123 Main Street
White Plains, New York 10601
914 681.6240

John C. Brons
Executive Vice President
Nuclear Generation

June 1, 1988
IPN-88-022

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Subject: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
Boric Acid Corrosion of Carbon Steel
Reactor Pressure Boundary Components
in PWR Plants (Generic Letter 88-05)

Dear Sir:

Generic Letter 88-05 (GL 88-05) requested that PWR licensees provide assurance that a program has been implemented that consists of systematic measures to ensure that boric acid corrosion does not lead to degradation of the reactor coolant pressure boundary. This letter provides a response to GL 88-05.

The Authority has reviewed its procedures and practices relative to the concerns identified therein. Several aspects of the program described in GL 88-05 are in place, either procedurally or in practice. In order to develop an integrated program for the identification, evaluation and repair of small reactor coolant pressure boundary leaks, certain existing practices will be formalized and, where necessary, new procedures prepared. A description of the program enhancements planned is provided in Attachment I. The Authority anticipates that these program enhancements will be implemented during the cycle 6/7 refueling outage scheduled to commence in February 1989.

The Authority has consistently emphasized maintenance of the material condition of its nuclear plants as a means of ensuring continued safe operation and maintaining personnel radiation exposure as low as reasonably achievable. Some examples of the Authority's activities in this regard include:

A001

8806130082 880601
PDR ADOCK 05000286
P DCD

- Implementing a leakage tracking program
- Extensive use of live loaded valve stem packing to minimize valve packing leakage and the need for frequent maintenance
- Installation of a new articulated clamp design for the reactor vessel instrument port column conoseal assemblies to simplify installation, thereby reducing the potential for leakage
- Actions taken in response to IEB 82-02 "Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of PWR Plants," specifically, the implementation of maintenance procedures and training for threaded fastener practices.

In addition, the Authority is currently evaluating the suitability of a coating material intended to minimize boric acid induced corrosion of threaded fasteners and elimination of the resistance temperature detector (RTD) bypass manifold. Mechanical joints associated with the bypass manifold have been a source of occasional reactor coolant pressure boundary leakage.

It has always been the Authority's policy to pursue the prompt identification and correction of component leakage. This policy is enhanced by the aggressive Indian Point effort to maintain a clean plant. As detailed in Attachment I, the program enhancements in the area of boric acid leakage/corrosion will serve to formalize many of Indian Point 3's practices related to the prompt disposition of identified leaks. Once identified, boric acid leaks are appropriately cleaned. For cases where an engineering evaluation of any observed component degradation is deemed to be required, the necessary examinations will be performed. However, it is the Authority's position that prior component clean-up will not adversely affect the examination and evaluation activities, since in most cases any boric acid crystal build-up will have to first be removed to allow for the examination. The procedural controls related to the program enhancements discussed in Attachment I should serve to alleviate any undue concerns in this area.

Should you or your staff have any questions concerning the information contained in Attachment I, please contact Mr. P. Kokolakis of my staff.

Very truly yours,

for J. C. Brons
John C. Brons
Executive Vice President
Nuclear Generation

STATE OF NEW YORK
COUNTY OF WESTCHESTER
Subscribed and Sworn to me before
this 1 day of June 1988

Norma Margaret Williams
Notary Public

NORMA MARGARET WILLIAMS
Notary Public, State of New York
No. 4869557
Qualified in Westchester County
Commission Expires September 8, 1988

cc: Resident Inspector's Office
Indian Point Unit 3
U.S. Nuclear Regulatory Commission
P.O. Box 337
Buchanan, NY 10511

Joseph D. Neighbors, Sr. Proj. Mgr.
Project Directorate I-1
Division of Reactor Projects - I/II
U.S. Nuclear Regulatory Commission
Mail Stop 14B2
Washington, D.C. 20555

U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

ATTACHMENT I
ACTIONS IN RESPONSE TO G/L 88-05

Program Element 1

"A determination of the principal locations where leaks that are smaller than the allowable technical specification limit can cause degradation of the primary pressure boundary by boric acid corrosion. Particular consideration should be given to identifying those locations where conditions exist that could cause high concentrations of boric acid on pressure boundary surfaces."

Action

The Authority will develop a list of carbon steel mechnical joints (and certain non-carbon steel mechnical joints such as control rod drive mechanism housing seal welds and reactor vessel head instrument port column conoseal assemblies) where small leaks can cause pressure boundary degradation. This list will be incorporated into procedure(s) covering leak identification and corrective action.

Program Element 2

"Procedures for locating small coolant leaks (i.e., leakage rates at less than technical specification limits). It is important to establish the potential path of the leaking coolant and the reactor pressure boundary components it is likely to contact. This information is important in determining the interaction between the leaking coolant and reactor coolant pressure boundary materials."

Action

The Authority will prepare/revise procedures to:

a) Require periodic surveillance (using a surveillance procedure) of the items identified in response to Program Element 1 above. This surveillance procedure will require periodic monitoring/surveillance of the listed mechanical joints as well as adjacent areas that may be impacted by accumulated boric acid.

b) Require the reporting of all identified leaks to Maintenace using the Maintenance Work Request (MWR) system and that evidence of boric acid leakage deposits and/or boric acid leakage induced corrosion be clearly called out in the MWR in as much detail as practical.

c) Require the maintenance of records pertaining to boric acid leakage induced corrosion in order to identify trends.

d) Require prompt repair and clean-up when the component can be readily made available for maintenance activities.

e) Require an engineering evaluation for continuing operability in those instances where prompt corrective action is impractical.

Program Element 3

"Methods for conducting examinations and performing engineering evaluations to establish the impact on the reactor coolant pressure boundary when leakage is located. This should include procedures to promptly gather the necessary information for an engineering evaluation before the removal of evidence of leakage, such as boric acid crystal buildup."

Action

The Authority will develop site specific procedure(s) to include provisions for evaluating leakage of borated water out of or onto RCPB components. The objective of this evaluation is:

1) To predict the duration of continued operability in terms of degradation of pressure retaining integrity as a result of boric acid corrosion.

2) Determine interim actions, if any. (e.g. the need for more frequent re-inspection).

3) Determine root cause of the leakage for feedback and corrective action.

4) Prioritization of repair.

5) Recommend corrective actions.

The evaluation will consider:

- rate of leakage
- surfaces contacted
- materials of construction
- corrosion rate
- effects of pressure retaining materials wastage on integrity.

Program Element 4

"Corrective actions to prevent recurrences of this type of corrosion. This should include any modifications to be introduced in the present design or operating procedures of the plant that (a) reduce the probability of primary coolant leaks at the locations where they may cause corrosion damage and (b) entail the use of suitable corrosion resistant materials or the application of protective coatings/claddings."

Action

- Actions in response to Program Elements 2 & 3 above accommodate this element.