123 Main Street
White Plains, New York 10601
914 681.6240

New York Power Authority

John C. Brons
Executive Vice President
Nuclear Generation

March 19, 1990
IPN-90- 014
JPN-90- 024

U.S. Nuclear Regulatory Commission
Mail Station P1-137
Washington, D.C. 20555

Attn: Document Control Desk

Subject: **Indian Point 3 Nuclear Power Plant**
Docket No. 50-286
James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Response to Generic Letter 89-19
Action Related to Resolution of Unresolved Safety Issue A-47

References:

1. NRC Generic Letter 89-19, "Request for Action Related to Resolution of Unresolved Safety Issue A-47, Safety Implication of Control Systems in LWR Nuclear Power Plants, Pursuant to 10 CFR 50.54(f)."

2. Letter from S. D. Floyd (BWR Owners' Group) to J. G. Partlow (NRC), dated February 16, 1990, "Response Deadline Specified In Generic Letter 89-19."

Dear Sir:

In accordance with 10 CFR 50.54 (f), this letter provides the Authority's response to Generic Letter (GL) 89-19 for the Indian Point 3 (IP3) and James A. FitzPatrick (JAF) Nuclear Power Plants. Reference 1 requested that the Authority assess the steam generator (IP3) and reactor vessel (JAF) overfill protection.

The Authority's response to GL 89-19 for IP3 is contained in Attachment I. The Authority is participating in the BWR Owners' Group (BWROG) program regarding GL 89-19 for the FitzPatrick plant. As stated in Reference 2, the BWROG is preparing a generic response to GL 89-19. The Authority will review this response, to verify its applicability to the FitzPatrick plant. To allow adequate time for review, the Authority requests extension of the GL 89-19 response deadline for FitzPatrick to May 4, 1990. The Authority has discussed this extension request with the NRC

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Project Manager for the FitzPatrick plant. The FitzPatrick Project Manager has stated that this extension is acceptable.

Should you or your staff have any questions regarding this matter, please contact Mr. P. Kokolakis or Ms. S. M. Toth of my staff.

Very truly yours,

John C. Brons
Executive Vice President
Nuclear Generation

STATE OF NEW YORK
COUNTY OF WESTCHESTER

Subscribed and Sworn to before me
this 19th day of March 1990

Mina Holden
Notary Public

MINA HOLDEN
NOTARY PUBLIC, State of New York
Westchester County
No. 4629150
My Commission Expires Aug. 31, 1991

Attachment

cc: See next page

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

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

Office of the Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 136
Lycoming, NY 13093

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

Mr. D. E. LaBarge
Project Directorate I-1
Division of Reactor Projects-I/II
U.S. Nuclear Regulatory Commission
Mail Stop 14B2
Washington, D.C. 20555

NEW YORK POWER AUTHORITY
Indian Point 3 Nuclear Power Plant

Steam Generator Overfill Protection Assessment
In accordance with Generic Letter 89-19, Enclosure 2

Section 2(a)

Overfill Protection System Classification

As defined by Reference 1, Enclosure 2, Indian Point 3 (IP3) is a Group I Westinghouse-designed PWR plant. The IP3 overfill protection system is initiated on a steam generator high-water-level signal based on a two-out-of-three initiating logic which is safety grade, with one out of the three channels used for both control and protection. The IP3 Steam Generator (SG) overfill protection functions as follows:

> If two-out-of-three narrow range level transmitters on a single steam generator indicate a high level, an electrical signal is generated. This signal is used to isolate feedwater by shutting both Main Boiler Feed Pump (MBFP) discharge isolation valves and all feedwater regulating valves simultaneously. When the discharge isolation valve leaves its open limit, a signal is sent to trip the respective MBFP. Tripping of the MBFPs, or closure of both MBFP discharge isolation valves, or closure of all four feedwater regulating valves, will prevent the overfilling of the SG's.

As a Group I plant, the existing overfill protection system is not electrically independent and physically separate from the main feedwater control system. One of the three channels provides a signal to the Steam Generator Water Level Control System (SGWLCS), as well as the steam generator overfill protection system. One channel of protection shares a common power source with the control channel. The generic letter considers this configuration acceptable if a common mode failure will still result in a feedwater pump trip.

