



NON-CONCURRENCE PROCESS COVER PAGE

The U.S. Nuclear Regulatory Commission (NRC) strives to establish and maintain an environment that encourages all employees to promptly raise concerns and differing views without fear of reprisal and to promote methods for raising concerns that will enhance a strong safety culture and support the agency's mission.

Employees are expected to discuss their views and concerns with their immediate supervisors on a regular, ongoing basis. If informal discussions do not resolve concerns, employees have various mechanisms for expressing and having their concerns and differing views heard and considered by management.

Management Directive, MD 10.158, "NRC Non-Concurrence Process," describes the Non-Concurrence Process (NCP).

The NCP allows employees to document their differing views and concerns early in the decisionmaking process, have them responded to (if requested), and include them with proposed documents moving through the management approval chain to support the decisionmaking process.

NRC Form 757, "Non-Concurrence Process," is used to document the process.

Section A of the form includes the personal opinions, views, and concerns of a non-concurring NRC employee.

Section B of the form includes the personal opinions and views of the non-concurring employee's immediate supervisor.

Section C of the form includes the agency's evaluation of the concerns and the agency's final position and outcome.

NOTE: Content in Sections A and B reflects personal opinions and views and does not represent the official agency's position of the issues, nor official rationale for the agency decision. Section C includes the agency's official position on the facts, issues, and rationale for the final decision.

1. If the process was discontinued, please indicate the reason (and skip to #3):

- Non-concurring employee(s) requested that the process be discontinued
- Subject document was withdrawn

2. At the completion of the process, the non-concurring employee(s):

- Concurred
- Continued to non-concur
- Agreed with some of the changes to the subject document, but continued to non-concur

3. For record keeping purposes:

- This record is non-public and for official use only
- This record has been reviewed and approved for public dissemination

NRC FORM 757 (06-2019) NRC MD 10.156	U.S. NUCLEAR REGULATORY COMMISSION NON-CONCURRENCE PROCESS (Continued)	1. NCP Tracking Number NCP-2020-002 Date 1/15/2020
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Section A - To Be Completed By Non-Concurring Employee

2. Title of Subject Document Safety Evaluation Report Related to the Subsequent License Renewal of Surry Generating Units 1 and 2	3. ADAMS Accession Number ML19360A020
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4. Document Signer Anna Bradford	5. Document Signer's Phone Number (Enter 10 numeric digits) (301) 415-1560
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6. Title of Document Signer Director Division of New and Renewed Licenses	7. Office (Choose from the drop down list or fill in) NRR
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8. Name of Non-Concurring Employee(s) James A. Gavula	9. Employee's Telephone Number (Enter 10 numeric digits) (630) 829-9755
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10. Title of Non-Concurring Employee Mechanical Engineer	11. Office (Choose from the drop down list or fill in) NRR
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12. Document Author Document Contributor Document Reviewer On Concurrence

13. Name of Non-Concurring Employee's Supervisor Steven D. Bloom	14. Office (Choose from the drop down list or fill in) NRR
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15. Title of Non-Concurring Employee's Supervisor Branch Chief, Corrosion & Steam Generator Branch	16. Supervisor's Telephone Number (Enter 10 numeric digits) (301) 415-2431
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17. I would like my non-concurrence considered and would like a written evaluation in Section B and C.
 I would like my non-concurrence considered, but a written evaluation in Sections B and C is not necessary.

18. When the process is complete, I would like management to determine whether public release of the NCP Form (with or without redactions) is appropriate (Select "No" if you would like the NCP Form to be non-public):
 Yes No

19. Reasons for the Non-Concurrence, Potential Impact on Mission, and the Proposed Alternatives
 SER Sections 3.0.3.1.6, 3.0.3.2.7, and 3.0.3.2.20 (ML19353C656 issued to licensee on December 27, 2019) were modified at management's direction by either deleting or significantly simplifying the descriptions of the staff's evaluation of the applicant's associated aging management programs. It is my opinion that the applicant failed to meet portions of the requirements of 10CFR54.21(a)(3), 10CFR54.21(d), or 10CFR54.29(a). The technical aspects are as follows:

Selective Leaching (3.0.3.1.6)

UFSAR supplement does not have critical aspects of the revised Selective Leaching program.

