (PTS), 10 CFR 50.62, "Requirements for Reduction of Risk from Anticipated Transients without Scram (ATWS) Events for Light-Water-Cooled Nuclear Power Plants" (ATWS), and 10 CFR 50.63, "Loss of All Alternating Current Power" SBO). PTS is only applicable to pressurized water reactor (PWR) plants and, as specified in the regulation, an evaluation in accordance with RG 1.154 (Ref. 5) for boiling water reactor (BWR) plants is not required. no SSCs will be in scope due to PTS. Typically, no SSC's fall within the scope of 10CFR54 due to PTS.**2.1.3.1 Scoping**

Once the information delineated above has been gathered, the reviewer reviews the applicant's methodology to determine whether its depth and breadth is sufficiently comprehensive to identify the systems, structures, and components within the scope of license renewal and the structures and components requiring an aging management review in a manner consistent with the facility's CLB. Because "[t]he CLB represents the evolving set of requirements and commitments for a specific plant that are modified as necessary over the life of a plant to ensure continuation of an adequate level of safety" (60 FR22465), the systems, structures and components that make up an applicant's current licensing basis (CLB) should be considered as the initial input into the scoping process. To determine the safety-related systems, structures and components that are required under 10 CFR 54.4 (a)(1), an applicant needs to identify those systems, structures and components that are relied upon to remain functional during and following a design-basis event, consistent with the CLB of the facility. §50.49 defines design-basis events as conditions of normal operation, including anticipated operational occurrences, design-basis accidents, external events and natural phenomena for which the plant must be designed to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100.

The methodology for fulfilling the scoping requirement under 10 CFR 54.4(a)(1) may vary from plant to plant, dependent upon the plant's CLB. A plant may choose to identify its design basis events, the associated functions, and resulting SCCs required to meet the three criteria of 10 CFR 54.4(a)(1)(i), (ii), and (iii). This may not be necessary, however, because usually plants will have a list of SCCs that meet the same criteria as those in 10 CFR 54.4(a)(1)(i), (ii), and (iii) that has been used to comply with previous regulations (such as 10 CFR 50.49) that use the same scoping criteria. Additionally, Regulatory Guide 1.29 required that "all plant features necessary to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the

reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100 be designed for a Safe Shutdown Earthquake." Identification of SSCs that comply with Regulatory Guide 1.29, if applicable to a specific plant, or other applicable CLB commitments would allow for an alternative approach to be used such as 10CFR100, Appendix A, for explicitly identifying design basis events and associated functions.

With respect to technical specifications, the Commission states (60 FR 22467) the following:

"The Commission believes that there is sufficient experience with its policy on technical specifications to apply that policy generically in revising the license renewal rule consistent with the Commission's desire to credit existing regulatory programs. Therefore, the Commission concludes that the technical specification limiting conditions for operation scoping category is unwarranted and has deleted the requirement that identifies systems, structures, and components with operability requirements in technical specifications as being within the scope of the license renewal review."

Therefore, an applicant need not consider its technical specifications, and applicable limiting conditions of operation when scoping for license renewal. This is not to say that the events, functions and systems, structures, or components within the applicant's technical specifications can be excluded from the scope of license renewal solely based on its inclusion in the technical specifications. Those systems, structures, and components within an applicant's technical specifications that are relied upon to remain functional during a design basis event as identified within the applicant's UFSAR, applicable NRC regulations, license conditions, Commission orders, and exemptions may need to be included within the scope of license renewal.

An applicant may take an approach in scoping and screening which combines components which are similar with other systems. For example containment isolation valves from various systems may be identified as a system for license renewal.

Staff from branches responsible for systems may be requested to assist in reviewing the plant design basis and intended function(s), as necessary.

The reviewer should verify that the applicant's scoping and screening methods document the actual information sources used (e.g., those identified in Table 2.1-1).

Tables 2.1-2 and 2.1-3 contain specific staff guidance on certain subjects of scoping and screening, respectively.

2.1.3.1.1 Safety-Related

The applicant's methodology is reviewed to ensure that safety related systems, structures and components are identified to satisfactorily accomplish any of the

intended functions identified in §54.4(a)(1). Specifically, the reviewer needs to review the application as well as all other relevant sources of information (e.g., available Q-List, Maintenance Rule, direct references to Design Basis Events) to identify the set of plant-specific conditions of normal operation (including anticipated operational occurrences), design basis accidents (typically described in Chapter 15 of the UFSAR), external events and natural phenomena (e.g., earthquakes, tornados, floods, etc.) for which the plant must be designed to ensure the following functions:

- (i) The integrity of the reactor coolant pressure boundary;
- (ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or
- (iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in §50.34(a)(1) or §100.11 of this chapter, as applicable.

2.1.3.1.2 Non-Safety-Related

The applicant's methodology is reviewed to ensure that non-safety related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in §54.4(a)(1) are identified as within the scope of license renewal.

The scoping criterion under 10 CFR 54.4(a)(2), in general, is intended to identify those non-safety-related SSCs that support safety related functions. More specifically, this scoping criterion requires an applicant to identify all non-safety-related SSCs whose failure could prevent satisfactory accomplishments of the applicable functions of the SSCs identified under 10 CFR 54.4(a)(1). The SOC (60FR22467), Section III.c (iii) contains a clarification of the Commission's intent for this requirement in the following statement:

"The inclusion of non-safety-related systems, structures, and components whose failure could prevent other systems, structures, and components from accomplishing a safety function is intended to provide protection against safety function failure in cases where the safety-related structure or component is not itself impaired by age-related degradation but is vulnerable to failure from the failure of another structure or component that may be so impaired."

In addition, the SOC, Section III.c (iii) provides the following guidance to assist an applicant in determining the extent to which failures need to be considered when applying this scoping criterion:

"Consideration of hypothetical failures that could result from system interdependencies, that are not part of the current licensing bases and that have not been previously experienced is not required. . . . However, for some license renewal applicants, the Commission cannot exclude the possibility that hypothetical failures that are part of the CLB may require consideration of second-, third-, or fourth-level support systems."

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Therefore, to satisfy the scoping criterion under 10 CFR 54.4(a)(2), an applicant needs to identify those nonsafety-related SSCs (including second-, third-, or fourth-level support systems) whose failures are considered in the CLB and could prevent the satisfactory accomplishment of the safety-related function identified under 10 CFR 54.4(a)(1). In order to identify such systems, an applicant would consider those failures identified in (1) the documentation that makes up its CLB, (2) plant-specific operating experience, and (3) industry-wide operating experience that is specifically applicable to its facility. The applicant need not consider hypothetical failures that are not part of the CLB, and that have not been previously experienced.

In determining the nonsafety-related SSCs that are within the scope of the rule, the reviewer must evaluate the applicant's CLB to identify those SSC's that fall within the scope of the rule.- an applicant,

The reviewer must also ensure that the applicant has properly identified non-safety related portions of piping system or systems whose failure could prevent satisfactory accomplishment of any of the functions identified in §54.4(a)(1) as part of CLB.

On the basis of the staff's experience to date, it is important to clarify that the scoping criterion under 10 CFR 54.4(a)(2) specifically applies to those functions "identified in paragraphs (a)(1)(i), (ii), and (iii)" of 10 CFR 54.4. An applicant need not extend this requirement to the scoping criteria under 10 CFR 54.4(a)(3), as is discussed below.

2.1.3.1.3 "Regulated Events"

The applicant's methodology is reviewed to ensure that systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the requirements of the fire protection (FP), environmental qualification (EQ), pressurized thermal shock (PTS), anticipated transients without scram (ATWS), and station blackout (SBO) regulations are identified. The reviewer should review the applicant's docketed correspondence associated with compliance of the facility with these regulations.

The scoping criteria under 10 CFR 54.4(a)(3) states that an applicant must consider *"[a]ll systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the [specified] Commission regulations[.]"* In addition, the SOC, Section III.c(iii) states that the Commission intended to limit the potential for unnecessary expansion of the review for SSCs that meet the scoping criteria under 10 CFR 54.4(a)(3), and provides additional guidance that qualifies what is meant by *"those SSCs relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission regulations. . ."* in the following statement:

"[T]he Commission intends that this [referring to 10 CFR 54.4(a)(3)] scoping category include all systems, structures, and components whose function is relied upon to demonstrate compliance with these Commission's regulations. An applicant for license renewal should rely on the plant's current licensing bases, actual plant-specific experience, industry-wide operating experience, as appropriate, and existing engineering evaluations to determine those systems, structures, and components that are the initial focus of license renewal."

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Therefore, all SSCs that are relied upon in the plant's CLB (as defined in 10 CFR 54.3), plant-specific experience, industry-wide experience (as appropriate) and existing engineering analysis safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations identified under 10 CFR 54.4(a)(3) are required to be included within the scope of the rule. For example, if a nonsafety-related diesel generator is required for safe shutdown under the fire protection plan, the diesel generator and all SSCs specifically required for that diesel to comply with the Commission's regulations based on the applicant's design specifications for that diesel shall be included within the scope of license renewal under 10 CFR 54.4 (a)(3). This may include, but should not be limited to the cooling water system or systems required for operability, the diesel support pedestal, and any applicable power supply cable specifically required for safe shutdown in the event of a fire.

In addition, the last sentence of the second paragraph in the SOC, Section III.c (iii) provides the following guidance for limiting the application of the scoping criteria under 10 CFR 54.4(a)(3) as it applies to the use of hypothetical failures:

"Consideration of hypothetical failures that could result from system interdependencies, that are not part of the current licensing bases and that have not been previously experienced is not required."

