LimerickNPEm Resource

From: Kuntz, Robert
Sent: Tuesday, May 01, 2012 2:30 PM
To: Anthony Z. Roisman; gfettus@nrdc.org
Cc: Smith, Maxwell; Kanatas, Catherine
Subject: FW: DRAFT Request for Information RE: Limerick Generating Station license renewal application.
Attachments: DRAFT Limerick OE and AMR RAIs.docx

From: Kuntz, Robert
Sent: Tuesday, February 07, 2012 10:02 AM
To: 'Christopher.Wilson2@exeloncorp.com'
Subject: DRAFT Request for Information RE: Limerick Generating Station license renewal application.

Chris,

Attached is a DRAFT Request for Information related to the Limerick Generating Station license renewal application. If Exelon would like clarification on any item in the attached let me know and I can set up a teleconference with the NRC staff.

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Subject: FW: DRAFT Request for Information RE: Limerick Generating Station license renewal application.
Sent Date: 5/1/2012 2:30:02 PM
Received Date: 5/1/2012 2:30:00 PM
From: Kuntz, Robert

Created By: Robert.Kuntz@nrc.gov

Recipients:
"Smith, Maxwell" <Maxwell.Smith@nrc.gov>
Tracking Status: None
"Kanatas, Catherine" <Catherine.Kanatas@nrc.gov>
Tracking Status: None
"Anthony Z. Roisman" <aroisman@nationallegalscholars.com>
Tracking Status: None
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Tracking Status: None

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MESSAGE	594	5/1/2012 2:30:00 PM
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Options
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Reply Requested: No
Sensitivity: Normal
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LIMERICK GENERATING STATION
LICENSE RENEWAL APPLICATION
REQUESTS FOR ADDITIONAL INFORMATION

DRAI B.1.4-1

Background

License Renewal Application (LRA) Section B.1.4 states that, during the first 10 years of entering the period of extended operation, the owners of programs credited for license renewal will perform a review of plant-specific and industry operating experience to confirm the effectiveness of the Aging Management Program (AMPs). This review will determine if the AMP is currently effective, requires modification, or identify a need to develop a new AMP. In addition, the LRA states that follow-up actions will be taken as appropriate to provide additional assurance that aging of systems, structures, and components in the scope of license renewal will be adequately managed throughout the period of extended operation.

Issue

LRA Section B.1.4 describes a plan to review operating experience once for each AMP after entering the period of extended operation. New operating experience information is generated daily; therefore, the proposed one-time review would not result in the timely consideration of operating experience. Further, if the operating experience review occurs only once in the first 10 years of entering the period of extended operation, then there will be a gap between that review and the renewed license expiration date, during which no operating experience will be considered to determine whether the AMPs are effective, require modification, or whether there is a need to develop new AMPs.

Request

Describe programmatic activities that will be used for the ongoing review of plant-specific and industry operating experience to ensure that (a) the license renewal AMPs are and will continue to be effective in managing the aging effects for which they are credited, and (b) the AMPs will be enhanced or new AMPs will be developed when the review of operating experience indicates that the AMPs may not be fully effective.

In this description, address the following:

(a) If crediting existing activities, justify why they would not preclude the consideration of operating experience related to aging.

(b) Describe the sources of plant-specific and industry operating experience that will be reviewed for potential impacts on the aging management activities.

(c) Indicate whether plant-specific and industry operating experience only will be considered from a prescribed list of sources.

(d) Describe how plant-specific and industry operating experience evaluations will be prioritized and completed in a timely manner.

(e) Describe the operating experience evaluation records with respect to what will be considered and recorded on aging. Indicate whether the evaluation records will be maintained in auditable and retrievable form.

(f) When it is determined through an operating experience evaluation that enhancements to the aging management activities are necessary, including the development of new AMPs, describe how the enhancements will be implemented.

(g) Describe how the ongoing operating experience review activities will be administratively controlled. Indicate whether these administrative controls include periodic audits to ensure the effectiveness of the operating experience review activities.

(h) Describe how operating experience issues will be identified and categorized as related to aging. If an identification code is used, provide its definition or the criteria for its application. Also, describe how age-related operating experience will be trended.

(i) Indicate whether guidance documents and other publications are considered as a source of operating experience information. If they are considered as a potential source, provide a plan for considering the content of guidance documents, such as the GALL Report, as operating experience applicable to aging management. If they are not a potential source, justify why they should not be considered as such.