The SER currently says that the UFSAR supplement is consistent with the recommended description in GALL-SLR Report Table XI-01. However, based on the loss of intended function in the fire water system, Surry significantly augmented the Selective Leaching program above the established GALL-SLR program, which needs to be reflected in the UFSAR supplement. Because the augmented aspects of the program are not included in the UFSAR supplement, the staff does not have reasonable assurance that changes to the program will be adequately controlled. The UFSAR supplement, as required by 10CFR54.21(d), was not appropriately updated to include the critical aspects of the revised program.

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Inspection reduction based on common conditions for two-unit sites.

The SLRA noted that, as allowed by the GALL-SLR Report for two-unit sites, the periodic visual and mechanical inspections were reduced from 10 to 8 because the operating conditions and history at each unit are sufficiently similar (e.g., flowrate, chemistry, temperature, excursions) such that aging effects are not occurring differently between the units. However, due to soil chemistry variations identified as part the fire water system rupture activities, the applicant did not provide any bases to address potential differences in the soil environment to justify the reduction in visual and mechanical inspections. Although the SER states that Dominion will identify changes to the AMP to address other possible issues including "soil parameter consistency across the site," the staff had not posed this issue to the applicant at the time the SER was written. Because Dominion is not aware of this issue, it is unclear to the staff that the applicant will either provide the appropriate justification that would support the reduced number of inspections or keep the number of inspections at 10, based on the soil chemistry variations identified as part of the fire water system ruptures. Based on this, Dominion's application for a renewed license did not contain the information required by 10CFR54.21(a)(3) to demonstrate that the effects of aging will be adequately managed for these components.

Excavation limited to confirmed groundwater and not system leakage

Dominion's program states that the fire loop piping will be excavated where groundwater has been confirmed in an exploratory hole. However, if the water in the exploratory hole is caused by system leakage, Dominion will take different corrective actions than if the water is a result of elevated groundwater. The corrective action document posted on the portal for the fire water system rupture states that since the damage was worse near a valve, it is plausible that long-term external leakage through the valve or associated connections kept the surrounding soil moist and was responsible for much of the corrosion damage noted in the piping. Although the SER states that Dominion will identify changes to the AMP to address other possible issues, the staff had not posed this issue (standing water due to system leakage) to the applicant at the time the SER was written. Because it is not clear whether Dominion's program will excavate piping for each confirmatory hole where any water is identified, not just groundwater, it is unclear to the staff whether the applicant's corrective actions will identify whether changes to the program are needed to address this issue. Based on this, Dominion's application for a renewed license did not contain the information required by 10CFR54.21(a)(3) to demonstrate that the effects of aging will be adequately managed for these components.

Operating conditions at the plant are not bounded by those for which the GALL AMP was evaluated.

SLRA Section B2.1.21 states that, when implemented, the Selective Leaching program will be consistent with the GALL-SLR Report AMP XI.M33. As noted in SRP-SLR Section 1.2.1, if an applicant takes credit for a program in the GALL-SLR Report, it is incumbent on the applicant to ensure that the conditions and operating experience at the plant are bounded by the conditions and operating experience for which the GALL-SLR program were evaluated.

The SER states that the staff finds that the conditions and operating experience at the plant are bounded by those for which the Selective Leaching program was evaluated. This statement is part of the SER templates in the Technical Reviewer Manual and it does not consider the operating experience in July 2019 for the rupture of the fire water system due to selective leaching. The operating experience for which the Selective Leaching program was evaluated did not include a loss of intended function caused by selective leaching. Although this issue does not affect the issuance of a renewed license for the Surry site, the questionably accurate statements in the SER should be addressed.