Main Feedwater Control System

The pneumatic main feedwater regulating valves, in conjunction with the SGWLCS, maintain the levels in the steam generators at a predetermined value. There are two steam turbine driven MBFPs, each discharging through a motor operated valve to a common header. Each MBFP turbine speed is controlled to maintain feedwater header pressure, which assists in optimization of the feedwater regulating valve position. Generic Letter (GL) 89-19 is concerned with the interface between the feedwater control system and the Hi-Hi level protection portion of the SGWLCS. The feedwater control system is considered to include each feedwater regulating valve positioner and the positioner input signals. The level signal is derived from one of the three available transmitters through an electrical isolation device. Upstream of the isolation device is considered protection circuitry, while downstream is considered control circuitry. Each feedwater regulating valve

positioner receives multiple inputs originating from protection channels, passing through isolation devices, which then go to a rack that is independent of protection functions.

Overfill Protection System

The IP3 steam generator overfill protection makes up a part of the "Feedwater Isolation" system. The overfill protection system is a two train actuation logic system. The logic input is comprised of signals from three narrow range level transmitters for each of the four steam generators. Each steam generator utilizes a two-out-of-three logic to feed two redundant trains of protection. Each train consists of four high level signals. Any one of the eight signals will result in the closure of both MBFP discharge valves, which in turn trips both MBFPs; both actions stop main feed flow to the steam generators. The protection system output, on a per steam generator basis, also closes the feedwater regulating valve by removing power to a solenoid, which allows the air needed to keep the valve open to vent off. This feedwater regulating valve closure is redundant to the feedwater pump trip for the purpose of feedwater isolation. The feedwater regulating valve is used as part of the control system, but uses a positioner which has no electrical interface with the solenoid valves used in the protection system.

During the review of the overfill system in response to the generic letter, it was determined that the cabling for portions of the overfill protection system and control system are located in common fire areas. This is true in the Control Room and the Cable Spreading Room. Fires, and their effects, in these areas have been addressed by the Authority as part of the IP3 Appendix "R" efforts. Outside of these areas, the MBFP and discharge valve cabling is not adjacent to the feedwater regulating valve positioner cabling. The Authority, for this reason, believes no further consideration or action related to fires is warranted.

Summary

The Authority has reviewed the Indian Point 3 steam generator overfill protection system in light of the concerns raised by GL 89-19, and considers the system sufficiently separate from the control system, based upon the following :

(a) For each of the steam generators, two of the three protection channels consistently utilize a power source different from the control channel. The MBFPs and discharge isolation valves utilize DC control power which is separate from the DC control power utilized by the feedwater regulating valve. Additionally, failure of the power source common to control and one channel of protection would result in feedwater regulating valve closure.

(b) The control portion of the main feedwater system is not located in the same rack as the overfill protection.

(c) The system routing recommendations stated in GL 89-19, as far as fires are concerned, are considered to have been adequately addressed by the IP3 Appendix "R" efforts.

(d) The common mode failure mechanisms that were looked at identified a mechanism which would not result in a MBFP trip. However, this mechanism would not prevent feedwater regulating valve closure. Therefore, the main feedwater supply to the steam generators will be isolated.

Based on the above, the Authority concludes that the overfill design at IP3 is sufficiently separate from the MFW control system, and is therefore acceptable. No modifications to this system are planned.

Section 2(b)

Plant Procedures and Technical Specifications

Currently, the IP3 Technical Specifications (Tech. Specs.) contain surveillance requirements for Steam Generator Level (Table 4.1-1, item no. 10) that are commensurate with the surveillance requirements for protection and safeguards instrumentation. These surveillance requirements periodically verify the operability of the protection system, both at power and while shutdown. These requirements include channel checks, calibrations, and functional testing. These tests, however, do not verify the operation of the actual logic relays which would shut the MBFP discharge isolation and feedwater regulating valves. Plant procedures will be modified to include actuation of these relays during the cycle 7/8 refueling outage, which is scheduled for the Fall of 1990.

The IP3 Tech. Specs. do not contain limiting conditions of operation (LCOs) specifically for the overfill protection system. As recommended by Reference 1, the Authority will consider modifying limiting conditions of operation to reflect the steam generator overfill protection concerns as part of future Tech. Spec. improvements.