The SOC does not provide any additional guidance relating to the use of hypothetical failures or the need to consider second-, third-, or fourth-level support systems for scoping under 10 CFR 54.4(a)(3). Therefore, in the absence of this guidance, an applicant need not consider hypothetical failures or second-, third-, or fourth-level support systems in determining the SSCs within the scope of the rule required by the applicable Commission regulations. For example, if a nonsafety-related diesel generator is only relied upon to remain functional to demonstrate compliance with the Commission regulations, an applicant may not need to consider the following SSCs: (1) an alternate/backup cooling water system, (2) the diesel generator non-seismically qualified building walls, or (3) an overhead segment of non-seismically qualified piping (in a Seismic II/I configuration). This guidance is not intended to exclude any support system (identified by an applicant's CLB, actual plant-specific experience, industry-wide experience, as applicable, safety analysis or plant evaluations) that is specifically required for compliance with or operation within the applicable Commission regulation. For example, if a nonsafety-related diesel generator (required to demonstrate compliance with an applicable Commission regulation) specifically requires a second cooling system to cool the diesel generator Jacket Water Cooling System for the diesel to be operable, then both cooling systems must be included within the scope of the rule under 10 CFR 54.4(a)(3).

The applicant is required to identify the systems, structures, and components whose functions are relied on to demonstrate compliance with these regulated events (that is, whose functions were credited in the analysis or evaluation). Mere mention of a system, structure, or component in the analysis or evaluation does not constitute support of an intended function as required by the regulation.

For EQ, the reviewer verifies that the applicant has indicated that the EQ equipment is that equipment already identified by the licensee under 10 CFR 50.49(b). That is, equipment relied upon in safety analyses or plant evaluations to demonstrate

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compliance with the Commission's regulations for environmental qualification (§50.49).

The PTS regulation is only applicable to pressurized water reactors (PWRs). If the renewal application is for a PWR and the applicant relies on a Regulatory Guide 1.154 analysis to satisfy 10 CFR 50.61 as specified in the applicant's CLB, the reviewer verifies that the applicant's methodology would include systems, structures, and components relied on in that analysis as within the scope of license renewal. Most applicants will not have performed an RG 1.154 analysis.

For SBO, the reviewer verifies that the applicant's methodology would include those systems, structures, and components relied upon during the "coping duration" phase of an SBO event (Ref. 6).

2.1.3.2 Screening

Once the systems, structures, and components within the scope of license renewal have been identified, the next step in the process is the determination of which structures and components are subject to an aging management review, i.e., "screening (Ref. 1). Note that the phrase "structures and components" applies to matters involving the integrated plant assessment (IPA) required by §54.21(a) because the aging management review required by the IPA should be a component and structure level review rather than a more general system level review (60FR22462- Footnote No. 1).

2.1.3.2.1 "Passive"

The reviewer reviews the applicant's methodology to ensure that "passive" structures and components are identified as those that perform their intended functions without moving parts or a change in configuration or properties in accordance with §54.21(a)(1)(i). The reviewer verifies that the applicant's proposed screening methodology includes consideration of structures and component intended function(s) as typified in Table 2.1-4 of this review plan section.

Intended functions are delineated for license renewal in 10 CFR 54.4(b). Table 2.1-4 is a list of typical "passive" structure and component intended functions.

Table 2.1-5 is a list of typical structures and components, identifying whether they meet 10 CFR 54.21(a)(1)(i).

10 CFR 54.21(a)(1)(i) explicitly excludes instrumentation, such as pressure transmitters, pressure indicators, and water level indicators, from an aging management review. If an applicant determines that certain structures and components listed in Table 2.1-5 as meeting 10 CFR 54.21(a)(1)(i) do not meet that requirement for its plant, the reviewer reviews the applicant's basis for that determination.

2.1.3.2.2 "Long-Lived"

The applicant's methodology is reviewed to ensure that "long-lived" structures and components are identified as those that are not subject to periodic replacement based on a qualified life or on a specified time period. Passive structures and components that are not replaced based on a qualified life or on specified time period are considered for an aging management review.

Replacement programs may be based on vendor recommendations, plant experience, or any means, which establishes a specific replacement frequency under a controlled program. Structures or components replaced either on a specified interval based upon the qualified life of the structure or component or periodically in accordance with a specified time period, are deemed to not be long lived.

A qualified life does not necessarily have to be based on calendar time. A qualified life based on run time or cycles are examples of qualified life references that are not based on calendar time (Ref. 6).

Structures and components that are replaced based on performance or condition are not generically excluded from an aging management review. An applicant may provide site specific justification for a performance or condition monitoring program to exclude structures or components from aging management review. [Reference 60CFR22.478]

2.1.4 Evaluation Findings

When the review of the information in the license renewal application is complete and the reviewer has determined that it is satisfactory and in accordance with the acceptance criteria in Subsection 2.1.2 above, a statement of the following type should be included in the staff's safety evaluation report:

The staff evaluation concludes that there is reasonable assurance that the applicant's methodology for identifying the systems, structures, and components within the scope of license renewal and the structures and components requiring an aging management review is consistent with the requirements of 10 CFR 54.4 and 10 CFR 54.21(a)(1).

2.1.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.1.6 References

1. NEI 95-10, Rev. 1, "Industry Guideline for Implementing the Requirements of 10 CFR Part 54 - The License Renewal Rule," Nuclear Energy Institute, January 2000.
2. Regulatory Guide 1.29, Rev. 2, "Seismic Design Classification," September 1978.

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3. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," July 1981.
4. Generic Letter (GL) 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities- 10 CFR 50.54(f)," dated November 23, 1988.
5. Regulatory Guide 1.154, "Format and Content of Plant-Specific Pressurized Thermal Shock Safety Analysis Reports for Pressurized Water Reactors," January 1987.
6. Letter from Dennis M. Crutchfield of NRC to Charles H. Cruse of Baltimore Gas and Electric Company dated April 4, 1996.
7. ANS-9, "Glossary of Terms in Nuclear Science and Technology," American Nuclear Society, 1986.
8. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated August 5, 1999.
9. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated March 10, 2000.
10. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated November 19, 1999.
- 2.1-11 Draft - 4/21/00
11. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated September 19, 1997.
12. Letter to Douglas J. Walters, Nuclear Energy Institute, from Christopher I. Grimes, NRC, dated April 27, 1999.
13. February 17, 1999, Letter from Duke Energy Corporation (signed by W. McCollum) forwarding responses to RAIs regarding license renewal for Oconee Nuclear Station, Units 1, 2 and 3.

Table 2.1-1. Sample Listing of Potential Information Sources

| |
|---|
| • Verified databases (A database that is subject to administrative controls to assure and maintain the integrity of the stored data or information) |
| • Master equipment lists (including NSSS vendor listings) |
| • Q-lists |
| • Updated Final Safety Analysis Reports |
| • Piping and instrument diagrams (P&IDs) |
| • Electrical one line or schematic drawings |
| • NRC Orders, Exemptions, or License Conditions for the facility |
| • Operations and training handbooks |
| • Design basis documents |
| • General arrangement or structural outline drawings |
| • Quality Assurance plan or program |
| • |
| • Maintenance Rule compliance documentation |
| • Design Basis Event evaluations (including plant-specific 10 CFR 50.59 evaluation procedures) |
| • |
| • Docketed correspondence |
| • System interaction commitments |
| • Technical Specifications |
| • Environmental Qualification program documents |
| • Regulatory compliance reports (Including Safety Evaluation Reports) |

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Table 2.1-2. Specific Staff Guidance on Scoping

| Subject Issue | Guidance |
|-----------------------|--|
| Commodity groups | The applicant may also group like structures and components into commodity groups. Examples of commodity groups are pipe supports and cable trays. The basis for grouping structures and components can be determined by such characteristics as similar design, similar materials of construction, similar aging management practices, and similar environments. If the applicant uses commodity groups, the reviewer verifies that the applicant has described the basis for the groups. |
| Complex assemblies | There are some structures and components that, when combined, are considered a complex assembly (for example, diesel generator starting air skids or heating, ventilating, and air conditioning refrigerant units). For purposes of performing an aging management review, it is important to clearly establish the boundaries of review. An applicant should establish the boundaries for such assemblies by identifying each structure and component that makes up the complex assembly and determining whether or not each structure and component is subject to an aging management review (Ref. 1). |
| Hypothetical failures | For 10 CFR 54.4(a)(2), an applicant should consider those failures identified in (1) the documentation that makes up its CLB, (2) plant-specific operating experience, and (3) industry-wide operating experience that is specifically applicable to its facility. The applicant need not consider hypothetical failures that are not part of the CLB and that have not been previously experienced. For example, an applicant should consider including: (1) the portion of a fire-protection system specified in the applicant's UFSAR that supplies water to the refueling floor (even if not required by its Fire Protection Plan) that is relied upon in a design basis accident analysis as an alternate source of cooling water that can be used to mitigate the consequences from the loss of spent fuel pool cooling, (2) a non-safety-related, non-seismically qualified building whose intended function as described in the applicant's CLB is to protect failure could result in the failure of a tank that is relied upon as an alternate source of cooling water needed to mitigate the consequences of a DBE, and (3) a segment of non-safety-related piping identified as a Seismic II/I component in the applicant's CLB (Ref. 8). |
| Cascading | For 10 CFR 54.4(a)(3), an applicant need not consider hypothetical failures or second-, third, or fourth-level support systems. For example, if a non-safety related diesel generator is only relied upon to remain functional to demonstrate compliance with the Commission regulations, an applicant may not need to consider: (1) an alternate/backup cooling water system, (2) the diesel generator non-seismically qualified building walls, or (3) an overhead segment of non-seismically qualified piping (in a Seismic II/I configuration). An applicant may not exclude any support system (identified by its CLB, actual plant-specific experience, industry-wide experience, as applicable, or existing engineering evaluations) that is specifically required for compliance with or operation within applicable Commission regulation. For example, if a non safety-related diesel generator (required to demonstrate compliance with an applicable Commission regulation) specifically requires a second cooling system to cool the diesel generator Jacket Water Cooling System for the diesel to be operable, then both cooling systems must be included within the scope of the rule (Ref. 8). |

