August 8, 2005

MEMORANDUM TO: Richard J. Laufer, Section Chief, LPDI-1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: David L. Solorio, Chief ***/RA/***
Balance of Plant Section
Plant Systems Branch
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation

SUBJECT: INDIAN POINT UNIT 3 - CLOSEOUT LETTER FOR BULLETIN 2003-01, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED-WATER REACTORS"

The Plant Systems Branch (SPLB) has reviewed and evaluated the information provided in responses to Bulletin 2003-01 by the licensee for the Indian Point Unit 3. SPLB has determined that the licensee's actions have been responsive to and meet the intent of Bulletin 2003-01. Attached to this letter is the proposed close-out letter for the above plant. If you have any questions, please contact Leon Whitney or Alan Wang. Please include Alan Wang and Leon Whitney on the distribution list.

Docket Nos: 50-286

Attachment: As stated

CONTACTS: Leon Whitney, SPLB/DSSA
415-3081

Alan B. Wang, DLPM, PD IV
415-1445

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OFFICIAL RECORD

Entergy Nuclear Northeast
295 Broadway, Suite 1
P.O. Box 249
Buchanan, NY 10511-0249

SUBJECT: INDIAN POINT UNIT 3 - RESPONSE TO NRC BULLETIN 2003-01, "POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY SUMP RECIRCULATION AT PRESSURIZED WATER REACTORS (TAC NO. MB9620)

Dear Mr. Gallagher:

This letter acknowledges receipt of your response dated August 7, 2003, to Nuclear Regulatory Commission (NRC) Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors," dated June 9, 2003. The NRC issued Bulletin 2003-01 to all pressurized-water reactor (PWR) licensees requesting that they provide a response, within 60 days of the date of Bulletin 2003-01, that contains either the information requested in following Option 1 or Option 2 stated in Bulletin 2003-01:

Option 1: State that the emergency core cooling system (ECCS) and containment spray system (CSS) recirculation functions have been analyzed with respect to the potentially adverse post-accident debris blockage effects identified in the Discussion section, and are in compliance with all existing applicable regulatory requirements.

Option 2: 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 and CSS 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.

You provided an Option 2 response.

Bulletin 2003-01 discussed six categories of interim compensatory measures (ICMs):

(1) operator training on indications of and responses to sump clogging; (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); (3) ensuring that alternative water sources are available to refill the RWST or to otherwise provide inventory to inject into the reactor core and spray into the containment atmosphere; (4) more aggressive

containment cleaning and increased foreign material controls; (5) ensuring containment drainage paths are unblocked; (6) ensuring sump screens are free of adverse gaps and breaches.

You stated in your bulletin response of August 7, 2003, that you had implemented the following ICMs:

(1) operator training to monitor operating recirculation and/or residual heat removal (RHR) pumps for erratic flow - ICM category #1;

(2) procedures which call, in the event of inadequate core cooling using recirculation pumps, for shifting to an independent alternate containment sump drawn upon by RHR pumps - ICM category #1;

(3) in the event of a loss of recirculation capability from both the recirculation and containment sumps, delaying depletion of the refueling water storage tank (RWST) by minimizing flow and depressurizing the reactor coolant system (RCS) to reduce break flow - ICM category #1;

(4) an operator training plan to present the mechanisms and potential consequences of sump clogging (to be presented in the fall 2003 requalification training cycle) - ICM category #1;

(5) in the event of the inability to establish or maintain recirculation flow, the securing of all containment spray flow depending on containment conditions - ICM category #1;

(6) addition of water to the RWST from the primary water system upon loss of recirculation flow, a beyond design basis circumstance - ICM category #3;

(7) foreign material control programs to ensure that inappropriate materials are not left in containment and that the containment sumps are free of debris - ICM category #4;

(8) plant startup containment walkdown and inspection activities - ICM category #4;

(9) removal of the blind flange on the four inch refueling cavity drain line prior to startup - ICM category #5; and

(10) inspection of of the sump screens each outage to verify the as-left condition is consistent with design requirements - ICM category #6.

You also stated in your response that you would be implementing the following ICM: improvements to the containment closeout procedures to provide more specific steps to verify that the sump screens are intact, with no adverse gaps or breaches - ICM category #6.

You further stated in your response, including justifications, that you would not be implementing the following ICMs:

(1) procedural modifications, if appropriate, that would delay the switchover to containment sump recirculation; and

(2) ensuring that alternative water sources are available to refill the RWST.

In a December 8, 2004, response to a September 30, 2004, NRC request for additional information (RAI) you:

(1) elaborated on operator training relating to sump clogging/loss of net-positive suction head (NPSH), including training on injection/recirculation pump lineups, indications of sump clogging (which include erratic flow, cavitation noises and/or abnormal vibrations - ammeters for the recirculation and RHR pumps are not provided), monitoring of sump levels, and monitoring of SI pump suction pressure during high head recirculation.