(j) Describe how evaluations of operating experience issues related to aging will consider the following:

- systems, structures, or components
- materials
- environments
- aging effects
- aging mechanisms
- AMPs

(k) Describe criteria for considering when AMPs should be modified or new AMPs developed due to operating experience.

(l) Describe how the results of the AMP inspections, tests, analyses, etc. will be considered as operating experience, both when they meet and do not meet the applicable acceptance criteria.

(m) Describe the training requirements and justify the level of training on aging issues for those plant personnel responsible for screening, assigning, evaluating, and submitting

plant-specific and industry operating experience. Also, provide the periodicity of the training and describe how it will account for personnel turnover.

(n) Provide criteria for reporting plant-specific operating experience on age-related degradation to the industry.

DRAI A.1-1

Background

Section 54.21(d) of 10 CFR requires the application to contain a final safety analysis report supplement. This supplement must contain a summary description of the programs and activities for managing the effects of aging and the evaluation of time-limited aging analyses for the period of extended operation.

LRA Appendix A contains the applicant's updated final safety analysis report (UFSAR) supplement. This supplement contains Commitment No. 46, which is to, "Perform a review of plant-specific and industry operating experience to confirm the effectiveness of the aging management programs." The implementation schedule for this commitment is "[d]uring the first 10 years of entering the period of extended operation."

Issue

As discussed above in RAI B.1.4-1, the implementation schedule would not provide for the timely consideration of operating experience. Further, this commitment does not adequately describe how operating experience will be considered to determine whether the AMPs are effective, require modification, or whether there is a need to develop new AMPs.

Request

Consistent with the response to RAI B.1.4-1 above, provide a summary description of the ongoing operating experience review activities for the final safety analysis report (FSAR) supplement required in accordance with 10 CFR 54.21(d). If enhancements are necessary, identify them in the FSAR supplement and include the schedules for their implementation.

DRAI 3.4.1.11-1

Background

LRA item 3.4.1-11 addresses cracking due to stress corrosion cracking (SCC) of stainless steel piping, piping components, and piping elements, tanks, heat exchanger components exposed to steam or treated water greater than 60°C (140°F). LRA item 3.4.1-11 indicates that cracking due to SCC of the components is managed by the Water Chemistry and One-Time Inspection programs.

LRA Table 3.1.2-1 addresses the aging management review results for the reactor coolant pressure boundary. More specifically, LRA Table 3.1.2-1 addresses the stainless steel piping, piping components, and piping elements exposed to steam (internal), indicating that these

components are related to LRA item 3.4.1-11 and cracking due to SCC of these stainless steel components are managed by the Water Chemistry and One-Time Inspection programs.

In comparison, GALL Report item IV.C1.R-20 and SRP-LR Table 3.1-1, ID 97 recommend GALL Report AMP XI.M7, “BWR Stress Corrosion Cracking,” and GALL Report AMP XI.M2, “Water Chemistry,” to manage cracking due to SCC and intergranular stress corrosion cracking (IGSCC) of stainless steel piping, piping components, and piping elements greater than or equal to four nominal pipe size (NPS) exposed to reactor coolant. GALL Report, Section IX.D, “Selected Definitions & Use of Terms for Describing and Standardizing Environments,” states that reactor coolant is treated water in the reactor coolant system and connected systems at or near full operating temperature, including steam associated with BWRs.

Issue

The LRA credits the One-Time Inspection program to manage cracking due to SCC of the reactor coolant pressure boundary stainless steel piping, piping components, and piping elements exposed to steam (internal), which are addressed in LRA Table 3.1.2-1. The staff needs clarification as to whether any of these stainless steel components is included in the scope of the BWR Stress Corrosion Cracking program or the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program, which includes periodic inspections. The staff also needs clarification as to the adequacy of the One-Time Inspection program.

Request

1. Provide information to clarify why any of these stainless steel components exposed to steam is not included in the scope of the BWR SCC program or the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program, which includes periodic inspections (for example, describe the nominal pipe sizes, more specific component types, locations, and applicable inspection requirements of ASME Code, Section XI).

2. Justify why the One-Time Inspection program, which does not include periodic inspections, is adequate to manage cracking due to SCC of these stainless steel components.

   As part of the response, clarify whether SCC has been observed in these components to demonstrate that the LGS operating experience supports the adequacy of the One-Time Inspection program to manage the aging effect.

3. Revise the LRA, consistent with the response to items 1 and 2 above.

DRAI 3.4.1.11-2

Background

LRA item 3.4.1-11 addresses cracking due to SCC of stainless steel piping, piping components, and piping elements, tanks, heat exchanger components exposed to steam or treated water greater than 60°C (140°F). LRA item 3.4.1-11 indicates that cracking due to SCC of the components is managed by the Water Chemistry and One-Time Inspection programs.