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Table 2.1-3. Specific Staff Guidance on Screening

| Issue | Guidance |
|-----------------------------------|--|
| Consumables | Consumables may be divided into the following four categories for the purpose of license renewal: (a) packing,askets, component seals, and O-rings; (b) structural sealants; (c) oil, grease, and component filters; and (d) system filters, fire extinguishers, fire hoses, and air packs. The consumables in both categories (a) and (b) are considered as subcomponents and are not explicitly called out in the scoping and screening procedures. Rather, they are implicitly included at the component level (i.e., if a valve is identified as being in scope, a seal in that valve would also be in scope as a subcomponent of that valve). Thus, for category (a) these consumables are to be considered in the aging management review as part of the associated component. For category (b), structural sealants may perform functions without moving parts or change in configuration and are not typically replaced. Thus it is expected that the applicant's structural aging management program will address these items with respect to an aging management review program on a plant specific basis. The consumables in categories (c) are short-lived and periodically replaced and can be excluded from an aging management review on that basis. Likewise, the consumables that fall within category (d) are typically replaced based on condition and may be excluded on a plant-specific basis, subject to justification by the applicant (Ref. 9). |
| Heat exchanger intended functions | Both the pressure boundary and heat transfer functions for heat exchangers should be considered, because heat transfer may be an intended safety function of these components. There may be a unique aging effect associated with different materials in the heat exchanger parts that are associated with the heat transfer function and not the pressure boundary function. The staff would expect that the activities that effectively manage aging effects of the pressure boundary function can, in conjunction with the activities for monitoring heat exchanger performance, effectively manage aging effects applicable to the heat transfer function (Ref. 10). |
| Piece-parts | An applicant does not have to perform a renewal review of structures and components at a piece part level. For example, if bolting contributes to the performance of component intended function with moving parts, or with a change in configuration or properties, the bolting is not subject to an aging management review for renewal. Degradation of such bolting would be revealed through the active performance of the component, for example, bolting to assemble a pump impeller. |
| Pressure Boundary Bolting | If bolting contributes to the performance of a component intended function without moving parts, or without a change in configuration or properties, the bolting is subject to an aging management review for renewal. Examples are: bolting on a pressurizer manway cover, valve bonnet-to-body bolting, bolting on a pump support, and diesel generator embedment plate anchors. |

Table 2.1-4. Typical "Passive" Structure and Component Intended Functions

| |
|--|
| Components |
| Provide pressure-retaining boundary so that sufficient flow at adequate pressure is delivered |
| Provide filtration |
| Provide flow restriction (throttle) |
| Provide structural support to safety-related components |
| Provide electrical connections to specified sections of an electrical circuit to deliver voltage, current or signals |
| Provide heat transfer |
| Structures |
| Provide rated fire barrier to confine or retard a fire from spreading to or from adjacent areas of the plant |
| Provide shelter/protection to safety-related components |
| Provide structural and / or functional support to safety-related equipment |
| Provide flood protection barrier (internal and external flooding event) |
| Provide pressure boundary or essentially leak tight barrier to protect public health and safety in the event of any postulated design basis events. |
| Provide spray shield or curbs for directing flow (e.g. safety injection flow to containment sump) |
| Provide shielding against radiation |
| Provide missile barrier (internally or externally generated) |
| Provide shielding against high energy line breaks |
| Provide structural support to nonsafety-related components whose failure could prevent satisfactory accomplishment of any of the required safety-related functions |
| Provide pipe whip restraint |
| Provide path for release of filtered and unfiltered gaseous discharge |
| Provide source of cooling water for plant shutdown. |
| Provide heat sink during SBO or design basis accidents. |

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Table 2.1-5. Typical Structures, Components, and Commodity Groups, and 10 CFR 54.21(a)(1)(i) Determinations for Integrated Plant Assessment

| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|-------------|--|---|--|
| 1 | Structures | Category I Structures | Yes |
| 2 | Structures | Primary Containment Structure | Yes |
| 3 | Structures | Intake Structures | Yes |
| 4 | Structures | Intake Canal | Yes |
| 5 | Structures | Other Non-Category I Structures Within the Scope of License Renewal | Yes |
| 6 | Structures | Equipment Supports and Foundations | Yes |
| 7 | Structures | Structural Bellows | Yes |
| 8 | Structures | Controlled Leakage Doors | Yes |
| 9 | Structures | Penetration Seals | Yes |
| 10 | Structures | Compressible Joints and Seals | Yes |
| 11 | Structures | Fuel Pool and Sump Liners | Yes |
| 12 | Structures | Concrete Curbs | Yes |
| 13 | Structures | Offgas Stack and Flue | Yes |
| 14 | Structures | Fire Barriers | Yes |
| 15 | Structures | Pipe Whip Restraints and Jet Impingement Shields | Yes |
| 16 | Structures | Electrical and Instrumentation and Control Penetration Assemblies | Yes |
| 17 | Structures | Instrument Racks, Frames, Panels, and Enclosures | Yes |
| 18 | Structures | Electrical Panels, Racks, Cabinets, and Other Enclosures | Yes |
| 19 | Structures | Cable Trays and Supports | Yes |
| 20 | Structures | Conduit | Yes |
| 21 | Structures | Tube Track | Yes |
| 22 | Structures | Reactor Vessel Internals | Yes |
| 23 | Structures | ASME Class 1 Hangers and Supports | Yes |
| 24 | Structures | Non-ASME Class 1 Hangers and Supports | Yes |
| 25 | Structures | Snubbers | No |
| 26 | Reactor Coolant Pressure Boundary Components (Note: the components of the RCPB are | ASME Class 1 Piping | Yes |

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| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|-------------|---|--|--|
| | defined by each plant's CLB and site specific documentation) | | |
| 27 | Reactor Coolant Pressure Boundary Components | Reactor Vessel | Yes |
| 28 | Reactor Coolant Pressure Boundary Components | Reactor Coolant Pumps | Yes (Casing) |
| 29 | Reactor Coolant Pressure Boundary Components | Control Rod Drives | No |
| 30 | Reactor Coolant Pressure Boundary Components | Control Rod Drive Housing | Yes |
| 31 | Reactor Coolant Pressure Boundary Components | Steam Generators | Yes |
| 32 | Reactor Coolant Pressure Boundary Components | Pressurizers | Yes |
| 33 | Non-Class 1 Piping Components | Underground Piping | Yes |
| 34 | Non-Class 1 Piping Components | Piping in Low Temperature Demineralized Water Service | Yes |
| 35 | Non-Class 1 Piping Components | Piping in High Temperature Single Phase Service | Yes |
| 36 | Non-Class 1 Piping Components | Piping in Multiple Phase Service | Yes |
| 37 | Non-Class 1 Piping Components | Service Water Piping | Yes |
| 38 | Non-Class 1 Piping Components | Low Temperature Gas Transport Piping | Yes |
| 39 | Non-Class 1 Piping Components | Stainless Steel Tubing | Yes |
| 40 | Non-Class 1 Piping Components | Instrument Tubing | Yes |
| 41 | Non-Class 1 Piping Components | Expansion Joints | Yes |
| 42 | Non-Class 1 Piping Components | Ductwork | Yes |
| 43 | Non-Class 1 Piping Components | Sprinklers Heads | Yes |

| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|----------------------------------|---|---|
| 44 | Non-Class 1 Piping Components | Miscellaneous Appurtenances (includes fittings, couplings, reducers, elbows, thermowells, flanges, fasteners, welded attachments, etc.) | Yes |
| 45 | Pumps | ECCS Pumps | Yes (Casing) |
| 46 | Pumps | Service Water and Fire Pumps | Yes (Casing) |
| 47 | Pumps | Lube Oil and Closed Cooling Water Pumps | Yes (Casing) |
| 48 | Pumps | Condensate Pumps | Yes (Casing) |
| 49 | Pumps | Borated Water Pumps | Yes (Casing) |
| 50 | Pumps | Emergency Service Water Pumps | Yes (Casing) |
| 51 | Pumps | Submersible Pumps | Yes (Casing) |
| 52 | Turbines | Turbine Pump Drives (excluding pumps) | Yes (Casing) |
| 53 | Turbines | Gas Turbines | Yes (Casing) |
| 54 | Turbines | Controls (actuator and overspeed trip) | No |
| 55 | Engines | Fire Pump Diesel Engines | No |
| 56 | Emergency Diesel Generators | Emergency Diesel Generators | No |
| 57 | Heat Exchangers | Condensers | Yes |
| 58 | Heat Exchangers | HVAC Coolers | Yes |
| 59 | Heat Exchangers | Primary Water System Heat Exchangers | Yes |
| 60 | Heat Exchangers | Treated Water System Heat Exchangers | Yes |
| 61 | Heat Exchangers | Closed Cooling Water System Heat Exchangers | Yes |
| 62 | Heat Exchangers | Lubricating Oil System Heat Exchangers | Yes |
| 63 | Heat Exchangers | Raw Water System Heat Exchangers | Yes |
| 64 | Heat Exchangers | Containment Atmospheric System Heat Exchangers | Yes |
| 65 | Motors | ECCS and Emergency Service Water Pump Motors | No |
| 66 | Motors | Small Motors | No |
| 67 | Miscellaneous Process Components | Gland Seal Blower | No |
| 68 | Miscellaneous | Recombiners | * |

