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Boyle, Patrick

From: Martin, Robert *NR*
Sent: Tuesday, September 13, 2011 8:30 AM
To: Boyle, Patrick
Cc: Kulesa, Gloria
Subject: FW: RAI questions
Attachments: North_Anna_RAIs.docx

I am working on the letter to send these to Dominion.

From: Mendiola, Anthony
Sent: Monday, September 12, 2011 3:49 PM
To: Martin, Robert
Subject: RAI questions

Here you go.

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Chief, Nuclear Performance and Code Review Branch
SNPB/DSS/NRR/NRC
(301) 415-1054

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North Anna RAI Questions:

1. 4. FANP Topical Report, BAW-10239(P)(A) Revision 0 provides an evaluation of the Advanced Mark-BW fuel assembly in a sample reactor against the criteria defined in the Section 4.2 of the Standard Review Plan (SRP). Section 5.3.4 discusses fuel assembly structural damage from external forces, such as OBE, SSE, as well as SSE + LOCA. The faulted evaluation also addresses both horizontal (LOCA and Seismic) and vertical LOCA effects. Based on the Dominion presentation and the Advanced Mark-BW fuel mechanical design report, the NRC staff is unable to determine the operability of the core internals, specifically of the fuel assemblies (grids, fuel rods, guide tubes) and control rods.
 - a) Please provide a comprehensive strategy and qualifying criteria for determining the operability of these components.
 - a)b) Provide a comparison of the predicted design basis loads (e.g., local acceleration) on the core internals and fuel assemblies against the predicted loads derived from the measured ground motion data during the seismic event. In addition, compare these predicted loads against the measured yielding load and deflection from the fuel assembly grid crush testing.
2. Please describe the extent of fuel assembly inspections which will be performed to confirm the structural integrity of the fuel. Please provide specific information on how the inspections will determine that there is no distortion of the fuel lattice array or Control Element Assembly guide tubes that occurred as a result of the seismic event.
3. Please describe the extent of fuel assembly inspections and supporting analysis which will be performed to confirm the thermal hydraulic performance of the fuel. Please provide specific information on how the inspections will determine that there is no deflection of any Fuel Grid Mixing Vanes or any other component that will alter the Thermal Hydraulic performance of the fuel bundle as a result of the seismic event. If any deficiencies are detected, please provide information on the impact on the fuel DNB and CHF calculations.
4. Describe the extent of inspections and testing which will be performed to demonstrate the operability of the control element drive mechanisms.
5. Describe all additional sources of technical information considered in determining the operability and integrity of the fuel.
6. Please provide any nuclear fuel related information that has been gathered considering the EPRI guidance and recommendations found in EPRI NP-6695. Specific information of interest is control rod drive mechanism operability: in-core instrumentation readouts for changes; primary coolant radiation monitor changes; primary coolant flow, temperature, and pressure for changes; loose parts monitoring equipment noise signatures; and primary coolant sample chemistry samples.
7. Please provide the fuel inspection plans and acceptance criteria for the fuel inspections planned for North Anna cores. Include a description of the extent of guide tube drag and CEA drop testing.

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8. Please explain the rationale and extent of the operability determinations for the core components (fuel and control rods) and their support systems.

9. Please provide the final root cause analysis report on the cause of the reactor trips.

10. Please describe the extent of inspection on the core shroud to investigate possible changes in local flow conditions (e.g., baffle jetting, change in core bypass flow).

11. Third burned fuel assemblies are generally located along the core periphery in locations where seismic loading is limiting. These assemblies are at end-of-life and would be discharged to the SFP (no reinsertion). Are there any plans to do detailed investigations and measurements (including rod pulls, dismantling, hot cell examinations) on any of the third burned fuel assemblies located at the core periphery of Unit 2?

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