Virgil C. Summer Nuclear Station, Unit No. 1
Subsequent License Renewal Application (SLRA) Safety Review

Requests for Confirmation of Information

Regulatory Basis:

Part 54 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," is designed to elicit application information that will enable the U.S. Nuclear Regulatory Commission (NRC) staff to perform an adequate safety review and the Commission to make the necessary findings. Reliability of application information is important and advanced by requirements that license applications be submitted in writing under oath or affirmation and that information provided to the NRC by a license renewal applicant or required to be maintained by NRC regulations be complete and accurate in all material respects. Information that must be submitted in writing under oath or affirmation includes the technical information required under 10 CFR 54.21(a) related to assessment of the aging effects on structures, systems, and components subject to an aging management review. Thus, both the general submission requirements for license renewal applications and the specific technical application information requirements require that submission of information material to NRC's safety findings (see 10 CFR 54.29 standards for issuance of a renewed license) be submitted by an applicant as part of the application.

Background:

By letter dated August 17, 2023 (Agencywide Documents Access and Management System Accession No. ML23233A175), as supplemented by letter dated March 2, 2024 (ML24093A229) Dominion Energy South Carolina, Inc. (DESC), on behalf of itself and Santee Cooper, submitted an application for the subsequent license renewal of Renewed Facility Operating License No. NPF 12 for Virgil C. Summer Nuclear Station, Unit No. 1 (V.C. Summer) to the U.S. Nuclear Regulatory Commission (NRC or staff). DESC submitted the application pursuant to Title 10 of the *Code of Federal Regulations* Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants," for subsequent license renewal.

Between November 6, 2023, and March 21, 2024, the NRC staff conducted audits of DESC's records to confirm information submitted in the V.C. Summer subsequent license renewal application.

Request:

During the audit, the staff reviewed several documents that contain information which will likely be used in conclusions documented in the Safety Evaluation (SE). To the best of the staff's knowledge, this information is not on the docket. Any information used to reach a conclusion in the SER must be included on the docket by the applicant. We request that you submit confirmation that the information gathered from the documents and listed below is correct or provide the associated corrected information.

Requests for Confirmation of Information (RCIs) – SET #1

RCI No.	Description
B2.1.28-1	During its audit, the staff reviewed operating experience associated with a buried piping break (CR-17-01949) and buried piping leak (CR 21 01475). During a breakout session associated with SLRA Section B2.1.28 (specifically Question No. 1), the applicant informed the staff that the subject break and leak were due to mechanical damage of polyvinyl chloride (PVC) piping. Confirm that mechanical damage of PVC piping was the cause of the subject break and leak.
3.3.1-1	VII Table G, AMR Item VII.G.A-90 (SRP Item 3.3-1, 060) in Volume 1 of NUREG-2191 (GALL-SLR Report) manages cracking due to chemical reaction, weathering, settlement, or corrosion of reinforcement; and loss of material due to delamination, exfoliation, spalling, popout, or scaling of reinforced concrete structural fire barriers exposed to air by both the Fire Protection and Structures Monitoring programs. VII Table G, AMR Item VII.G.A-626 (SRP Item 3.3-1, 179) in Volume 1 of NUREG-2191 manages cracking due to restraint shrinkage, creep, aggressive environment; and loss of material (spalling, scaling) and cracking due to freeze-thaw of masonry walls that are considered fire barriers by both the Fire Protection and Masonry Walls programs. SLRA Tables 3.5.2-2, 3.5.2-4, 3.5.2-6, 3.5.2-7, 3.5.2-12, 3.5.2-13, 3.5.2-18, and 3.5.2-20 cite SRP Item 3.3-1, 060 for managing cracking and loss of material of reinforced concrete “concrete elements” exposed to air by both the Fire Protection and Structures Monitoring programs. SLRA Table 3.5.2-1 cites SRP Item 3.3-1, 060, with standard note E (“Consistent with NUREG-2191 item for material, environment, and aging effect, but a different AMP is credited or NUREG-2191 identifies a plant-specific AMP”), for managing cracking and loss of material of reinforced concrete “concrete elements” exposed to air by both the Fire Protection Program and ASME Section XI, Subsection IWL (substituted for Structures Monitoring program) programs. In addition, SLRA Tables 3.5.2-4 and 3.5.2-20 cite SRP Item 3.3-1, 179 for managing cracking and loss of material of masonry walls “masonry block walls” exposed to air by both the Fire Protection and Masonry Walls programs. However, the SLRA tables noted above also included concrete “concrete elements” and concrete block “masonry block walls” where only the Structures Monitoring or Masonry Walls programs were credited to manage the effects of aging. During the audit of the Fire Protection AMP, it was discussed whether the concrete “concrete elements” and concrete block “masonry block walls” managed only by the Structures Monitoring or Masonry Walls programs have a fire barrier intended function and should also be managed by the Fire Protection program. The applicant stated during the audit that some of the concrete “concrete elements” and concrete block “masonry block walls” have a fire barrier intended function and are also managed by the Fire Protection program. The applicant also stated that the material terms of “reinforced concrete” and “masonry walls” are consistent with AMR items in the GALL-SLR report and that SRP Items 3.3-1, 060 and 3.3-1, 179 apply to concrete elements and masonry block walls, respectively, with a fire barrier intended function. Please confirm, consistent with the GALL-SLR Report, that the effects of aging for concrete “concrete elements” with a fire barrier intended function (except concrete “concrete elements” associated with the Containment Structure) are managed by both the Fire Protection and Structures Monitoring programs. For the concrete “concrete elements” with a fire barrier intended function associated with the Containment Structure, please