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| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|--|--|--|
| | Process Components | | |
| 70 | Miscellaneous Process Components | Strainers | Yes |
| 71 | Miscellaneous Process Components | Rupture Disks | Yes |
| 72 | Miscellaneous Process Components | Steam Traps | Yes |
| 73 | Miscellaneous Process Components | Restricting Orifices | Yes |
| 74 | Miscellaneous Process Components | Air Compressor | No |
| 75 | Electrical and I&C | Alarm Units (e.g., fire detection devices) | No |
| 76 | Electrical and I&C | Analyzers (e.g., gas analyzers, conductivity analyzers) | No |
| 77 | Electrical and I&C | Annunciator (e.g., lights, buzzers, alarms) | No |
| 78 | Electrical and I&C | Batteries | No |
| 79 | Electrical and I&C | Cables and Connections, Bus, electrical portions of Electrical and I&C Penetration Assemblies (e.g., electrical penetration assembly cables and connections, connectors, electrical splices, terminal blocks, power cables, control cables, instrument cables, insulated cables, communication cables, uninsulated ground conductors, transmission conductors, isolated-phase bus, nonsegregated-phase bus, segregated-phase bus, switchyard bus) | Yes |

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| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|--------------------|--|--|
| 80 | Electrical and I&C | Chargers, Converters, Inverters (e.g., converters-voltage/current, converters-voltage/pneumatic, battery chargers/inverters, motor-generator sets) | No |
| 81 | Electrical and I&C | Circuit Breakers (e.g., air circuit breakers, molded case circuit breakers, oil-filled circuit breakers) | No |
| 82 | Electrical and I&C | Communication Equipment (e.g., telephones, video or audio recording or playback equipment, intercoms, computer terminals, electronic messaging, radios, transmission line traps and other power-line carrier equipment) | No (Ref. 13) |
| 83 | Electrical and I&C | Electric Heaters, Heat Tracing | No (Ref. 11) |
| 84 | Electrical and I&C | Electrical Controls and Panel Internal Component Assemblies (may include internal devices such as, but not limited to, switches, breakers, indicating lights, etc.) (e.g., main control board, HVAC control board) | No |
| 85 | Electrical and I&C | Elements, RTDs, Sensors, Thermocouples, Transducers (e.g., conductivity elements, flow elements, temperature sensors, watt transducers, thermocouples, RTDs, vibration probes, amp transducers, frequency transducers, power factor transducers, speed transducers, var. transducers, vibration transducers, voltage transducers) | No Yes for a PB if applicable (Ref. 13) |
| 86 | Electrical and I&C | Fuses | No (Ref. 12) |

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| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|--------------------|--|---|
| 87 | Electrical and I&C | Generators, Motors (e.g., emergency diesel generators, ECCS and emergency service water pump motors, small motors, motor-generator sets, steam turbine generators, combustion turbine generators, fan motors, pump motors, valve motors, air compressor motors) | No |
| 88 | Electrical and I&C | High-voltage Insulators (e.g., porcelain switchyard insulators, transmission line insulators) | Yes (Ref. 13) |
| 89 | Electrical and I&C | High-voltage Surge Arresters (e.g., switchyard surge arresters, lightning arresters, surge suppressers, surge capacitors, protective capacitors) | No (Ref. 13) |
| 90 | Electrical and I&C | Indicators (e.g., differential pressure indicators, pressure indicators, flow indicators, level indicators, speed indicators, temperature indicators, analog indicators, digital indicators, LED bar graph indicators, LCD indicators) | No |
| 91 | Electrical and I&C | Isolators (e.g., transformer isolators, optical isolators, isolation relays, isolating transfer diodes) | No |
| 92 | Electrical and I&C | Light Bulbs (e.g., indicating lights, emergency lighting, incandescent light bulbs, fluorescent light bulbs) | No (Ref. 11) |
| 93 | Electrical and I&C | Loop Controllers (e.g., differential pressure indicating controllers, flow indicating controllers, temperature controllers, controllers, speed controllers, programmable logic controller, single loop digital controller, process controllers, manual loader, selector station, hand/auto station, auto/manual station) | No |
| 94 | Electrical and I&C | Meters (e.g., ammeters, volt meters, frequency meters, var meters, watt meters, power factor meters, watt-hour meters) | No |
| 95 | Electrical and I&C | Power Supplies | No |

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| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|--------------------|---|---|
| 96 | Electrical and I&C | Radiation Monitors (includes radiation sensors and radiators transmitters) (e.g., area radiation monitors, process radiation monitors) | No Yes for a PB if applicable |
| 97 | Electrical and I&C | Recorders (e.g., chart recorders, digital recorders, events recorders) | No |
| 98 | Electrical and I&C | Regulators (e.g., voltage regulators) | No (Ref. 13) |
| 99 | Electrical and I&C | Relays (e.g., protective relays, control/logic relays, auxiliary relays) | No |
| 100 | Electrical and I&C | Signal Conditioners | No |
| 101 | Electrical and I&C | Solenoid Operators | No |
| 102 | Electrical and I&C | Solid-State Devices (e.g., transistors, circuit boards, computers) | No |
| 103 | Electrical and I&C | Switches (e.g., differential pressure indicating switches, differential pressure switches, pressure indicator switches, pressure switches, flow switches, conductivity switches, level indicating switches, temperature indicating switches, temperature switches, moisture switches, position switches, vibration switches, level switches, control switches, automatic transfer switches, manual transfer switches, manual disconnect switches, current switches, limit switches, knife switches) | No |
| 104 | Electrical and I&C | Switchgear, Load Centers, Motor Control Centers, Distribution Panel Internal Component Assemblies (may include internal devices such as, but not limited to, switches, breakers, indicating lights, etc.) (e.g., 4.16 kV switchgear, 480V load centers, 480V motor control centers, 250 VDC motor control centers, 6.9 kV switchgear units, 240/125V power distribution panels) | No |
| 105 | Electrical and I&C | Transformers (e.g., instrument transformers, load center transformers, small distribution transformers, large power transformers, isolation transformers, | No (Ref. 11) |

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| Item | Category | Structure, Component, or Commodity Group | Structure, Component, or Commodity Group Meets 10 CFR 54.21(a)(1)(i) (Yes/No) |
|------|--------------------------|---|--|
| | | | |
| | | | |
| 107 | Electrical Components | Terminal Blocks | No |
| 108 | Valves | Hydraulic Operated Valves | Yes (Bodies) |
| 109 | Valves | Explosive Valves | Yes (Bodies) |
| 110 | Valves | Manual Valves | Yes (Bodies) |
| 111 | Valves | Small Valves | Yes (Bodies) |
| 112 | Valves | Motor-Operated Valves | Yes (Bodies) |
| 113 | Valves | Air-Operated Valves | Yes (Bodies) |
| 114 | Valves | Main Steam Isolation Valves | Yes (Bodies) |
| 115 | Valves | Small Relief Valves | Yes (Bodies) |
| 116 | Valves | Check Valves | Yes (Bodies) |
| 117 | Valves | Safety Relief Valves | Yes (Bodies) |
| 118 | Valves | Dampers | No |
| 119 | Tanks | Air Accumulators | Yes |
| 120 | Tanks | Discharge Accumulators (Dampers) | Yes |
| 121 | Tanks | Boron Acid Storage Tanks | Yes |
| 122 | Tanks | Above Ground Oil Tanks | Yes |
| 123 | Tanks | Underground Oil Tanks | Yes |
| 124 | Tanks | Demineralized Water Tanks | Yes |
| 125 | Tanks | Neutron Shield Tank | Yes |
| 126 | Fans | Ventilation Fans | No |
| 127 | Fans | Other Fans | No |
| 128 | Miscellaneous | Emergency Lighting | No |
| 129 | Miscellaneous | Hose Stations | Yes |
| | | | |
| | | | |
| | | | |
| | | | |

*The applicant should identify the intended function(s) and apply the IPA process to determine whether the structure, component, or commodity grouping meets 10 CFR 54.21(a)(1)(i).

2.2. PLANT LEVEL SCOPING RESULTS

Review Responsibilities

Primary - Branches responsible for systems

Secondary - Branch responsible for electrical engineering

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2.2.1 Areas of Review

This review plan section addresses the plant level scoping results for license renewal. An applicant is required by 10 CFR 54.21(a)(1) to identify and list structures and components subject to an aging management review. These are "passive," "long-lived" structures and components that are within the scope of license renewal. In addition, an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify these structures and components. The staff reviews the applicant's methodology separately following the guidance in Section 2.1 of this standard review plan.

. An applicant will provide a list of all the plant system and structures identifying those that are within the scope of license renewal. If the list exists elsewhere, such as in the UFSAR, it is acceptable to merely identify that linkage. The license renewal rule does not require the identification of all plant systems and structures. However, providing such a list may make the NRC's review more efficient.. To verify that the applicant has properly implemented its scoping methodology, the staff focuses its review on the implementation results separately following the guidance in section 2.2.3.1 of this standard review plan.

Examples of plant systems are the reactor coolant system, containment spray, standby gas treatment (BWR), emergency core cooling, open and closed cycle cooling water, compressed air, chemical and volume control (PWR), standby liquid control (BWR), main steam, feedwater, condensate, steam generator blowdown (PWR), and auxiliary feedwater systems (PWR).

Examples of plant structures are the primary containment, secondary containment (BWR), control room envelope, auxiliary building, fuel storage building, radwaste building, and ultimate heat sink cooling tower.

Examples of components are the reactor vessel, reactor vessel internals, steam generator (PWR), and light and heavy load handling cranes. Some applicants may have categorized such components as plant "systems" for their convenience.

After the plant level scoping, an applicant would identify the portion of the system or structure that performs intended function(s), as defined in 10 CFR 54.4(b). Then, the applicant would identify those structures and components that are "passive" and "long-lived" in accordance with 10 CFR 54.21(a)(1)(i) and (ii). These "passive," "long-lived" structures and components are those that are subject to an aging management review. The staff reviews these results separately following the guidance in Sections 2.3 through 2.5 of this standard review plan.

