From: Paige, Jason
Sent: Monday, April 11, 2011 4:38 PM
To: Abbatiello, Tom
Cc: Abbott, Liz; Hoffman, Jack; Tiemann, Philip; Tomonto, Bob
Subject: Turkey Point EPU - Nuclear Performance and Code Review (SNPB) Request for Additional Information - Round 1

Tom,

Below are requests for additional information (RAIs) regarding the Turkey Point Extended Power Uprate license amendment request. On April 11, 2011, the Nuclear Regulatory Commission (NRC) staff and Florida Power & Light Company (FPL) discussed draft RAIs to gain a common understanding of the questions. The below RAIs reflect the questions discussed during the April 11, 2011, call. FPL agreed upon providing its responses within 45 days of the date of this email. If you have any questions, feel free to contact me.

Nuclear Design

SNPB-1.1 Provide qualitative and quantitative technical basis as to why the nuclear design models and methods referenced in the Westinghouse reload methodology (WCAP-9272-P-A) are applicable to the modern fuel designs that will be loaded under EPU conditions. In particular, discuss the capability of the methods to address increased fuel enrichment limits and the capability of computer codes to make use of the latest cross-section libraries and fission product distributions. Provide this information, as applicable, for each computer code used in the reload methodology that is associated with the nuclear design.

Fuel System Design

SNPB-1.2 Section 2.8.1.2.1 Fuel System Design Features: (a) Provide justification for the peak fuel assembly average burnup limit of 62,000 MWD/MTU for the Upgrade fuel assembly design; (b) Provide the description of enhanced intermediate flow mixer (EIFM); (c) Provide the justification that P-Grid will not have the problem of corrosion cracking; and (d) Provide the description of hafnium vessel flux depression (HVFD) absorber rods in the assembly and how they are going to be loaded in the core.

SNPB-1.3 Section 2.8.1.2.3 Seismic/LOCA: (a) Justify that the structural loading methodologies including the WEGAP code are applicable for the Upgrade fuel assembly design of 15x15 array; (b) Describe of the two limiting mixed cores of DRFA and Upgrade fuel assemblies; (c) Elaborate how the leak-before–break methodology is used for the reactor coolant loop piping, (d) Provide details how the maximum structural loads occurs at the outer three assembly rows on the core periphery for the Upgrade fuel at non-RCCA locations; and (e) Provide details how the maximum fuel assembly deflection occurs in an assembly row consisting of 9, 11, 13, and 15 fuel assemblies in the Z-direction during a LOCA ACC loading.

SNPB-1.4 Provide analyses of rod internal pressure, corrosion, and fuel melting for an Upgrade fuel rod at EPU limiting conditions. The rod power histories should take into account of all applicable transients.

Thermal and Hydraulic Design

SNPB-1.5 With regards to Table 2.8.3-5, Note 6, provide a qualitative and quantitative description of the transition core penalty methodology. How is the penalty determined?

SNPB-1.6 In section 2.8.3.2.3.8, "Effects of Fuel Rod Bow on DNBR," supply a reference supporting the statement that in spans containing IFM grids in the Upgrade fuel, no rod bow penalty is necessary due to the short spacing between grids.

SNPB-1.7 In conjunction with section 2.8.3.2.5, "Results," and Table 2.8.3-5, provide an additional table showing the departure from nucleate boiling (DNB) Margin/Penalty Summary for those analyses that utilize the standard thermal design procedure (STDP). Indicate the CHF/DNB correlation that was used, the correlation limit, and the DNBR limit. For the case of Rod Withdrawal from Subcritical, indicate these values for below the first mixing vane grid and for a typical grid span.

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