Open-Cycle Cooling Water System (3.0.3.2.7)

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No aging management review for passive components associated with essential service water diesel engines or pumps.

The SER includes a staff-identified exception associated with Dominion not providing aging management review items for the emergency service water (ESW) diesel engine heat exchanger or the ESW pump right angle gear oil coolers. The scoping and screening discussion in SER Section 2.3.3.4.2 notes that the applicant determined that these components "did not screen in and were not subject to an aging management review," and there were "no Table 2 items identifying the component, component material, applicable aging effects, and the aging management program used to manage the aging effects." Although the staff had initially questioned this aspect, Dominion responded to the staff's request by stating these components are treated as active skid-mounted assemblies, and therefore did not require an aging management review.

Although the staff took issue with Dominion's position because it was inconsistent with SRP-SLR Table 2.3-2 and Table 2.1-2, the applicant said it did not need to provide additional information. NRC management told the staff to accept the applicant's position. A senior reviewer used the "staff identified difference" approach and, in order to show reasonable assurance of intended function performance, credited the activities contained in Dominion's Generic Letter (GL) 89-13 program. Although an argument can be made that Dominion's GL 89-13 program includes additional inspection and maintenance activities that are capable of identifying age related degradation, Dominion's application for a renewed license did not contain the information required by 10CFR54.21(a)(3) to demonstrate that the effects of aging will be adequately managed for these components. Instead of being submitted as part of the integrated plant assessment, the NRC staff had to infer that the affects of aging would be adequately managed through the GL 89-13 program.

Buried and Underground Piping and Tanks (3.0.3.2.20)

Corrosion of tie rods in the bell and spigot fire water system piping

As noted in the SER the staff identified significant loss of material for a buried bell and spigot tie rod as part of the evaluation for the cast iron fire water system piping rupture. The corrective action document posted on the portal for the fire water system rupture includes a discussion about long-term external leakage in the fire water system that potentially kept the surrounding soil moist causing corrosion. Although the replacement of the cast iron piping with ductile iron will resolve ongoing issue of selective leaching, changing the piping material will not address corrosion of tie rods which will still be carbon steel. The SER notes that "a corrective action entry should have been initiated" to identify the tie rod degradation. However, the staff had not posed this issue to the applicant at the time the SER was written. Because Dominion is not aware of this issue, it is unclear to the staff that the applicant's corrective action program includes any activities to address degradation of the fire water system tie rods. Based on this, it does not appear that actions have been identified for managing the effects of aging as required by 10CFR54.29(a).

External coatings for the buried fire water system piping was found to be inadequate.

Dominion's Buried Piping AMP credits the coatings on the fire water system piping as a preventive action that is consistent with the GALL-SLR program. In its June 27th response to RAI B2.1.27-3, Dominion stated that the fire water system piping was coated with a bituminous coating and based on the RAI response the staff found that the preventive actions were consistent with the GALL Report's AMP XI.M41 recommendations. However, corrective action documents associated with the July 2019 fire water system ruptures state that the observed coating was not consistent with piping coated to greater than 1/16 inch with bitumastic enamel and that the coating is too thin to provide substantial long-term protection in the high moisture content soil. Based on coating found on the fire water system piping during the evaluation of the fire water system rupture, further

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clarification is required by the applicant in order to determine if the preventive actions for the coating applied to the fire water system piping can be credited and are consistent with the guidance in GALL-SLR AMP XI.M41. Based on this, it does not appear that Dominion's application for a renewed license contained the information required by 10CFR54.21(a)(3) to demonstrate that the effects of aging will be adequately managed for these components.