An applicant has the flexibility to determine the set of systems and structures for which it considers as within the scope of license renewal, provided that this set encompasses the systems and structures for which the Commission has determined as within the scope of license renewal. Therefore, the reviewer must verify that the applicant has properly implemented its methodology ensuring that it complies with 10 CFR 54.4(a)(1) through (3). Therefore, the reviewer should not review systems and structures that the applicant has identified as within the scope of license renewal, because it is an applicant's option to include more systems and components than those required by 10 CFR 54.4.

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The following area relating to the methodology implementation results for the plant level systems and structures are reviewed:

2.2.1.1 Systems and Structures Within the Scope of License Renewal

The reviewer verifies the applicant's identification of plant level systems and structures that are within the scope of license renewal.

2.2.2 Acceptance Criteria

The acceptance criteria for the area of review define methods for meeting the requirements of the Commission regulations in 10 CFR 54.4. For the applicant's implementation of its methodology in 10 CFR 54.21(a)(2) to be acceptable, the staff should find the applicant has properly implemented the methodology for scoping, in accordance with guidance provided the reviewer in Inspection Procedure 71002..

2.2.2.1 Systems and Structures Within the Scope of License Renewal

Systems and structures are within the scope of license renewal as delineated in 10 CFR 54.4(a) if they are:

1. Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events [as defined in 10 CFR 50.49(b)(1)] to ensure the following functions:

(i) The integrity of the reactor coolant pressure boundary,

(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition, or

(iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1) or 10 CFR 100.11, as applicable.

2. Non-safety-related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in 10 CFR 54.4(a)(1) above.

3. Systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

2.2.3 Review Procedures

For the area of review, the following review procedures are to be followed:

2.2.3.1 Systems and Structures Within the Scope of License Renewal

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The reviewer should determine whether the applicant has properly identified the plant level systems and structures within the scope of license renewal. The license renewal rule does not require the identification of all plant systems and structures. However, providing such a list may make the NRC's review more efficient. A plant may choose to identify its design basis events, the associated functions, and resulting SCCs required to meet the three criteria of 10 CFR 54.4(a)(1)(i), (ii), and (iii). This may not be necessary, however, because usually plants will have a list of SCCs that meet the same criteria as those in 10 CFR 54.4(a)(1)(i), (ii), and (iii) that has been used to comply with previous regulations (such as 10 CFR 50.49) that use the same scoping criteria. Additionally, Regulatory Guide 1.29 required that "all plant features necessary to ensure (1) the integrity of the reactor coolant pressure boundary, (2) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (3) the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures comparable to the guidelines exposures of 10 CFR part 100 be designed for a Safe Shutdown Earthquake." Identification of SSCs that comply with Regulatory Guide 1.29, if applicable to a specific plant, or other applicable CLB commitments would allow for an alternative approach to be used such as 10CFR100, Appendix A, for explicitly identifying design basis events and associated functions.

To make that determination, the reviewer should review selected systems and structures that the applicant did not identify as within the scope of license renewal to verify that they do not have any intended functions. To make that determination, The reviewer should verify that the applicant has implemented the methodology to make the staff finding that there is reasonable assurance that the applicant has identified the plant level systems and structures within the scope of license renewal.

This review plan section addresses scoping at a plant level. Thus, if any portion of a system or structure performs an intended function as defined in 10 CFR 54.4(b), the system or structure is within the scope of license renewal. The review of the individual portions of systems and structures that are within the scope of license renewal are addressed separately in Sections 2.3 through 2.5 of this standard review plan.

From the list of plant level systems and structures, the reviewer validates the methodology by selecting a sample of systems and structures that the applicant did not identify as within the scope of license renewal. The following are a few examples:

1. An applicant does not identify its a radiation monitoring system as within the scope of license renewal. The reviewer may review the UFSAR to verify that this particular system does not perform any intended functions at the applicant's plant.
2. An applicant does not identify its polar crane as within the scope of license renewal. The reviewer may review the plant's UFSAR to verify that this particular structure for the applicant's plant is not "seismic II over I," denoting a non-seismic Category I structure interacting with seismic Category I structure, as described in Position C.2 of Regulatory Guide 1.29, "Seismic Design Classification" (Ref. 1).
3. An applicant does not identify its fire protection pump house as within the scope of license renewal. The reviewer may review the plant's commitments to the fire protection regulation (10 CFR 50.48) to verify that this particular structure does not perform any intended functions at the applicant's plant.

4. An applicant uses the “spaces” approach for scoping electrical equipment and elects to include all electrical equipment on site to be within the scope of license renewal, with the exception of the 525kV switchyard and the 230kV transmission lines. The reviewer may review the plant’s UFSAR and commitments to the station blackout regulation (10 CFR 50.63) to verify that the applicant has included the appropriate SSC’s and their intended functions. 525kV switchyard and the 230kV transmission lines do not perform any intended functions at the applicant’s plant.

Table 2.2-1 of this review plan section contains additional examples based on lessons learned from the review of the initial license renewal applications, including a discussion of the plant-specific basis for disposition, of determining whether a system or structure is within the scope of license renewal.

An applicant may choose to group similar components and structures together in commodity groups for separate analyses. It is acceptable for an applicant to identify a particular system or structure as not within the scope of license renewal, if the only portion of the system or structure that has any intended functions is addressed separately in specific commodity groups.

The reviewer should find sufficient information supplied by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the plant level systems and structures within the scope of license renewal.

Section 2.1 of this standard review plan contains additional guidance on the following:

- commodity groups
- complex assemblies
- hypothetical failure
- cascading

2.2.4 Evaluation Findings

The reviewer verifies that sufficient and adequate information has been provided to satisfy the provision of this standard review plan and that the staff’s evaluation supports conclusions of the following type, to be included in the staff’s safety evaluation report:

The staff evaluation concludes that there is reasonable assurance that the applicant has appropriately identified the systems and structures within the scope of license renewal in accordance with 10 CFR 54.4.

2.2.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specific portions of the Commission’s regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.2.6 References None

Table 2.2-1. Examples of System and Structure Scoping and Basis for Disposition

| Example | Disposition |
|--|---|
| Recirculation cooling water system | One function of the recirculation cooling water system is to remove decay heat from the stored fuel in the spent fuel pool. However, the fuel handling accident for the plant assumes that the spent fuel pool cooling, thus the recirculation cooling water system, is not functional during or following such an event. Thus, the recirculation cooling water system is not within the scope of license renewal because of this function. |
| Station blackout diesel generator building | The UFSAR indicates that certain structural components of the station blackout diesel generator building for the plant are designed to preclude seismic failure and subsequent impact of the structure on the adjacent safety-related emergency diesel generator building. In addition, the UFSAR indicates that certain equipments on the building have been anchored to resist tornado wind loads. Thus, the station blackout diesel generator building is within the scope of license renewal. |

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2.3. SYSTEM SCOPING AND SCREENING RESULTS: MECHANICAL

Review Responsibilities

Primary - Branches responsible for systems

Secondary - None

2.3.1 Areas of Review

This review plan section addresses the mechanical systems scoping and screening results for license renewal. Typical mechanical systems consist of the following:

Reactor Coolant System (such as reactor vessel and internals, coolant pressure boundary, coolant system and connected lines, and steam generators).

Engineered Safety Features (such as containment spray and isolation systems, standby gas treatment system, emergency core cooling system, and fan cooler system).

Auxiliary Systems (such as new and spent fuel storage, spent fuel cooling and cleanup, suppression pool cleanup, load handling, open and closed cycle cooling water, ultimate heat sink, compressed air system, chemical and volume control system, standby liquid control system, reactor water cleanup, coolant storage/refueling water, shutdown water, ventilation, diesel generator, fire protection, and liquid waste disposal).

Steam and Power Conversion System (such as turbines, main and extraction steam, feedwater, condensate, steam generator blowdown, and auxiliary feedwater).

An applicant is required by 10 CFR 54.21(a)(1) to identify and list structures and components subject to an aging management review. These are "passive," "long-lived" structures and components that are within the scope of license renewal. In addition, an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify these structures and components. The staff reviews the applicant's methodology separately following the guidance in Section 2.1 of this standard review plan. To verify that the applicant had properly implemented its methodology, the staff should focus its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified mechanical system components which require aging management review..

For a mechanical system that is within the scope of license renewal, an applicant would identify the portion of the system that performs intended function(s), as defined in 10 CFR 54.4(b). The applicant may identify this particular portion of the system in marked-up piping and instrument diagrams (P&IDs) or other media. This is "scoping" of mechanical components in a system to identify those that are within the scope of license renewal for a system.

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For the mechanical components within this particular portion of the system, an applicant would identify those that are "passive" and "long-lived" in accordance with 10 CFR 54.21(a)(1)(i) and (ii). These "passive," "long-lived" mechanical components are those that are subject to an aging management review. This is "screening" of mechanical components in a system to identify those that are "passive" and "long-lived."

The applicant has the flexibility to determine the set of structures and components for which an aging management review is performed, provided that this set encompasses the structures and components for which the Commission has determined an aging management review is required. This is based on the statements of consideration for the license renewal rule (60 FR 22478). Therefore, the reviewer should ~~not~~ review components that the applicant has identified as subject to an aging management review to verify that the applicant has implemented a methodology that produces results consistent with 10CFR54.21(a)(1). , because it is an applicant's option to include more components than those required by 10 CFR 52.21(a)(1).

The following areas relating to the methodology implementation results for the mechanical systems are reviewed:

2.3.1.21 Components Subject to an Aging Management Review

The applicant's identification of mechanical system components within the scope of license renewal that are "passive" and "long-lived" is reviewed. (Screening)

2.3.1.1 Components Subject to an Aging Management Review

For each of the systems within the scope of license renewal, an applicant should identify those "passive," "long-lived" components that have intended functions as requiring aging management review.

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.