LRA Table 3.1.2-1 addresses the aging management review results for the reactor coolant pressure boundary. LRA Table 3.1.2-1 also indicates that the flow device (main steam flow elements), made of cast austenitic stainless steel (CASS) and exposed to steam (internal), is related to LRA item 3.4.1-11. LRA Table 3.1.2-1 further indicates that cracking due to SCC of these CASS components are managed by the Water Chemistry and One-Time Inspection programs.

In comparison, GALL Report item IV.C1.R-20 and SRP-LR Table 3.1-1, ID 97 recommend GALL Report AMP XI.M7, "BWR Stress Corrosion Cracking," and GALL Report AMP XI.M2, "Water Chemistry," to manage the aging effect of stainless steel piping, piping components, and piping elements greater than or equal to four NPS exposed to reactor coolant. GALL Report, Section IX.D, "Selected Definitions & Use of Terms for Describing and Standardizing Environments," states that reactor coolant is treated water in the reactor coolant system and connected systems at or near full operating temperature, including steam associated with BWRs.

In addition, GALL Report, IV.C1.R-52 addresses loss of fracture toughness due to thermal aging embrittlement of Class 1 piping, piping components, and piping elements exposed to reactor coolant greater than 250°C (482°F), for which GALL Report AMP XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)." GALL Report AMP XI.M12 includes the screening criteria for susceptibility of CASS materials to thermal aging embrittlement.

Issue

The applicant credits the One-Time Inspection program to manage cracking due to SCC of the CASS flow device exposed to steam. The staff needs clarification as to whether any of these CASS components is included in the scope of the BWR SCC program. The staff also needs clarification as to whether any of these CASS components is included in the scope of the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program, which includes periodic inspections.

In addition, the staff needs clarification as to whether these CASS components are susceptible to loss of fracture toughness due to thermal aging embrittlement based on the material screening criteria that are consistent with the guidance in GALL Report AMP XI.M12.

Request

1. Provide information to clarify why any of these CASS flow device components exposed to steam is not included in the scope of the BWR SCC program or the ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD program, which includes periodic inspections (for example, describe more specific component type, locations/configurations, and applicable inspection requirements of ASME Code Section XI).

2. Justify why the One-Time Inspection program, which does not include periodic inspections, is adequate to manage cracking due to SCC of the CASS components. As part of the response, clarify whether or not SCC has been observed in these components to demonstrate that the LGS operating experience supports the adequacy of the One-Time Inspection program to manage the aging effect.

3. Clarify why these components are not susceptible to loss of fracture toughness due to thermal aging embrittlement.

   As part of the response, describe the casting method, molybdenum content and ferrite content of the components to clarify whether the applicant's evaluation of the material susceptibility to thermal aging embrittlement is consistent with the material screening criteria addressed in GALL Report AMP XI.M12.

   If these components are determined to be susceptible to loss of fracture toughness due to thermal aging embrittlement, propose an AMP to manage the aging effect.

4. Revise the LRA, consistent with the response to items 1 through 3 of the above.

DRAI 3.5.2.11-1

Background:

LRA Table 3.5.1, item 3.5.1-78 states that the spent fuel pool liner is managed for loss of material and cracking by the Water Chemistry program and monitoring of the leak chase channel drainage system.

LRA Tables 3.5.2-11 and 3.5.2-13 include several stainless steel components that reference item 3.5.1-78, but do not line the spent fuel pool. These include, but are not necessarily limited to, the debris screens in the primary containment system in LRA Table 3.5.2-11 and the integral attachments in the reactor enclosure system in LRA Table 3.5.2-13.

For stainless steel components other than the spent fuel pool liner that are exposed to treated water, the GALL Report typically recommends the One-Time Inspection program to verify the effectiveness of the Water Chemistry program (e.g., GALL Report item VII.A4.AP-110).

Issue:

Monitoring of the leak chase channel drainage may not be an appropriate activity to verify the effectiveness of the Water Chemistry program for all of the components in LRA Tables 3.5.2-11 and 3.5.2-13 that reference item 3.5.1-78.

Request:

Identify those items in LRA Tables 3.5.2-11 and 3.5.2-13 that reference LRA item 3.5.1-78 for which monitoring of the leak chase channel drainage system would not be expected to detect degradation. For those items, propose an alternative activity to verify the effectiveness of the Water Chemistry program.