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Subject: Questions
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Attachments: [image001.png](#)
[2019.10.02 final draft questions to Surry forwarded to PM.docx](#)

Paul,

As a follow up to our yesterday, I am providing to you the revised set of questions that staff developed. Please confirm the following:

Dominion will identify which answers to questions will be included in the annual update.

Dominion will identify which remaining questions will require additional follow-on communications.

Additional discussions will need to be arranged for:

- discussion of path forward on remaining questions
- consideration of additional supplement after the annual update but in time to support SER issuance on 11/25
- possibility of open item or confirmatory item in SER issued 11/25

Please let me know if you have any questions or concerns.

Thanks

Eric R. Oesterle / Chief

License Renewal Project Branch (MRPB)

Division of Materials and License Renewal (DMLR)

Office of Nuclear Reactor Regulation (NRR)

301-415-1014



Surry – Questions Related to Internal Visual Inspections In Lieu of External Visual Inspections

Should the applicant remove the option for internal visual inspections and only rely on the one-time surrogate structure inspection, questions 1 – 4, 8, and 10 will remain.

Question
<ol style="list-style-type: none"> 1. What is the thickness of the cementitious piping? 2. What are the type and size of steel reinforcement and physical configuration in the piping, including the number of layers of rebar and its center to center spacing? 3. What is the quantity of leakage that would be acceptable regarding: (a) flow rates and pressures being adequate to meet the piping's intended function; (b) leakage would not lead to washout of surrounding soil enough to degrade the soil's support intended function during normal operation and following a seismic event; and (c) a potential challenge to the canal's inventory. 4. What is the ground water elevation as compared to the in-scope piping? What depth is the freeze line? Same question for the potential surrogate structure.
<ol style="list-style-type: none"> 5. Based on a review of the LAR (relief request) and SER for the installation of carbon fiber-reinforced polymer (CFRP) on service water and circulating water piping. The staff seeks clarification on the following: <ol style="list-style-type: none"> a. Will CFRP be used on any of the CW piping under discussion? b. If yes, does the use of CFRP involve anything more than nominal lengths potentially required at a cementitious to steel transition as a result of the extent of repairs associated with the LAR? c. Do any of the in-scope cementitious piping surfaces have or potentially have internal liners that would obstruct the planned periodic internal visual inspections that will be credited for external surface inspections? 6. What surface preparation activities (e.g., extent of dewatering, debris removal) will be conducted prior to conduct of the internal visual inspections with an emphasis on the capability of identifying and measuring crack sizes against the acceptance criteria?
<ol style="list-style-type: none"> 7. Provide a technical basis that provides reasonable assurance of the premise that external loss of material or cracking on the CW piping will be detected from examination of the inside surfaces of the piping. Examples could be: (a) an industry consensus standard related to concrete inspections; (b) a professional society paper with operating experience input; or (c) a qualitative evaluation of how external loss of material or cracking would propagate to the interior surface of the piping and provide a visually detectable indication while interacting with the concrete and rebar matrix in the pipe wall.
<ol style="list-style-type: none"> 8. Based on the staff's review of the September 3, 2019, RAI response, five soil samples will be conducted (3 for the Structures Monitoring program, 2 for Open-Cycle Cooling Water program). <ol style="list-style-type: none"> a. The OCCW samples will be every 10 years, the SMP samples will be every 5 years. What is the basis for the 10-year interval versus the 5-year interval? b. What specific corrective actions that will be taken if the soil is determined to be aggressive to concrete? c. What is the basis for the soil samples being representative of the in-scope cementitious circulating water buried piping and the surrogate structural one-time inspection site? For example, depth, distance between sample points and the piping.

Surry – Questions Related to Internal Visual Inspections In Lieu of External Visual Inspections

Question
<p>9. ACI 349.3R, "Evaluation of Existing Nuclear Safety-Related Concrete Structures," is cited as the basis for acceptance criteria. Both GALL SLR Report AMP XI.M20, "Open Cycle Cooling Water System," and AMP XI.M42, "Internal Coatings/Lining for In Scope Piping, Piping Components, Heat Exchangers, and Tanks," cite ACI 349.3R as an appropriate standard to establish acceptance criteria for cementitious piping and cementitious linings. However, citing the standard in the AMP was based on direct visual inspections of the surface of the component. Further clarification is required for use of the standard when conducting internal inspections to detect external aging effects. Although the extent of degradation might meet acceptance criteria on the inside of the pipe, the corresponding extent of degradation on the exterior surfaces of the pipe might not be acceptable. State how the acceptance criteria in ACI 349.3R will be used when degradation is detected on the interior surfaces when this degradation could have initiated from the exterior surfaces.</p>
<p>10. The RAI response regarding corrective actions states:</p> <p style="padding-left: 40px;">For aggressive groundwater/soil environments and/or when concrete 96-inch inlet circulating water piping and structures have experienced degradation, corrective actions will be implemented to manage the concrete aging, accounting for the extent of the degradation experienced. Corrective actions may include evaluations, destructive testing, and/or focused inspections of accessible (leading indicator) or below-grade inaccessible concrete structural elements exposed to aggressive groundwater/soil.</p> <p>AMP XI.S6 has no specific corrective actions associated with structures except for adjusting inspection frequencies when projected inspection results do not meet acceptance criteria. Given that internal inspections will be credited to assess the conditions of external surfaces), what specific corrective actions will be taken?</p> <p>For example, if internal spalling is detected with the absence or presence of rust staining, the area could be excavated to sound concrete, sufficient to demonstrate that the spalling is not a result of external cracking or spalling with accompanying reinforcing corrosion/expansion. If the cracking is through wall or there is evidence that the spalling originated from the external surfaces, what corrective actions will be taken?</p> <p>For the surrogate structures inspection, how will the potential corrective actions associated with the structure to be inspected be adjusted to address potential related CW piping conditions?</p>