20. Signature and Date of Non-Concurring Employee

James A. Gavula

Digitally signed by James A. Gavula
Date: 2020.01.13 16:21:41 -06'00'

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Section B - To Be Completed By Non-Concurring Employee's Supervisor

2. Title of Subject Document Safety Evaluation Report Related to the Subsequent License Renewal of Surry Generating Units 1 and 2	3. ADAMS Accession Number ML19360A020
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4. Name of Non-Concurring Employee's Supervisor Steven D. Bloom	5. Office (Choose from the drop down list or fill in) NRR
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6. Title of Non-Concurring Employee's Supervisor Branch Chief, Corrosion & Steam Generator Branch	7. Supervisor's Telephone Number (Enter 10 numeric digits) (301) 415-2431
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8. Comments for the NCP Reviewer to Consider

I support my staff's use of the non-concurrence process and agree with the technical merits of this non-concurrence with respect to Surry not revising the Selective Leaching (SL) Aging Management Program (AMP), as well as other AMPs due to the fire water piping ruptures to account for moist corrosive soil and soil parameter consistency across the site. However, Dominion has made specific changes to specific AMPs to address the potential cause for the aging mechanisms, specifically groundwater. In addition, they have entered these ruptures and aging effects into their corrective action program and following their causal analysis will take any additional corrective actions and will make the necessary revisions to their current and SLR-related AMPs. For license renewal, the NRC established two fundamental safety principles during the development of 10 CFR Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." First, with the exception of the detrimental effects of aging, the existing regulatory process is adequate for safe plant operations. This process includes the continued implementation of licensing and oversight activities by the NRC and ensures potential safety, security, and emergency preparedness issues are addressed when identified. Second, each plant's licensing basis must be maintained during the renewal term. After the licensee's evaluation is complete, the Region will be following up on this issue within the ROP and will be letting us be involved in that inspection effort to ensure we find Dominion's actions appropriate.

9. Signature and Date of Non-Concurring Employee's Supervisor Steven D. Bloom	Digitally signed by Steven D. Bloom Date: 2020.01.16 10:40:24 -05'00'
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Section C - To Be Completed By NCP Coordinator

2. Title of Subject Document Safety Evaluation Report Related to the Subsequent License Renewal of Surry Generating Units 1 and 2		3. ADAMS Accession Number ML19360A020
4. Name of NCP Coordinator Allen L. Hiser, Jr.	5. Office (Choose from the drop down list or fill in) NRR	
6. Title of NCP Coordinator Senior Technical Advisor for License Renewal Aging Management	7. Coordinator's Telephone Number (Enter 10 numeric digits) (301) 415-5650	

8. Agreed Upon Summary of Issues

The non-concurring employee contends that:

- changes currently proposed by the applicant to the Selective Leaching AMP, resulting from the July 2019 fire water system piping rupture, have not been appropriately included in the updated final safety analysis report supplement in SLRA Section A1.21, as required by 10 CFR 54.21(d).
- age related degradation issues revealed by the July 2019 fire water system piping rupture have not been appropriately addressed in the Selective Leaching and Buried Piping AMPs in order to demonstrate that the effects of aging will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the subsequent period of extended operation, as required by 10 CFR 54.21(a)(3).
- passive components (heat exchangers and coolers) for the essential service water pump diesel engine and gear drive did not receive an aging management review, as required by 10 CFR 54.21(a)(3), because the applicant considered them to be integral parts of active skid-mounted assemblies.