Additionally in your December 8, 2004, RAI response you elaborated on your evaluations of the ICMs (candidate operator actions or COAs) of Westinghouse Owners Group (WOG) WCAP-16204, Rev. 1 "Evaluation of Potential ERG and EPG Changes to Address NRC Bulletin 2003-01 Recommendations (PA-SEE-0085)." You discussed the COAs as follows:

(1) COA A1a-W "Operator Action to Secure One Spray Pump," concluding that Indian Point will perform an evaluation of actions to stop one of two operating containment spray pumps early in the (small-break) LOCA recovery, assuming that the currently requested alternate source term amendment is approved (approximately March, 2005), and that the containment fan cooler unit charcoal is not longer in the licensing basis for iodine removal (evaluation completed by March 25, 2005, procedure revisions approximately 8 weeks after engineering analyses have been completed, simulator verification and operator training conducted prior to implementation of any EOP changes) - ICM category #1;

(2) COA A1b "Operator Action to Secure Both Spray Pumps," concluding that existing EOP E-1, "Loss of Reactor or Secondary Coolant," provides direction to stop both containment spray pumps if containment pressure has been reduced below the spray signal reset pressure and containment area radiation is normal, but that for Indian Point 3 specifically, one containment spray pump must remain operating throughout the switchover to recirculation until the RWST is essentially empty to assure that containment sump pH will be maintained within the design range - ICM category #1;

(3) COA A2 "Manually Establish One Train of Containment Sump Recirculation Prior to Automatic Actuation," concluding that this COA would not be implemented due to NPSH considerations (insufficient emergency sump water level if recirculation is commenced before full RWST discharge);

(4) COA A3-W "Terminate One Train of Safety Injection After Recirculation Alignment," concluding that Indian Point, which establishes recirculation by starting only one recirculation pump, will perform and evaluation of the advisability of adding additional core cooling and recirculation spray guidance to EOP ES-1.3, "Transfer to Cold Leg Recirculation," to provide operators with an option in an existing procedural step which starts a second recirculation pump even if it is not needed for heat removal capability (evaluation competed by April 28, 2005, procedure revisions approximately 8 weeks after engineering analyses have been completed, simulator verification and operator training conducted prior to implementation of any EOP changes) - ICM category #1;

(5) COA A4 “Early Termination of One LPSI/RHR Pump Prior to Recirculation Alignment,” concluding that, in order to account for an active RHR pump failure, two RHR pumps are required to operate during the injection phase of a LOCA, that these pumps may be stopped only if the RCS pressure is above the RHR pump shutoff head, and that therefore this COA would not be implemented.

(6) COA A5 “Refill of Refueling Water Storage Tank,” concluding that Indian Point will include actions to establish makeup to the RWST in EOP ES-1.3, “Transfer to Cold Leg Recirculation,” after the last pump taking suction from the RWST is stopped and isolated from the tank - ICM category #3;

(7) COA A6 “Inject More Than One RWST Volume From a Refilled RWST or by Bypassing the RWST,” concluding that such injection would only be undertaken upon loss of recirculation capability, a beyond design basis event, and that actions to provide additional makeup flow to the RCS from a borated water source, after a loss of recirculation capability due to sump blockage, will be included in a new Indian Point procedure for response to sump blockage, pending engineering analysis - ICM category #3;

(8) COA A7 “Provide More Aggressive Cooldown and Depressurization Following a Small Break LOCA,” concluding that Indian Point EOP ES-1.2 already provides guidance to cooldown and depressurize the RCS to reduce break flow, thereby reducing the injection flow necessary to maintain RCS subcooling and inventory and delaying depletion of the RWST - ICM category 2;

(9) COA A8-W “Westinghouse Plants Provide Guidance on Symptoms and Identification of Containment Sump Blockage,” concluding that Indian Point would add steps to EOP ES1.3, “Transfer to Cold Leg Recirculation,” and EOOP ECA-1.1, “Loss of Emergency Coolant Recirculation,” which would direct the operators to monitor for indications of sump blockage using plant specific indications to be identified by an evaluation of instrumentation available at Indian Point (evaluation to be completed by April 28, 2005, procedure revisions within 8 weeks after the engineering evaluation, and training initiated in the next practical training cycle) - ICM category #1.

(10) COA A9-W “Develop Contingency Actions in Response to: Containment Sump Blockage, Loss of Suction, and Cavitation,” concluding that, in order to enhance recovery from a sump blockage event, Indian Point would develop plant specific guidance based on the generic Westinghouse guideline “Sump Blockage Control Room Guideline” (SBCRG) by April 28, 2005, procedure revisions about 8 weeks after the engineering evaluation, and simulator verification and operator training conducted prior to implementation of any new sump blockage guidance - ICM category #1;

(11) COA A10 “Early Termination of One Train of HPSI/High-Head Injection Prior to Recirculation Alignment (RAS),” concluding that Indian Point’s high-head injection pumps already may be manually sequentially stopped (based on established criteria that maintains core cooling) per Indian Point EOP ES-1.2 “Post-LOCA Cooldown and Depressurization,” which provides actions to cooldown and depressurize the RCS to reduce break flow - ICM category #2.

The NRC staff has considered your Option 2 response for compensatory measures 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 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-[xxxx] or the lead PM for this issue, Alan Wang at 301-415-1445.

Sincerely,

[Name], Project Manager, Section [1 or 2]
Project Directorate [I, II, III, or IV]
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

cc: See next page [Plant Mailing List]

ADD TO DISTRIBUTION: AWang, RArchitzel, DSolorio, MKowal, LWhitney, THafera