	confirm that the effects of aging are managed by both the Fire Protection and ASME Section XI, Subsection IWL programs. In addition, please confirm, consistent with the GALL-SLR Report, that the effects of aging for concrete block “masonry block walls” with a fire barrier intended function are managed by both the Fire Protection and Masonry Walls programs.
3.3.1-2	AMR Item VII.G.A-19 (SRP Item 3.3-1, 057) in Volume 1 of NUREG-2191 manages hardening, loss of strength, and shrinkage due to elastomer degradation of elastomer fire barrier penetration seals exposed to air and condensation by the Fire Protection program. SLRA Table 3.5.2-14 cites AMR Item VII.G.A-19 (SRP Item 3.3-1, 057) for managing hardening, loss of strength, shrinkage of “elastomer” penetration seals and “elastomer” seismic gap filler material exposed to air by only the Fire Protection program. SLRA Table 3.5.2-14 includes “elastomer, rubber and other similar materials” penetration seals and “elastomer, rubber and other similar materials” seismic gap filler material where only the Structures Monitoring program is credited to manage the effects of aging (loss of sealing). SLRA Table 3.5.2-14 appears to indicate that the “elastomer” and “elastomer, rubber and other similar materials” penetration seals and seismic gap filler material have the following intended functions: enclosure protection, fire barrier, flood barrier, and pressure boundary. During the audit of the Fire Protection AMP, it was discussed whether the “elastomer” and “elastomer, rubber and other similar materials” penetration seals and seismic gap filler material have all of the intended functions noted above. The applicant stated during the audit that the “elastomer” and “elastomer, rubber and other similar materials” penetration seals and seismic gap filler material may have one or more of the cited intended functions, however, the Fire Protection program will manage the effects of aging for all “elastomer” and “elastomer, rubber and other similar materials” penetration seals and seismic gap filler material with a fire barrier intended function. In addition, if an “elastomer” and “elastomer, rubber and other similar materials” penetration seals and seismic gap filler material has any of the other cited intended functions, in addition to the fire barrier intended function, it would be managed by both the Fire Protection and Structures Monitoring programs. Please confirm that the Fire Protection program will manage the effects of aging for all “elastomer” and “elastomer, rubber and other similar materials” penetration seals and seismic gap filler material with a fire barrier intended function. In addition, please confirm that both the Fire Protection and Structures Monitoring program will manage the effects of aging for “elastomer” and “elastomer, rubber and other similar materials” penetration seals and seismic gap filler material with other intended functions (i.e., enclosure protection, flood barrier, and/or pressure boundary), in addition to the fire barrier intended function.
4.2.1-1	In Section 4.2.1 of the SLRA the licensee states used of RAPTOR-M3G and the BUGLE-96 cross section library in accordance with the methodology described in WCAP-18124-NP-A, “Fluence Determination with RAPTOR-M3G and FERRET” and WCAP-18124-NP-A Supplement 1-NP-A, “Fluence Determination with RAPTOR-M3G and FERRET – Supplement for Extended Beltline Materials”. NRC approved the use of RAPTOR-M3G and FERRET for determination of reactor pressure vessel (RPV) fluence provided that the two limitations and conditions in the staff safety evaluation for the topical report WCAP-18124-NP-A are met. a) As part of the regulatory audit, the licensee provided information that WCAP-18124-NP-A Revision 0, Supplement 1-NP-A, Revision 0 provides the conditions necessary for meeting the Limitation 1 and allows for application of RAPTOR-M3G method to the RPV extended beltline region on a generic basis. The licensee stated that

	except for lower shell to bottom head circumferential weld, these conditions are met for the plant specific neutron exposure measurements. To satisfy Limitation 1, please confirm that the lower shell to bottom head circumferential weld fast neutron (E > 1.0 MeV) fluence exposures for the SLRA for 72 EFPY, along with any increase in non calculated analytical uncertainty associated with these exposures, would not result in exposures greater than 1.0E+17 n/cm2. b) To meet the Limitation 2, please confirm that the least-squares analyses were not used to adjust any calculated RPV or surveillance capsule neutron exposure, and were only used as a supplemental check on the results of the dosimetry analyses.