The reviewer should select functions described in the UFSAR to verify that selected mechanical components were properly scoped and screened. For example, if the UFSAR indicates that a diesel engine is required to mitigate design basis events and that the jacket water heat exchanger, diesel fuel oil and air start systems are noted in the UFSAR as required for the diesel to operate, the reviewer should verify that passive long lived components in these systems have been identified as requiring aging management review.

Only components that are "passive" and "long-lived" are subject to aging management review. Table 2.1-5 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain components are "passive." The applicant should justify omitting a component that is within the scope of license renewal at their facility and is listed as "passive" on Table 2.1-5.

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The applicant should also identify the components' intended functions. Table 2.1-4 in Section 2.1 of this standard review plan provides typical "passive" component intended functions.

The reviewer should validate the applicant's methodology for identifying components subject to aging management review to make the staff finding that there is reasonable assurance that the applicant has identified the components subject to an aging management review.

The staff has developed additional scoping/screening guidance. For example, there are some components that may be grouped together as a commodity, such as carbon steel containment isolation valves with an air internal environment, and there are some components that are considered consumable materials, such as sealants. Additional guidance on these and others are contained in Section 2.1 of this standard review plan for the following:

- commodity groups
- consumables
- multiple functions
- piece-parts

Table 2.3-1 provides examples of components scoping/screening lessons learned from the review of initial license renewal applications and basis for disposition.

2.3.2 Acceptance Criteria

The acceptance criteria for the areas of review define methods for meeting the requirements of the Commission's regulations in 10 CFR 54.21(a)(1). For the applicant's implementation of its methodology in 10 CFR 54.21(a)(2) to be acceptable, the staff should find the applicant has properly implemented the methodology for screening.

2.3.2.1 Components Subject to Aging Management Review

Mechanical components are subject to an aging management review if they are within the scope of license renewal and perform an intended function as defined in 10 CFR 54.4(b) without a change in configuration or properties ("passive"), and are not subject to replacement based on a qualified life or specified time period ("long-lived") (10 CFR 54.21(a)(1)(i) and (ii)).

2.3.3 Review Procedures

For each area of review, the following review procedures are to be followed:

2.3.3.1 Components Within the Scope of License Renewal

This step determines whether the applicant has properly identified the components within the scope of license renewal. The reviewer should review selected components

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that the applicant ~~did not~~ identified as within the scope of license renewal to verify that they did not omit components with intended functions were properly selected.

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.

An applicant may provide plant marked-up drawings (P&IDs) indicating the portion of the system that is within the scope of license renewal. The reviewer should focus the review on those components that are ~~not~~ identified as being within the scope of license renewal, verifying the accuracy of boundary points and major system components and validating that the components identified within the scope of 10CFR 54(a)(10) through (3) that are required for the system to perform its intended functions. Portions of the system identified as being within the scope of license renewal by the applicant do not have to be identified by the reviewer because the applicant has the option of including more components than the rule requires to be in the scope.

Further, the reviewer should select functions described in the UFSAR to verify that the applicant has properly implemented the methodology for screening selected components in mechanical systems.

Section 2.1 of this standard review plan contains additional guidance on the following:

- commodity groups
- complex assemblies
- hypothetical failure
- cascading

Table 2.3-1 provides examples of mechanical components scoping lessons learned from the review of the initial license renewal applications and basis for disposition.

At the completion of this review step, the reviewer has confidence that the applicant has identified the components within the scope of license renewal.

2.3.3.2 Components Subject to an Aging Management Review

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.

For example, an applicant has marked a boundary of a certain system that is within the scope of license renewal. The marked-up P&ID shows that there are piping, valves, and air compressors within this boundary. The applicant has identified piping and valve bodies as subject to an aging management review. The reviewer verifies that Table 2.1-2 of Section 2.1 of this standard review plan indicates air compressors are not subject to an aging management review.

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The reviewer should find no omissions of components subject to an aging management review by the applicant verify that the applicant has properly implemented the screening methodology for components in mechanical systems to make the staff finding that there is reasonable assurance that the applicant has identified the components subject to an aging management review for the mechanical systems.

Section 2.1 of this standard review plan contains additional guidance on screening the following:

- consumables
- heat exchanger intended functions
- multiple functions
- piece-parts

Table 2.3-2 provides examples of mechanical components screening lessons learned from the review of the initial license renewal applications and basis for disposition.

The applicant should identify the intended functions which are the basis for the components being in the scope of license renewal.

At the completion of the review step, the reviewer has confidence that the applicant has identified the "passive," "long-lived" components subject to an aging management review.

2.3.4 Evaluation Findings

The reviewer verifies that sufficient and adequate information has been provided to satisfy the provision of this review plan section and that the staff's evaluation supports conclusions of the following type, to be included in the staff's safety evaluation report:

The staff evaluation concludes that there is a reasonable assurance that the applicant has appropriately identified the mechanical system components subject to an aging management review to meet the requirements stated in 10 CFR 54.21(a)(1).

2.3.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specific portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.3.6 References

None

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Table 2.3-1. Examples of Mechanical Components Scoping and Basis for Disposition

| Example | Disposition |
|---|--|
| Piping segment that provides structural support | The safety-related/non-safety-related boundary along a pipe run may occur at a valve location. The piping segment between this valve and the next seismic anchor provides structural support in a seismic event. This piping segment is within the scope of license renewal. |
| Containment heating and ventilation system ductwork downstream of the fusible links providing cooling to the steam generator compartment and reactor vessel annulus | This non-safety-related ductwork provides cooling to support the applicant's environmental qualification (EQ) program. However, the failure of the cavity cooling system ductwork will not prevent the satisfactory completion of any critical safety function during and following a design basis accident. Thus, this ductwork is not within the scope of license renewal. |
| Standpipe installed inside the fuel oil storage tank | The standpipe as described in the applicant's CLB ensures that there is sufficient fuel oil reserve for the emergency diesel generator to operate for the specified number of days in the plant technical specifications following design basis events. Therefore, this standpipe is within the scope of license renewal. |
| Insulation on boron injection tank | The temperature is high enough that insulation is not necessary to prevent boron precipitation. Technical specifications require periodic verification of the tank temperature. Thus the insulation is not relied on to ensure the function of the emergency system and is not within the scope of license renewal. |
| Pressurizer spray head | The spray head is not credited for the mitigation of any accidents addressed in the UFSAR accident analyses. The function of the pressurizer spray is to reduce reactor coolant system pressure during normal operating conditions. Therefore, the spray head is not within the scope of license renewal. |

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Table 2.3-2. Examples of Mechanical Components Screening and Basis for Disposition

| Example | Disposition |
|---|---|
| Diesel engine jacket water heat exchanger, and portions of the diesel fuel oil system and starting air system supplied by a vendor on a diesel generator skid | These are "passive," "long-lived" components having intended functions. They are subject to an aging management review for license renewal even though the diesel generator is considered "active." |
| Fuel assemblies | The fuel assemblies are replaced at regular intervals based on the fuel cycle of the plant. They are not subject to an aging management review. |
| Valve internals (such as disk and seat) | 10 CFR 54.21(a)(1)(i) excludes valves, other than the valve body, from aging management review. The statements of consideration of the license renewal rule provide the basis for excluding structures and components that perform their intended functions with moving parts or with a change in configuration or properties. Although the valve body is subject to an aging management review, valve internals are not. |

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Table 2.3-3. Examples of Mechanical Component Intended Functions

| Component | Intended Function* |
|--------------------------|--|
| Piping | Pressure boundary |
| Valve body | Pressure boundary |
| Pump casing | Pressure boundary |
| Orifice | Pressure boundary Flow restriction |
| Heat exchanger | Pressure boundary Heat transfer |
| Reactor vessel internals | Structural support of fuel assemblies, control rods, and incore instrumentation, to maintain core configuration and flow distribution |

*The component intended function(s) are those that support the system intended function(s). For example, a heat exchanger in the spent fuel cooling system has a pressure boundary intended function, but may not have a heat transfer function. Similarly, not all orifices have flow restriction as an intended function.

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2.4. STRUCTURE SCOPING AND SCREENING RESULTS

Review Responsibilities

Primary - Branch responsible for plant systems

Secondary - None

2.4.1 Areas of Review

This review plan section addresses the scoping and screening results of structures and structural components for license renewal. Typical structures include the following:

- The primary containment structure
- Building structures, such as the intake structure, diesel generator building, auxiliary building, and turbine building.
- Component supports, such as cable trays, pipe hangers, elastomer vibration isolators, equipment frames and stanchions, and HVAC ducting supports.
- Non-safety-related structures whose failure could prevent safety-related systems, structures, and components from performing their intended functions (that is, seismic Category II over I structures).

Typical structural components include the following: liner plates, walls, floors, roofs, foundations, doors, beams, columns, and frames.

An applicant is required by 10 CFR 54.21(a)(1) to identify and list structures and components subject to an aging management review. These are "passive," "long-lived" structures and components that are within the scope of license renewal. In addition, an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify these structures and components. The staff reviews the applicant's methodology separately following the guidance in Section 2.1 of this standard review plan. The staff should focus its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified structures and components which require aging management review. confirm that there is no omission of structural components that are subject to an aging management review by the applicant to

For structures that are within the scope of license renewal, an applicant should identify the structural components that are "passive" and "long-lived" in accordance with 10 CFR 54.21(a)(1)(i) and (ii). These "passive," "long-lived" structural components are those that are subject to an aging management review ("screening"). The applicant's methodology implementation results for identifying structural components subject to an aging management review is the area of review.

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The applicant has the flexibility to determine the set of structures and components for which an aging management review is performed, provided that this set encompasses the structures and components for which the Commission has determined that an aging management review is required. This flexibility is described in the statements of consideration for the license renewal rule (60 FR 22478). Therefore, the reviewer should ~~not~~ focus the review on structural components that the applicant has already identified as subject to an aging management review, because it is an applicant's option to include more structural components than those required by 10 CFR 52.21(a)(1). The staff focuses its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified structural components which require aging management review.

