September 19, 2005

Mr. Gene St. Pierre, Site Vice President
c/o James M. Peschel
Seabrook Station
FPL Energy Seabrook, LLC
PO Box 300
Seabrook, NH 03874

SUBJECT: SEABROOK STATION, UNIT NO. 1 - RESPONSE TO NRC BULLETIN 2003-01, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED WATER REACTORS" (TAC NO. MB9612)

Dear Mr. St. Pierre:

The Nuclear Regulatory Commission (NRC) issued Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors," dated June 9, 2003. A response was requested to provide the information stated in Option 1 or Option 2 of Bulletin 2003-01. By letter dated August 8, 2003, FPL Energy Seabrook, LLC (FPLE) provided a response to Option 2 regarding Seabrook Station, Unit No. 1. Option 2 states:

> Describe any interim compensatory measures that have been implemented or that will be implemented to reduce the risk which may be associated with potentially degraded or nonconforming ECCS [emergency core cooling system] and CSS [containment spray system] recirculation functions until an evaluation to determine compliance is complete. If any of the interim compensatory measures listed in the Discussion section will not be implemented, provide a justification. Additionally, for any planned interim measures that will not be in place prior to your response to this bulletin, submit an implementation schedule and provide the basis for concluding that their implementation is not practical until a later date.

Bulletin 2003-01 identified six categories of interim compensatory measures (ICMs), namely:

- ICM category (1) Operator training on indications of and responses to sump clogging.
- ICM category (2) Procedural modifications if appropriate, that would delay the switchover to containment sump recirculation (e.g., shutting down redundant pumps that are not necessary to provide required flows to cool the containment and reactor core, and operating the CSS intermittently).
- ICM category (3) Ensuring that alternative water sources are available to refill the RWST [refueling water storage tank] or to otherwise provide inventory to inject into the reactor core and spray into the containment atmosphere.

- ICM category (4) More aggressive containment cleaning and increased foreign material controls.

- ICM category (5) Ensuring containment drainage paths are unblocked.

- ICM category (6) Ensuring sump screens are free of adverse gaps and breaches.

In your letter of August 8, 2003, in regard to the six ICMs listed above you stated that you had implemented the ICMs, as follows:

- Regarding ICM category (1) - operator guidance and training for continuously monitoring ECCS and containment building spray (CBS) pump parameters, including loss of net-positive suction head (NPSH) as indicated by erratic current, flow, discharge pressure, suction pressure (CBS pumps only), and pump bearing temperature.

- Regarding ICM category (2) - for small to medium loss-of-coolant accidents (LOCAs), guidance to delay depletion of the RWST before switchover to recirculation through cooldown and depressurization of the reactor coolant system (RCS), with sequential stopping of ECCS pumps based on core cooling criteria.

- Regarding ICM category (3) - RWST refill, to be accomplished after it is determined that there is a loss of sump recirculation capability using chemical and volume control system (CVCS) blended makeup.

- Regarding ICM category (4) - an aggressive containment cleaning and foreign material exclusion program meeting the latest industry guidance of Nuclear Energy Institute (NEI) 02-01, Revision 1, “Condition Assessment Guidelines; Debris Sources Inside PWR [pressurized-water reactor] Containments”.

- Regarding ICM category (5) - the existence of numerous bio-shield openings from the area containing the reactor vessel and RCS piping to the outer containment annulus leading to the sumps, the existence of large stairwell openings in the upper levels of the containment, verified open refueling pool drains, and engineering/design reviews of equipment to be left in containment after outages.

- Regarding ICM category (6) - visual inspections of the containment sumps at least once per 18 months for signs of distress or abnormal conditions.

You also stated in your response that you would be implementing the following ICMs by October 2003:

- Regarding ICM category (1) - adding operator guidance and training for continuously monitoring ECCS CBS pump parameters in procedures for transferring to cold-leg recirculation.

- Regarding ICM category (2) - procedural changes to use residual RWST capacity by lining up the high head safety injection charging pumps to take a suction from the RWST.

- Regarding ICM category (5) - to support debris transport analyses, a walkdown of the containment building recirculation flowpaths in accordance with the guidance of NEI 02-01, Revision 1.

- Regarding ICM category (6) - the addition of more details in the acceptance criteria for inspections of the containment sumps, and application of these enhanced criteria.

You further stated in your response, including justifications, that you would not be implementing an ICM, namely: procedural changes that would delay the switchover to containment sump recirculation for larger LOCAs.