Summary of Issues

- UFSAR Supplement: The UFSAR supplement, as required by 10 CFR 54.21(d), was not appropriately updated to include the critical augmented aspects of the revised Selective Leaching aging management program (AMP). Thus, the staff does not have reasonable assurance that changes to the program will be adequately controlled.
- Soil Chemistry Consistency: Inspection reduction in the Selective Leaching AMP based on common conditions for two-unit sites has not been justified, based on soil chemistry variations identified as a part of the fire water system rupture. Although the SER states that Dominion will identify changes to the AMP to address other possible issues including "soil parameter consistency across the site," the SER statement is not based on docketed information and there are no assurances that the applicant's corrective action program will either develop the appropriate justification or revert to the recommended number of inspections.
- Standing Water due to System Leakage: Excavation of fire loop piping is inappropriately limited to confirmed groundwater and not system leakage in exploratory holes. If the water in the exploratory holes is caused by system leakage, Dominion will take different corrective actions than if the water is a result of elevated groundwater. The staff has not posed this issue (standing water due to system leakage) to the applicant and there are no assurances that the applicant's corrective action program will address this issue.
- Bounding Conditions and Operating Experience: Operating conditions at the plant are not bounded by those for which the GALL Selective Leaching AMP was evaluated. The SER statement that the staff finds that the conditions and operating experience at the plant are bounded by those for which the Selective Leaching program was evaluated is not consistent with the operating experience in July 2019 for the rupture of the fire water system due to selective leaching, which resulted in a loss of intended function. Although this issue does not affect the issuance of a renewed license for the Surry site, the questionably accurate statements in

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the SER should be addressed.

- **Corrosion of Carbon Steel Elements:** The corrosion of tie rods in the bell and spigot of buried fire water system piping, which resulted in a significant loss of material and was identified during evaluation of the July 2019 piping rupture, was not adequately addressed in the SLRA. The replacement of the cast iron piping with ductile iron will resolve the ongoing issue of piping selective leaching but will not address corrosion of the carbon steel tie rods. There are no assurances the applicant's corrective action program will address degradation of the fire water system tie rods to ensure that the effects of aging will be adequately managed during the subsequent period of extended operation.
- **Credit for Coatings:** External coatings for the buried fire water system piping have been found to be inadequate. Dominion's Buried Piping AMP credits the coatings on the fire water system piping as a preventive action, which is consistent with the GALL-SLR program. However, corrective action documents associated with the July 2019 fire water system ruptures state that the coating is too thin to provide substantial long-term protection in the high moisture content soil, and therefore the coating piping cannot be credited as a preventive measure. Thus, it does not appear that Dominion's application for a renewed license contained the information required by 10 CFR 54.21(a)(3) to demonstrate that the effects of aging will be adequately managed for these components.
- **Essential Service Water Diesel Engine/Pump Passive Components:** No aging management review was performed for passive components associated with essential service water diesel engines or pumps. Dominion stated that these components are treated as active skid-mounted assemblies, and therefore did not require an aging management review. Dominion's application for a renewed license did not contain the information required by 10 CFR 54.21(a)(3) to demonstrate that the effects of aging will be adequately managed for these components. Instead of being submitted as part of the integrated plant assessment, the NRC staff had to infer that the effects of aging would be adequately managed through the GL 89-13 program.

9. Evaluation of Non-Concurrence and Rationale for Decision

The non-concurring staff member's use of the non-concurrence process is appreciated as an appropriate mechanism to raise concerns and differing views. I also appreciate the comments provided by the non-concurring employee's supervisor in Section B and find them to be consistent with my evaluation discussed below.

The non-concurring staff member raises valid technical issues regarding recent operational experience at Surry and other concerns. However, the issues identified in the non-concurrence will be appropriately evaluated and addressed within the context of the principles of license renewal, the applicant's on-going corrective actions to evaluate the buried piping ruptures and modify its related aging management activities, the NRC's reactor oversight activities, and the standard of "reasonable assurance" in approving renewed licenses.

The process outlined in 10 CFR Part 54 for license renewal (which includes subsequent license renewal) is founded on these principles as stated in the Statements of Consideration for the 1995 license renewal rule (60 Federal Register 22464):

- The ongoing regulatory process is adequate to ensure the safety of currently operating plants
- The plant-specific licensing basis must be maintained in the same manner and to the same extent as during the original licensing term, in part through a program of age-related degradation management for plant structures and components that meet the scoping and screening requirements of the rule

The basis for approval of subsequent license renewal applications is the concept of "reasonable assurance," as stated in 10 CFR 54.29 (with emphasis added):

A renewed license may be issued by the Commission up to the full term authorized by § 54.31 if the Commission finds that:

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(a) Actions have been identified and have been or will be taken with respect to the matters identified in Paragraphs (a)(1) and (a)(2) of this section, such that there is **reasonable assurance** that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB, and that any changes made to the plant's CLB in order to comply with this paragraph are in accord with the Act and the Commission's regulations. These matters are:

- (1) managing the effects of aging during the period of extended operation on the functionality of structures and components that have been identified to require review under § 54.21(a)(1); and
- (2) time-limited aging analyses that have been identified to require review under § 54.21(c).