2.4.2 Acceptance Criteria

The acceptance criteria for the areas of review define methods for meeting the requirements of the Commission's regulations in 10 CFR 54.21(a)(1). For the applicant's implementation of its methodology in 10 CFR 54.21(a)(2) to be acceptable, the staff should find the applicant has properly implemented the methodology for screening.

2.4.3 Review Procedures

For each area of review, the following review procedures are to be followed:

2.4.3.1 Structural Components Subject to Aging Management Review

For each of the plant level structures within the scope of license renewal, an applicant should identify those "passive," "long-lived" structural components that have intended functions. For example, the applicant may identify that its auxiliary building is within the scope of license renewal. For this auxiliary building, the applicant may identify the structural components of beams, concrete walls, blowout panels, etc., are subject to an aging management review. The reviewer should focus on such a structure, one at a time, to confirm that the "passive," "long-lived" structural components that have intended functions have been identified by the applicant.

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.

The reviewer should focus the review on those structural components that are ~~not~~ identified as being within the scope of license renewal. For example, for a building within the scope of license renewal, if an applicant did not identify the building roof as subject to an aging management review, the reviewer should verify that this particular roof has no intended functions, such as a "Seismic II over I" concern in accordance with the plant's CLB. The reviewer should not review structural components that have been identified as subject to an aging management review by the applicant because the applicant has the option of including more structural components than the rule requires to be subject to an aging management review.

~~Further,~~ The reviewer should select functions described in the UFSAR to verify that selected structural components were included in having intended functions were not

omitted from the scope of the rule. For example, if the UFSAR indicates that a dike within the fire pump house prevents a fuel oil fire from spreading to the electrically driven fire pump, the reviewer should verify that this dike has been identified as within the scope of license renewal.

Only structural components that are "passive" and "long-lived" are subject to aging management review. Table 2.1-5 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain structures and structural components are "passive." The applicant should justify omitting a structure or structural component that is within the scope of license renewal at their facility and is listed as "passive" on Table 2.1-5.

The applicant should also identify the structural components intended functions. Table 2.1-4 in Section 2.1 of this standard review plan provides typical "passive" structural component intended functions.

The reviewer should find no omissions of validate the applicant's methodology for identifying structural components subject to aging management review by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the structural components subject to an aging management review.

The staff has developed additional scoping/screening guidance. For example, there are some structural components that may be grouped together as a commodity, such as pipe hangers, and there are some structural components that are considered consumable materials, such as sealants. Additional guidance on these and others are contained in Section 2.1 of this standard review plan for the following:

- commodity groups
-
- hypothetical failure
- cascading
- consumables
-
- multiple functions
- piece-parts

Table 2.4-1 provides examples of structural components scoping/screening lessons learned from the review of initial license renewal applications and basis for disposition.

2.4.4 Evaluation Findings

The reviewer verifies that sufficient and adequate information has been provided to satisfy the provision of this review plan section and that the staff's evaluation supports conclusions of the following type, to be included in the staff's safety evaluation report:

The staff evaluation concludes that there is a reasonable assurance that the applicant has appropriately identified the structural components subject to an

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aging management review to meet the requirements stated in 10 CFR 54.21(a)(1).

2.4.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specific portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.4.6 References

None.

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Table 2.4-1. Examples of Structural Components Scoping/Screening and Basis for Disposition

| Example | Disposition |
|---|--|
| Turbine building roof | An applicant indicates that degradation or loss of its turbine building roof will not result in the loss of any intended functions. The turbine building contains safety-related systems, structures, and components in the basement, which would remain sheltered and protected by several reinforced concrete floors if the turbine building roof was to degrade. Because this roof does not perform an intended function, it is not within the scope of license renewal. |
| Post-tensioned containment tendon gallery | The intended function of the post-tensioning system is to impose compressive forces on the concrete containment structure to resist the internal pressure resulting from a design-basis accident with no loss of structural integrity. Although the tendon gallery is not relied on to maintain containment integrity during design basis events, operating experience indicates that water infiltration and high humidity in the tendon gallery can contribute to a significant aging effect on the vertical tendon anchorages that could potentially result in loss of the ability of the post-tensioning system to perform its intended function. However, containment inspections provide reasonable assurance that the aging effects of the tendon anchorages, including those in the gallery, will continue to perform their intended functions. Because the tendon gallery does not perform an intended function, it is not within the scope of license renewal |
| Water-stops | Ground water in-leakage into the auxiliary building could occur as a result of degradation to the water-stops. This leakage may cause flooding of equipment within the scope of license renewal. (The plant's UFSAR discusses the effects of flooding.) The water-stops perform their functions without moving parts or change in configuration and they are not typically replaced. Thus, the water-stops are subject to an aging management review. However, they need not be called out explicitly in the scoping/screening results if they are included as parts of structural components that are subject to an aging management review. |

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2.5. SYSTEM SCOPING AND SCREENING RESULTS: ELECTRICAL AND INSTRUMENTATION AND CONTROLS

Review Responsibilities

Primary - Branch responsible for electrical and Instrumentation and Controls engineering

Secondary - None

2.5.1 Areas of Review

This review plan section addresses the electrical and instrumentation and controls (I&C) scoping and screening results for license renewal. Typical electrical and I&C components consist of the following: electrical penetrations, electrical cables and connections, motors, diesel generators, air compressors, pressure transmitters, pressure indicators, water level indicators, switchgear, cooling fans, transistors, batteries, breakers, relays, switches, power inverters, circuit boards, battery chargers, and power supplies.

An applicant is required by 10 CFR 54.21(a)(1) to identify and list structures and components subject to an aging management review. These are "passive," "long-lived" structures and components that are within the scope of license renewal. In addition, an applicant is required by 10 CFR 54.21(a)(2) to describe and justify methods used to identify these structures and components. The staff reviews the applicant's methodology separately following the guidance in Section 2.1 of this standard review plan. To verify that the applicant has properly implemented its methodology, the staff focuses its review to verify the applicant has implemented the methodology such that there is reasonable assurance that the applicant has identified electrical and I&C components which require aging management review.

An applicant would list all plant level systems and structures. Based on the Design Basis Events (DBEs) in the plant's current licensing basis (CLB) and other CLB information relating to non-safety-related systems and structures and certain regulated events, the applicant would identify those plant level systems and structures within the scope of license renewal, as defined in 10 CFR 54.4(a). This is "scoping" of the plant level systems and structures for license renewal. The staff reviews the applicant's plant level "scoping" results separately following the guidance in Section 2.2 of this standard review plan.

For an electrical and I&C system that is within the scope of license renewal, an applicant would not identify the specific electrical and I&C components that are subject to an aging management review. For example, an applicant would not "tag" each specific length of cable that is "passive," "long-lived," and performs an intended function as defined in 10 CFR 54.4(b). Instead, an applicant may use the so-called "plant spaces" approach (Ref. 1). The "plant spaces" approach provides efficiencies in aging management review of electrical equipment located within the same plant space environment.

Under the "plant spaces" approach, an applicant would identify all "passive," "long-lived" electrical equipment within a specified plant space as subject to an aging

management review, regardless of whether these components perform any intended functions. For example, an applicant could identify all “passive,” “long-lived” electrical equipment located within the turbine building (“plant space”) to be subject to an aging management review for license renewal. In the subsequent aging management review, the applicant would evaluate the environment of the turbine building to determine the appropriate aging management activities for these equipment. The applicant has options to further refine this encompassing scope on an as-needed basis. For the above example, if the applicant identified elevated temperatures in a particular area within the turbine building, the applicant may elect to identify only those “passive,” “long-lived” electrical equipment that perform an intended function in this particular area as subject to an aging management review.

10 CFR 54.21(a)(1)(i) provides many examples of electrical and I&C components that are not considered to be “passive” and are not subject to an aging management review for license renewal. Therefore, an applicant is expected to identify only a few electrical and I&C components, such as electrical penetrations, cables, and connections, that are “passive” and subject to an aging management review. However, the time-limited aging analysis (TLAA) evaluation requirements in 10 CFR 54.21(c) apply to environmental qualification (EQ) of electrical equipment that is not limited to “passive.”

An applicant has the flexibility to determine the set of structures and components for which an aging management review is performed, provided that this set encompasses the structures and components for which the Commission has determined an aging management review is required. This is based on the statements of consideration for the license renewal rule (60 FR 22478). Therefore, the reviewer should not review components that the applicant has identified as subject to an aging management review, because it is an applicant’s option to include more components than those required by 10 CFR 54.21(a)(1).

The following areas relating to the methodology implementation results for the electrical and I&C systems are reviewed:

2.5.1.1 Components Subject to an Aging Management Review

The applicant’s identification of electrical and I&C system components within the scope of license renewal that are “passive” and “long-lived.” (Screening)

2.5.2 Acceptance Criteria

The acceptance criteria for the areas of review define methods for meeting the requirements of the Commission’s regulations in 10 CFR 54.21(a)(1). The staff should find the applicant has properly implemented the methodology for screening .

2.5.2.1 Components Within the Scope of License Renewal

Electrical and I&C components are within the scope of license renewal as delineated in 10 CFR 54.4(a) if they are:

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1. Safety-related systems, structures, and components which are those relied upon to remain functional during and following design-basis events (as defined in 10 CFR 50.49(b)(1)) to ensure the following functions --

(i) The integrity of the reactor coolant pressure boundary;

(ii) The capability to shut down the reactor and maintain it in a safe shutdown condition; or

(iii) The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the guidelines in 10 CFR 50.34(a)(1) or 10 CFR 100.11, as applicable.

2. All non-safety related systems, structures, and components whose failure could prevent satisfactory accomplishment of any of the functions identified in 1. above.

