

NRR-PMDAPem Resource

From: Regner, Lisa
Sent: Thursday, November 09, 2017 11:54 AM
To: Paul.Duke@pseg.com
Cc: Thomas, Brian J.
Subject: Draft RAI for Hope Creek MUR

Follow Up Flag: Follow up
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Paul,
Below are the 2 draft questions from the Chemical, Corrosion, and Steam Generator Branch (MCCB). Please let me know if you'd like to have a clarification call next week.
Thanks,
Lisa

DRAFT REQUEST FOR ADDITIONAL INFORMATION
REGARDING LICENSE AMENDMENT REQUEST FOR
MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE
HOPE CREEK GENERATING STATION
PSEG NUCLEAR, LLC.
DOCKET NO. 50-354

Protective Coatings in Containment:

Protective coating systems (paints) provide a means for protecting the surfaces of facilities and equipment from corrosion and contamination from radionuclides, and also provide wear protection during plant operation and maintenance activities. Coatings are also used due to their suitability for, and stability under, design basis LOCA accident conditions, considering radiation and chemical effects. The NRC's acceptance criteria for protective coating systems is based on: (1) 10 CFR Part 50, Appendix B, which states quality assurance requirements for the design, fabrication, and construction of safety-related structures, systems, and components (SSCs); and (2) Regulatory Guide (RG) 1.54, Revision 3, Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants. Specific review criteria are contained in SRP Section 6.1.2, Protective Coating Systems (Paints) - Organic Materials Review Responsibilities.

Consistent with the regulatory requirements stated above, the license amendment request (LAR) dated July 7, 2017 (Agencywide Documents Access Management System (ADAMS) Accession No. ML17188A260), TSAR Section 4.1.5, "Containment Coatings" stated that the service level 1 coatings in containment are qualified to 340 degrees Fahrenheit (F), 70 pounds per square inch (psig), and 1.1×10^6 absorbed radiation dose (rads).

MCCB 1:

In order for the NRC staff to determine whether the coatings will continue to perform their safety function and not be adversely impacted by the power uprate conditions, the staff requests the licensee confirm the qualification limit for radiological dose. The current radiological dose qualification appears to be low for service in containment compared to similar epoxy coatings at other plants. In addition, provide the maximum post-accident primary containment conditions for temperature, pressure, and radiation at the measurement uncertainty recapture (MUR) power uprate conditions.

Flow-Accelerated Corrosion (FAC):

FAC is a corrosion mechanism occurring in carbon steel components exposed to single-phase or two-phase water flow. Components made from stainless steel are immune to FAC, and FAC is significantly reduced in components containing even small amounts of chromium or molybdenum. The rates of material loss due to FAC depend on the system flow velocity, component geometry, fluid temperature, steam quality, oxygen content, and pH. During plant operation, it is not normally possible to maintain all of these parameters in a regime that minimizes FAC; therefore, loss of material by FAC can occur and the rate of material loss needs to be predicted so that repair or replacement of damaged components could be made before reaching a critical thickness. The NRC's acceptance criteria are based on the structural evaluation of the minimum acceptable wall thickness for the components undergoing degradation by FAC.

MCCB 2:

The MUR power uprate will affect several process variables that influence FAC. The licensee states that for the TPO the evaluation of predicted wall thinning of the balance of plant piping will be minimal. However, the licensee also states that the TPO will change some parameters affecting FAC in systems associated with the turbine cycle and appropriate changes to piping inspection frequency will be made. Provide the areas where changes may be made to the piping inspection frequency and discuss the impacts of operating parameters (e.g. planned changes in water chemistry, power level, steam cycle data, etc.) that lead to the changes in inspection frequency.

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