In addition to the requirements for subsequent license renewal, the agency's overall regulatory process involves numerous NRC activities related to operating plants, including the reactor oversight process to verify operation in compliance with the CLB. In particular, the process involves oversight of licensee performance relative to regulatory requirements, such as conformance to the quality assurance requirements of Appendix B to 10 CFR Part 50. As an example, Criterion XVI of Appendix B, "Corrective Actions," describes the need to determine the cause of the condition and to take corrective action to preclude repetition for significant conditions adverse to quality. Although the applicability of Appendix B is limited to license renewal SSCs that are in scope in accordance with 54.4(a)(1), Appendix A1 of the SLRA states:

The scope of the existing QA Program is expanded to also include safety-related and non safety-related structures and components (SCs) subject to AMPs.

The applicant has entered the ruptures of the buried fire water piping into the Corrective Action Program via Condition Reports. Therefore, corrective actions related to the ruptures of the fire water piping would be covered by the provisions of Appendix B, and would be subject to NRC review under the reactor oversight process.

In the time since the pipe ruptures discussed in the non-concurrence occurred, the plant has put in place compensatory measures, as stated in Dominion's October 31, 2019, letter, "to isolate sections of the yard loop which are known to have been exposed to groundwater and to start a pre-staged high flow capacity pump if needed. The high flow capacity pump is staged, but not running, with administrative controls to provide the required backup fire suppression supply." With these compensatory measures in place, the plant continues to operate safely.

For the reasons outlined below for each of the issues described in the non-concurrence and based on the on-going corrective actions by the plant, effective regional oversight of these actions, and the agency's overall regulatory framework and oversight, I am confident that this issue of the piping ruptures will be addressed in a manner that is protective of public health and safety, that the plant will appropriately amend its aging management program, if needed, and that the effects of selective leaching on gray cast iron piping will be appropriately managed during the subsequent period of extended operation. Therefore, there is reasonable assurance that that the activities authorized by the renewed license will continue to be conducted in accordance with the CLB and the renewed license can be issued.

In addition, I conclude that the SER adequately reflects the basis for a reasonable assurance finding that the applicant's program is adequate for the subsequent period of extended operation.

Each issue is evaluated as indicated below.

UFSAR Supplement

As stated in 10 CFR 54.21(d), each application for license renewal (and by extension subsequent license renewal) must include an FSAR supplement which "must contain a summary description of the programs and activities for managing the effects of aging . . . for the [subsequent] period of extended operation determined by paragraphs (a) and (c) of this section, respectively." The regulation does not specify a level of detail for the required summary.

The safety evaluation report (SER) evaluation of the Selective Leaching program for Surry (SER Section 3.0.3.1.6) states that "SLRA Section A1.21 provides the UFSAR supplement for the Selective Leaching program," and does not

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Identify any revision or update of the supplement based on the augmented program activities implemented in response to the fire water system piping rupture.

The applicant has on-going actions to evaluate the buried piping ruptures and appropriately modify its related aging management activities. The use of the corrective action program is consistent with the principles of license renewal which rely on the adequacy of the current licensing basis and the ongoing regulatory process, and the corrective actions related to such a finding would be subject to NRC review under the reactor oversight process. Therefore, it is not necessary to require the applicant to modify its FSAR supplement at this time with additional detail that may or may not change after completion of the corrective actions, and the current FSAR supplement is an adequate and acceptable summary of the Selective Leaching program, as required by 10 CFR 54.21(d).