3. All systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63).

2.5.2.2 Components Subject to Aging Management Review

Electrical and I&C components are subject to an aging management review if they are within the scope of license renewal and perform an intended function as defined in 10 CFR 54.4(b) without moving parts or without a change in configuration or properties ("passive"), and are not subject to replacement based on a qualified life or specified time period ("long-lived") (10 CFR 54.21(a)(1)(i) and (ii)).

2.5.3 Review Procedures

The reviewer should verify that an applicant has identified in the license renewal application the electrical and I&C components that are subject to an aging management review for its plant. The review procedures are presented below assuming an applicant has performed "scoping" and "screening" of electrical and I&C system components in that sequence. However, an applicant may elect to perform "screening" before "scoping" and that is acceptable because, regardless of the sequence, the end result should encompass the electrical and I&C components that are subject to an aging management review.

The scope of 10 CFR 50.49 electric equipment to be included within 10 CFR 54.4(a)(3) is that "long-lived" (qualified life of 40-years or greater) equipment already identified by licensees under 10 CFR 50.49(b) which specifies certain electric equipment important to safety. Licensees may rely upon their listing of EQ equipment, as required by 10 CFR 50.49(d), for purposes of satisfying 10 CFR 54.4(a)(3) with respect to equipment within the scope of 10 CFR 50.49 (60 FR 22466). However, the license renewal rule has a requirement (10 CFR 54.21(c)) on the evaluation of TLAA's, including EQ (10 CFR 50.49). EQ equipment is not limited to "passive." An applicant may identify EQ equipment separately for TLAA evaluation and not include them as equipment subject to an aging management review under 10 CFR 54.21(a)(1). The

EQ equipment identified for TLAA evaluation would encompass the “passive” EQ equipment subject to an aging management review. The TLAA evaluation would ensure that the EQ equipment would be functional for the period of extended operation. The staff reviews the applicant’s EQ TLAA evaluation separately following the guidance in Section 4.4 of this standard review plan.

For each area of review, the following review procedures are to be followed:

2.5.3.1 Components Within the Scope of License Renewal

2.5.3.1 Components Subject to an Aging Management Review

For each of the systems within the scope of license renewal, an applicant should identify those “passive,” “long-lived” components that have intended functions as requiring aging management review.

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.

The reviewer should select functions described in the UFSAR to verify that selected electrical components were properly scoped and screened. For example, if the UFSAR indicates that a diesel generator is required to mitigate design basis events and that the power from the diesel is carried by buried cables, as noted in the UFSAR, the reviewer should verify that these buried cables are identified as requiring aging management review.

Only components that are “passive” and “long-lived” are subject to aging management review. Table 2.1-5 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain components are “passive.” The applicant should justify omitting a component that is within the scope of license renewal at their facility and is listed as “passive” on Table 2.1-5.

The applicant should also identify the components’ intended functions. Table 2.1-4 in Section 2.1 of this standard review plan provides typical “passive” component intended functions.

The reviewer should validate the applicant’s methodology for identifying components subject to aging management review to make the staff finding that there is reasonable assurance that the applicant has identified the components subject to an aging management review.

The staff has developed additional scoping/screening guidance which is contained in Section 2.1 of this standard review plan for the following:

- consumables
- multiple functions
- piece-parts

Table 2.5-1 provides examples of components scoping/screening lessons learned from the review of initial license renewal applications and basis for disposition.

This step determines whether the applicant has properly identified the components within the scope of license renewal. The staff focuses its review to verify the applicant has implemented the methodology such as there is reasonable assurance that the applicant has identified electrical and I&C system components which require aging management review.

The reviewer should use the methodology and determine whether identification of the components requiring aging management review in the application is consistent with its use.

An applicant may use the “plant spaces” approach in scoping electrical and I&C components for license renewal. In the “plant spaces” approach, an applicant may indicate that all electrical and I&C components located within a particular plant area (“plant space”), such as the containment and auxiliary building, are within the scope of license renewal. The applicant may also indicate that all electrical and I&C components located within a particular plant area (“plant space”), such as the warehouse, are not within the scope of license renewal. Table 2.5-1 contains some examples of this “plant spaces” approach and the corresponding review procedures.

An applicant would use the “plant spaces” approach for the subsequent aging management review of the electrical and I&C components. The applicant may evaluate the environment of the “plant spaces” to determine the appropriate aging management activities for these equipment. The applicant has options to further refine this encompassing scope on an as-needed basis. For example, if the applicant identified elevated temperatures in a particular area within a building (“plant space”), the applicant may elect to identify only those “passive,” “long-lived” electrical and I&C components that perform an intended function in this particular area as subject to an aging management review. This approach to further narrow the “plant spaces” is consistent with the “plant spaces” approach. In this case, the reviewer verifies that the applicant has specifically identified the electrical and I&C components that are within the scope of license renewal in these narrow “plant spaces.” The reviewer should verify that the electrical and I&C components that the applicant has elected to further exclude indeed do not have any intended functions as defined in 10 CFR 54.4(b).

The reviewer should verify the applicant’s methodology for evaluating electrical and I&C components that are within the scope of license renewal find no omissions of components within the scope of license renewal by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the components within the scope of license renewal for the electrical and I&C systems.

Section 2.1 of this standard review plan contains additional guidance on scoping the following:

- commodity groups
- complex assemblies
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- hypothetical failure
- cascading

At the completion of this review step, the reviewer has confidence that the applicant's identification has encompassed all electrical and I&C components within the scope of license renewal.

2.5.3.2 Component Subject to an Aging Management Review

This step determines whether the applicant has properly identified the components subject to an aging management review from among those identified in the previous step, that is, Subsection 2.5.3.1 of this review plan section. The reviewer should review selected components that the applicant has identified as within the scope of license renewal to verify that the applicant has identified these components as subject to an aging management review if they perform intended functions without moving parts or without a change in configuration or properties and are not subject to replacement on the basis of a qualified life or specified time period. The description of "passive" may also be interpreted to include structures and components that do not display "a change in state."

Only components that are "passive" and "long-lived" are subject to an aging management review. Table 2.1-2 of Section 2.1 of this standard review plan is provided for the reviewer to assist in identifying whether certain components are "passive." The reviewer should verify that electrical and I&C components identified as "passive" in Table 2.1-2 of Section 2.1 of this standard review plan have been included by the applicant as subject to an aging management review, as appropriate. An applicant should justify omitting a component that is within the scope of license renewal at their facility and is listed as "passive" in Table 2.1-2.

The reviewer should verify the applicant's methodology for evaluating electrical and I&C components that are subject to aging management review find no omissions of components subject to an aging management review by the applicant to make the staff finding that there is reasonable assurance that the applicant has identified the components subject to an aging management review for the electrical and I&C systems.

Section 2.1 of this standard review plan contains additional guidance on screening of the following:

- consumables
- multiple intended functions
- piece-parts

At the completion of this review step, the reviewer has confidence that the applicant has identified the "passive," "long-lived" components subject to an aging management review.

2.5.4 Evaluation Findings

The reviewer verifies that sufficient and adequate information has been provided to satisfy the provision of this review plan section and that the staff's evaluation supports conclusions of the following type, to be included in the staff's safety evaluation report:

The staff evaluation concludes that there is a reasonable assurance that the applicant has appropriately identified the electrical and instrumentation and controls system components subject to an aging management review to meet the requirements stated in 10 CFR 54.21(a)(1).

2.5.5 Implementation

Except in those cases in which the applicant proposes an acceptable alternative method for complying with specific portions of the Commission's regulations, the method described herein will be used by the staff in its evaluation of conformance with Commission regulations.

2.5.6 References

1. SAND96-0344, "Aging Management Guideline for Commercial Nuclear Power Plants-Electrical Cable and Terminations," Sandia National Laboratories, September 1996, page 6- 11.

**Table 2.5-1. Examples of "Plant Spaces" Approach for Electrical and I&C Scoping
And Corresponding Review Procedures**

| Example | Review Procedures |
|--|--|
| An applicant indicates all electrical and I&C components on site are within the scope of license renewal. | This is acceptable and a staff review is not necessary, because all electrical and I&C components are included without exception and would encompass those required by the rule. |
| An applicant indicates all electrical and I&C components located in 7 specific buildings (containment, auxiliary building, turbine building, etc.) are within the scope of license renewal. | The reviewer should review in areas outside of inside of these 7 buildings ("plant spaces"). The reviewer should verify the applicant's methodology utilized in scoping the electrical and I&C components within the buildings. verify that the applicant has included any direct-buried cables in trenches between these building as within the scope of license renewal if they perform an intended function. The reviewer should also select buildings other than the 7 specific building (for example, the radwaste facility), to verify that they do not contain any electrical and I&C components that perform any intended functions. |
| An applicant indicates that all electrical and I&C components located on site, except for the 525kV switchyard, 230kV transmission lines, radwaste facility, and 44kV substation, are within the scope of license renewal. | The reviewer should select the specifically excluded "plant spaces" (that is, the 525kV switchyard, 230kV transmission lines, radwaste facility, and 44kV substation) to verify that they do not contain any electrical and I&C components that perform any intended functions. |
| An applicant indicates that all electrical and I&C components associated with the systems specifically identified as within the scope of license renewal are themselves within the scope of license renewal. | This is not strictly the "plant spaces" approach for scoping. The applicant may provide marked-up electrical one-line drawings identifying those system components that are within the scope of license renewal. The reviewer should review the UFSAR to select electrical and I&C components that the applicant did not identify as within the scope of the rule to verify that they do not perform any intended functions as defined in 10 CFR 54.4(b). For example, if an applicant indicates that all electrical and I&C components of the reactor protection system are within the scope of license renewal, the reviewer should review drawings to verify that all reactor protection system electrical and I&C components have been included. The reviewer should also verify that electrical and I&C components not identified as within the scope of license renewal do not perform an intended function associated with the reactor protection system. |

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