Stephen B. Bram
Vice President

Consolidated Edison Company of New York, Inc.
Indian Point Station
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March 21, 1990

Re: Indian Point Unit No. 2
Docket No. 50-247

Document Control Desk
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

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

Attached please find our response to Generic Letter 89-19. If you have any further questions, please contact Mr. Charles W. Jackson, Manager, Nuclear Safety and Licensing.

Very truly yours,

Subscribed and sworn to
before me this 21st day
of March, 1990.

Karen L. Lancaster
Notary Public

KAREN L. LANCASTER
Notary Public, State of New York
No. 60-4643659
Qualified In Westchester County
Term Expires 9/30/91

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cc: Mr. William Russell
Regional Administrator - Region I
US Nuclear Regulatory Commission
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Mr. Donald S. Brinkman, Senior Project Manager
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US Nuclear Regulatory Commission
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Washington, DC 20555

Senior Resident Inspector
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Buchanan, NY 10511

Attachment I

Response to Generic Letter 89-19 - Steam Generator Overfill - Indian Point Unit 2 - Consolidated Edison Co.

According to Enclosure 2 to the subject Generic Letter, Indian Point 2 is a Group I plant. The high steam generator level feedwater isolation function is derived from the safety grade steam generator level instrumentation and logic used to generate the safety grade reactor trip on low steam generator level. Each steam generator has 3 channels of level instrumentation. The overfill protection system is initiated on a steam generator high water level signal based on a 2 out of 3 initiating logic in any steam generator. The overfill protection system redundantly isolates main feedwater by closing all the main feedwater and low flow bypass regulating valves and both main feedwater pump discharge valves. Closure of the main feedwater pump discharge valves causes the main boiler feed pumps to trip. It also causes the main turbine to trip and the transfer of the 6.9 KV buses to off-site power.

Based on the generic letter, the overfill protection system, is acceptable provided that:

> "The protection portion is sufficiently separate from the control portion of the main feedwater control system so that it is not powered from the same power source, not located in the same panel or cabinet and not routed so that a fire is likely to affect both systems."

The main feedwater control system consists of a 3-element controller for each steam generator and a main boiler feed pump speed controller for each main boiler feed pump. On a per steam generator basis, the 3 element controller looks at steam flow, feedwater flow and steam generator level analog signals and positions the feedwater regulator valve to maintain a programmed steam generator level. The main boiler feed pump speed controller looks at totalized steam flow, steam header pressure and main boiler feed pump discharge pressure, and adjusts boiler feed pump speed to maintain delta-p across the feedwater regulating valves in a narrow range in order to minimize cutting of the valve seats at low feedwater flows.

Each 3 element controller receives its steam generator level signal from the channel 3 level transmitter associated with the steam generator through a Class 1E isolation amplifier which forms the boundary between the protection and control systems. The channel 3 level signal is common to both the protection and control systems. This can be considered acceptable since a failure of the channel 3 power supply, while disabling feedwater protection and control associated with that channel, will have no impact on the remaining 2 channels on each steam generator. The 2 remaining level signals (any 2 out of 3) will be available to isolate feedwater in the event of an impending overfill condition. Consistent with the generic letter, this potential common mode failure would still result in feedwater isolation (i.e. the overfill protection function would not be compromised).

With regard to physical location, the protection portion of the feedwater overfill protection system (upstream and including the isolation amplifier) is located in racks that are separate from the racks containing the control portion. The output of the steam generator 3-element controller is directed to a pneumatic positioner associated with each feedwater regulating valve. The protection output (upstream of the isolation amplifiers) is directed to separate logic racks (2 trains, 1 rack per train), which in turn provides an output to solenoids located between the feedwater regulating valve positioners and the feedwater regulating valves. When a 2 out of 3 overfill protection signal is developed, these solenoids will de-energize causing control air to be vented from the feedwater regulating valves, thus causing valve closure. There is no direct electrical or physical interface between the control signals to the positioner and the protection signals to these solenoids.

Cabling involved with steam generator overfill protection and steam generator level control is routed in common fire areas. These locations include the Central Control Room, the Cable Spreading Room, the Electrical Tunnel and the Auxiliary Feedwater Building. Each of these areas has been subject to fire protection reviews in accordance with previous NRC correspondences. Each area is provided with appropriate fire detection and suppression equipment. As this equipment has been determined to be adequate to protect these same areas with respect to the safety-related equipment that is located there, it will also protect the steam generator level control and overfill protection equipment. In any event, for a fire in any of these areas, manual feedwater isolation to mitigate an overfill event could be accomplished by manually tripping the main boiler feed pumps or closing the feedwater regulating valves.

With regard to periodic verification and testing of the overfill protection system, our existing plant procedures now contain most of the appropriate testing protocols for this system. Specifically, level channels are tested monthly as part of the steam generator level test, the 2/3 high steam generator logic is tested monthly, the transmitters are calibrated on a refueling basis, and the feedwater isolation system is tested every refueling during the SI system actuation test. As an additional measure, we will be adding a test to our test program by our next refueling outage (expected in the Spring of 1991) to check the logic from the 2/3 high steam generator logic matrix to the initiation of the feedwater isolation relay.

Based on the foregoing, we believe that our testing and in-place hardware provide reasonable assurance that the overfill protection system will operate as per design, and that this system will provide automatic steam generator overfill protection to mitigate main feedwater overfeed events.