Soil Chemistry Consistency

The Selective Leaching program is used to manage external (soil side) selective leaching of susceptible piping, such as the fire water system. This program and the Buried and Underground Piping and Tanks program include several provisions for soil testing. This testing will be evaluated by the applicant to assess the corrosivity of the soil for carbon steel (see Commitment #27, Item 9, from Appendix A of the draft SER). Procedures will be revised to specify that soil sample results indicating corrosivity greater than 10 points "require evaluation of potential scope expansion or category transition."

Although the applicant's program may not align perfectly with the provisions of the program in the GALL-SLR report, soil testing that indicates corrosive conditions will, as stated in Item 9 of Commitment #27, require evaluation of possible scope expansion. This evaluation should ensure that adverse soil conditions are appropriately investigated and any appropriate changes to the sampling for inspections in the program will be implemented.

Standing Water due to System Leakage

The applicant modified its Selective Leaching program in response to the pipe ruptures, principally through the use of exploratory holes to identify the presence/absence of groundwater. The presence of groundwater would trigger specific follow on actions identified by the applicant in the program.

In a letter dated October 31, 2019, the applicant states the following in its modification to the Selective Leaching program:

If water in an exploratory hole is identified to be a result of fire protection system leakage or other plant system leakage and not due to elevated groundwater, then corrective actions consistent with the Selective Leaching program (B2.1.21) will be initiated.

Although the applicant does not provide specific corrective actions should water be identified in an exploratory hole as a result of fire protection system leakage or other plant system leakage, the applicant explicitly states that corrective actions will be initiated in such a circumstance. The reliance on the corrective action program is consistent with the guidance described in the GALL-SLR Selective Leaching program, which identifies the Appendix B corrective action program as the initial response to results that do not meet acceptance criteria. Further, the use of the corrective action program is consistent with the principles of license renewal which rely on the adequacy of the current licensing basis and the ongoing regulatory process. The corrective actions related to such a finding would be subject to NRC review under the reactor oversight process.

Bounding Conditions and Operating Experience

The SER states [emphasis added]:

The staff did not identify any operating experience, other than that noted above for buried fire protection piping, to indicate that Dominion should modify its proposed program beyond those modifications incorporated into the Selective Leaching program. **Based on its audit and review of the application, the staff finds that the conditions and operating experience at the plant are bounded by those for which the Selective Leaching program was evaluated.**

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The operating experience at Surry is clearly beyond that considered in the development of the GALL-SLR Selective Leaching program in XI.M33 of NUREG-2191, Vol. 2, as evidenced by the applicant's augmented activities within the program. However, the SER statement highlighted above is appropriately read to mean that the staff evaluated the applicant's augmented program against the plant-specific operating experience, and the program is adequate to bound the conditions and operating experience at the plant. More specifically, the SER statement does not claim that the conditions and operating experience at Surry are bounded by those for the GALL-SLR Selective Leaching program in XI.M33 of NUREG-2191, Vol. 2.

Corrosion of Carbon Steel Elements

Corrosion of carbon steel tie rods in the bell and spigot of buried fire water system piping was readily identified in photographs provided with the condition report. These tie rods were not identified in either the SLR application, or any of the supplemental information provided in the annual update or subsequent to the annual update

As stated in the non-concurrence, the replacement of the cast iron piping will not necessarily address corrosion of the carbon steel tie rods. However, the corrective action assessment to support the piping replacement should also ensure that necessary associated elements such as the tie rods will continue to serve their necessary design function(s) to support the piping in accordance with the plant's CLB. Therefore, it would be incumbent on the applicant to repair or replace the tie rods, as necessary, in accordance with the corrective action program. And as stated previously, the use of the corrective action program is consistent with the principles of license renewal which rely on the adequacy of the current licensing basis and the ongoing regulatory process.

