

From: Poole, Justin
Sent: Wednesday, January 13, 2010 3:43 PM
To: 'Hale, Steve'; 'COSTEDIO, JAMES'
Subject: Request for Additional Information RE: Extended Power Uprate Small Break LOCA Model

Steve

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated April 7, 2009 (Agencywide Documents Access and Management System Accession No. ML091250564), FPL Energy Point Beach, LLC, submitted a request to increase each unit's licensed core power level from 1540 megawatts thermal (MWt) to 1800 MWt reactor core power, and revise the technical specifications to support operation at this increased core thermal power level.

As part of the review for the Extended Power Uprate (EPU), the NRC staff develops a model to perform a confirmatory analyses of the small break loss of coolant accident at EPU conditions. The NRC staff requests the following information in order to complete the development of this model.

During a discussion with Steve Hale on January 13, 2010, it was agreed that you would provide the additional information within 30 days of the date of this letter.

The NRC staff considers that timely responses to requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources. If circumstances result in the need to revise the requested response date, please contact me.

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1. Topical Report on the licensing analysis of record for SBLOCA at EPU conditions with results including sequence of events and key responses.
 - a) Please also provide plots of break flow and loop seal (broken loop) steam flow vs time.
 - b) Please clarify the end point of the 4.2 second delay (item C of Table 2.8.5.6.3.3-1) in the draft EPU SBLOCA report. Does the remark (Includes Rod Drop Time) imply that the rods are fully inserted at the end of the 4.2 seconds as in item 32 of the NRC 2008-0092 information?
 - c) Does the SBLOCA hot rod heatup analysis consider cross flow from neighboring bundles? Is there a flow penalty placed on the hot bundle in SBLOCA?
 - d) Is loss of off-site power assumed at time zero? If not, what is the RCP trip logic?

e) Axial power shape from Westinghouse is double humped. TRACE currently uses a top peaked shape from the FSAR. Please confirm what power shape is used by NOTRUMP.

2. Additional fuel design information (spacer grid locations and K-factors).
3. Secondary side geometric information: steam generator and steam line volumes, flow areas, K-factors, hydraulic diameters.
4. Reactor coolant pump (RCP): confirm anti-reverse rotation device operational for RCPs. Pump trip setpoints, time delays and logic.
5. Additional RPS, SGIS, ESFAS setpoints and delays information: Please confirm reactor trip and SIS actuation on low pressure (only assumed for SBLOCA?). Is Loss of Office Power (LOOP) assumed? If so, on what conditions? Please provide setpoints and delays for containment isolation and turbine trip.
6. Pressurizer PORV and SRV flows, setpoints and delays.
7. Basic geometry information (P&ID) for the ECCS injection lines. The information needed is the length of the ECCS injection lines from the injection location on the primary loop piping up to the first isolation valve. The information either is not on the cited drawings or the print is too small to read.
8. Upper head fluid temperature at EPU operating conditions.
9. Information for Counter Current Flow Limit (CCFL) model at the core outlet – Please provide either drawings or the following information: plate thickness, number of holes, hole diameter(s), open flow area ratio (open plate flow area to total plate flow area).
10. Steam flow, feedwater flow and steam generator recirculation ratio at EPU full power conditions.
11. Steam line flow restrictor flow area.
12. Control systems design report or equivalent information describing operation of the primary and secondary control systems: Steam generator water level instrumentation and control (single and three-element), steam generator pressure (including bypass and ADV), logic for operation of pressurizer heaters and sprays, pressurizer level (charging and letdown), pressurizer water level required to cover heaters (low level at which heaters are tripped off), power level of proportional and backup pressurizer heaters.
13. Valve characteristics (TCVs, Bypass Valves, TSVs, MFIVs, MSIVs) – number of valves, full open flow area, open/close rate.
14. Control rod insertion versus time after scram and CEA worth versus insertion (with and without highest worth rod stuck out of core). Reactivity versus fuel temperature, and reactivity versus moderator density, moderator temperature coefficient. Please provide Point Beach EPU specific reactivity feedback and neutron kinetics parameters.

15. Operator actions during transients and accidents including: reactor coolant pump trips (conditions to trip pumps – automatic or manual), HPI throttling criteria.
16. Material property data. (density, specific heat, thermal conductivity, and emissivity versus temperature) for the various materials in the reactor system (stainless steel, inconel, etc.).

E-mail Properties

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LOCA Model
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From: Poole, Justin

Created By: Justin.Poole@nrc.gov

Recipients:

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Tracking Status: None

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