In your October 28, 2004, response to an NRC letter dated September 10, 2004, requesting additional information, you elaborated on the existing operator actions now included in your revised Emergency Operating Procedures (EOPs). The steps in the revised EOPs address responses to small, medium and large-break LOCAs, transfer to cold-leg recirculation, and operator response to sump clogging and loss of ECCS recirculation capability, with new emphasis on shutting down redundant pumps not necessary for core heat removal and containment building cooling/depressurization/iodine removal. These pertain to ICM category (1) and ICM category (2).

In your October 28, 2004, response you also elaborated on your evaluation of the Westinghouse Owners Group (WOG) Candidate Operator Actions (COAs) of WCAP-16204, "Evaluation of Potential ERG [emergency response guidelines] and EPG [emergency procedure guidelines] Changes to Address NRC Bulletin 2003-01 Recommendations (PA-SEE-0085), Revision 1," dated March 2004. Your COA evaluation results were as follows:

1. COA A1a-W, "Secure One Spray Pump," was not appropriate for Seabrook due to its non-fan cooler design.

2. COA A1b, "Operator Action to Secure Both Spray Pumps," was not appropriate for Seabrook due to its non-fan cooler design.

3. COA A2, "Manually Establish One Train of Containment Sump Recirculation Prior to Automatic Actuation," was only applicable to small-break LOCAs, which for Seabrook will reach cooldown conditions before switchover to recirculation (as discussed for COA A7 below) and, therefore, will not be implemented.

4. COA A3-W, "Terminate One Train of Safety Injection After Recirculation Alignment," was determined to be non-beneficial due to increased localized flow rates in the vicinity of the remaining independent sump screen.

5. COA A4, “Early Termination of One LPSI [low-pressure safety injection]/RHR [residual heat removal] Pump Prior to Recirculation Alignment,” was not applicable to the Seabrook ECCS design with its dependent low and high pressure pumps (Combustion Engineering, Inc. (CE) plant applicability only, unlike Seabrook’s Westinghouse design).

6. COA A5, “Refill of Refueling Water Storage Tank,” was accomplished by refilling the RWST from the CVCS upon switchover to sump recirculation, and also by drawing a suction on the RWST with the charging pumps (which take suction lower in the RWST, thereby drawing upon normally unused RWST capacity) - ICM category #3.

7. COA A6, “Inject More than One RWST Volume from a Refilled RWST or by Bypassing the RWST,” was implemented by refilling the RWST and taking a suction on the RWST with charging pumps (as discussed for COA A5 above), and by aligning the volume control tank for makeup via the CVCS blended makeup system and charging pumps to the RCS when the charging pumps can no longer take a suction on the RWST (RWST bypass) - ICM category #3.

8. COA A7, “Provide More Aggressive Cooldown and Depressurization Following a Small Break LOCA,” is already addressed in Seabrook procedures, modeled on the ERGs, maximizing the cooldown rate up to the Technical Specification limit (see discussion above for small to medium LOCAs) - ICM category #2.

9. COA A8-W, “Provide Guidance on Symptoms and Identification of Containment Sump Blockage,” was considered and implemented (see discussion above) - ICM category #1.

10. COA A9-W, “Develop Contingency Actions in Response to Containment Sump Blockage, Loss of Suction, and Cavitation,” applicable WOG recommended items were considered and implemented (see discussion above) - ICM category #1.

11. COA A10, “Early Termination of One Train of HPSI [high-pressure safety injection]/High-Head Injection Prior to Recirculation Alignment (RAS),” is applicable to CE plants only, unlike Seabrook’s Westinghouse design.

12. COA A11, “Prevent or Delay Containment Spray for Small Break LOCAs (< 1.0 Inch Diameter) in Ice Condenser Plants,” Seabrook’s dry containment is not equipped with an ice condenser.

The NRC staff has considered your Option 2 response for ICMs that were, or were to have been, implemented to reduce the interim risk associated with potentially degraded or nonconforming ECCS and CSS recirculation functions. Based on your response, the NRC staff considers your actions to be responsive to, and to meet the intent of, Bulletin 2003-01. Please retain any records of your actions in response to Bulletin 2003-01, as the NRC staff may conduct subsequent inspection activities regarding this issue.

Should you have any questions, please contact me at 301-415-1484, or the lead Project Manager for this issue, Mr. Alan Wang, at 301-415-1445.

Sincerely,

/RA/

Victor Nerses, Senior Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-443

cc: See next page

Should you have any questions, please contact me at 301-415-1484, or the lead Project Manager for this issue, Mr. Alan Wang, at 301-415-1445.

Sincerely,

/RA/

Victor Nerses, Senior Project Manager, Section 2
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