Credit for Coatings

In a letter dated October 14, 2019, the applicant stated:

Due to plant operating experience with external coatings on buried components, the Selective Leaching program (B2.1.21) inspection exclusion has been deleted for buried components that are susceptible to selective leaching and are coated consistent with the Buried and Underground Piping and Tanks program (B2.1.27). As a result, externally coated buried components that are susceptible to selective leaching are included in program sample plans and inspected consistent with the Selective Leaching program (B2.1.21) aging management requirements.

SER Section 3.0.3.1.6 provides the staff's review of the resultant change to the SLRA:

For the "scope of program" program element, the staff determined the need for additional information regarding why the external surfaces of buried components that are coated consistent with the Buried and Underground Piping and Tanks program are excluded from the sample population, which resulted in the issuance of a RAI. By letter dated October 14, 2019, Dominion provided additional clarification regarding the staff's concerns, which superseded the information provided in the response to RAI B2.1.21-1.

In its response dated October 14, 2019, Dominion revised the Selective Leaching program to remove the inspection exclusion for the external surfaces of buried components that are coated consistent with the Buried and Underground Piping and Tanks program. The staff finds Dominion's revision acceptable because the external surfaces of buried components will be included in the inspection population for selective leaching, which is consistent with GALL-SLR Report AMP XI.M33 recommendations.

The revisions to the SLRA address the stated concern and make clear that no credit is assigned to the external coatings for buried components that are susceptible to selective leaching.

Essential Service Water Diesel Engine/Pump Passive Components

SER Section 2.3.3.4.2 describes the staff's evaluation of the applicant's exclusion of these components from an aging management review as a staff-identified exception; SER Section 3.0.3.2.7 describes the basis for the staff's evaluation of the adequacy of aging management for the essential service water diesel engine heat exchangers and pump right angle gear oil coolers.

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From SER Section 3.0.3.2.7:

SLRA Section B2.1.11 states that the program is comprised of the aging management aspects of Dominion's response to GL 89-13, which includes tests to verify heat transfer of safety-related heat exchangers, with routine inspection and maintenance so that loss of material, corrosion, erosion, cracking, fouling, and biofouling cannot degrade the performance of systems serviced by the open-cycle cooling water system.

As described in SER Section 3.0.3.2.7, the applicant's response to RAI B2.1.11-2 clearly stated that exclusion of these heat exchangers from aging management review does not exempt them from Generic Letter 89-13 commitments, and those commitments remain in effect during the subsequent period of extended operation.

SER Section 3.0.3.2.7 further states:

Dominion's CLB regarding GL 89-13 includes additional inspections and maintenance for the ESW pump engine heat exchangers and ESW pump right angle gear oil coolers. These additional inspections and maintenance are capable of identifying flow blockage and reduction of heat transfer due to fouling. The removal of the ESW pump engine heat exchanger cooler cores can provide access to determine if loss of material is occurring. Even though the internals of the ESW pump right angle gear oil coolers are not visually inspected, the conditions inside of the ESW pump engine heat exchangers can provide insights regarding loss of material for this component. The staff determined that, given the CLB requirements for the inspections and maintenance of the ESW pump engine heat exchangers and ESW pump right angle gear oil coolers, there is reasonable assurance that they will perform their intended function during the subsequent period of extended operation as follows. Based on the above discussion, the staff finds this exception acceptable.

Although these heat exchangers and oil coolers could have been included in the aging management review by the applicant, the inspections, maintenance and monitoring of the essential service water diesel engine heat exchangers and pump right angle gear oil coolers under the Open Cycle Cooling Water System program, which implements the CLB GL 89-13 program, provide assurance that they will continue to perform their intended function, consistent with Part 54 requirements.

10. Signature and Date of NCP Coordinator

Allen Hiser

Digitally signed by Allen Hiser
Date: 2020.03.02 16:49:14 -05'00'

11. Signature and Date of NCP Approver

Anna H. Bradford

Digitally signed by Anna H. Bradford
Date: 2020.03.05 16:13:43 -05'00'