

Stephen B. Bram  
Vice President

Consolidated Edison Company of New York, Inc.  
Indian Point Station  
Broadway & Bleakley Avenue  
Buchanan, NY 10511  
Telephone (914) 737-8116

September 21, 1992

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

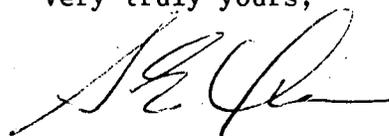
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US Nuclear Regulatory Commission  
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Washington, DC 20555

SUBJECT: Supplemental Response to Inspection Report No.  
50-247/92-09

This letter supplements our previous letter dated July 6, 1992 on the subject inspection report. Attachment A provides additional details as requested in your letter dated August 13, 1992.

Should you or your staff have any question regarding this matter, please contact Mr. Charles W. Jackson, Manager, Nuclear Safety and Licensing.

Very truly yours,



Attachment

cc: Mr. Thomas T. Martin  
Regional Administrator - Region I  
US Nuclear Regulatory Commission  
475 Allendale Road  
King of Prussia, PA 19406

Mr. Francis J. Williams, Jr., Project Manager  
Project Directorate I-1  
Division of Reactor Projects I/II  
US Nuclear Regulatory Commission  
Mail Stop 14B-2  
Washington, DC 20555

Senior Resident Inspector  
US Nuclear Regulatory Commission  
PO Box 38  
Buchanan, NY 10511

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ATTACHMENT A

REPLY TO NOTICE OF VIOLATION - SUPPLEMENT

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.  
INDIAN POINT UNIT NO. 2  
DOCKET NO. 50-247  
SEPTEMBER, 1992

REPLY TO NOTICE OF VIOLATION - SUPPLEMENT

VIOLATION

As a result of an NRC inspection conducted by NRC Region I from April 5, 1992 to May 9, 1992, and in accordance with the NRC Enforcement Policy (10 CFR 2, Appendix C), the following violation was identified:

10 CFR 50, Appendix B, Criterion XVI, requires, in part, that in the case of significant conditions adverse to quality, measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

CI-240, Quality Assurance Program for Operating Nuclear Plants, Section XIII, "Conditions Adverse to Quality and Corrective Actions," establishes measures to assure that significant conditions adverse to quality are promptly identified and corrected, that the cause of the condition is determined, and corrective action is taken to preclude its recurrence.

Contrary to the above, between September, 1988 and April, 1992, the corrective action process failed to determine and correct the adverse interactions which existed between the auxiliary feedwater system and the condensate system. This resulted in the malfunctioning of both motor-driven auxiliary boiler feed pumps on April 13, 1992, following a reactor trip.

This is a Severity Level IV violation (Supplement I).

RESPONSE

Our response to this violation was previously provided in our letter dated July 6, 1992. On August 13, 1992 the NRC requested additional information in two specific areas of the response to the notice of violation: 1) the root cause of the failure of Con Edison's program to identify and correct the problems associated with the auxiliary feed water and condensate system interactions, and 2) intended corrective actions for this apparent breakdown. The following addresses these issues and supplements our earlier communication on this matter.

Root Cause Determination for Nonidentification of the Adverse Auxiliary Feedwater and Condensate System Interaction.

Con Edison's corrective action program was unsuccessful in recognizing and resolving the adverse interactions between the auxiliary feedwater and condensate system prior to the summer of 1991. As discussed in our previous response, earlier indications of this issue involved four events over a period from September 1988 thru November 7, 1991. A synopsis of each of these events and resulting actions are as follows:

- o On September 1, 1988 three over ranged suction pressure gauges in each auxiliary feedwater pump suction were discovered. The over ranged gauges were later determined to be caused by a water hammer transient created by the opening of condensate storage tank outlet valve LCV-1158. The event was documented in SAO 132 Report 88-13 and resulted in the formation of a special investigation team and a corrective action to reduce the opening speed of LCV-1158.
- o On January 10, 1990 another water hammer event occurred affecting the auxiliary feedwater pump suction pressure gauges. The high pressure transient was caused by the operators filling the evacuated portion of piping between the condensate make-up valve LCV-1128 and the condenser hotwell stop valves with the stop valves closed. As noted in SAO 132 Report 90-01, this event was recognized as being similar to the September 1988 event and resulted in a corrective action to enhance operator training by emphasizing the conditions that lead to the water hammer and the importance of avoiding those conditions, as well as another corrective action to evaluate the design basis of the auxiliary feedwater/condensate system to determine if the current installed condition and operating practices remain consistent with the original design philosophy by comparing current operating practices to original design requirements. This latter effort, completed on November 5, 1991, concluded that at least one hotwell stop valve should be left open and the 12 inch butterfly valve LCV-1128 should be opened only slightly when used.
- o On September 7, 1990 both motor driven auxiliary feedwater pumps #21 and #23 tripped. The cause of this event, as documented in SAO 132 report 90-12, was attributed to incorrect placement of the sensing for the pump's low suction pressure switches. The immediate corrective action involved implementation of a jumper to change the sensing point on each suction line, followed by a modification to permanently effect same. This was accomplished on September 8, 1991.
- o On November 7, 1991 Auxiliary Feedwater Pump #23 tripped on low suction pressure. The low suction pressure transient was created when LT-1128 was being returned to service after being out for maintenance. This action caused LCV-1158 to close. When LCV-1158 was opened, #23 auxiliary feedwater pump tripped. For this event, we reverified the low suction trip setpoints for the motor driven auxiliary feedwater pumps and duplicated the event that caused the pump to trip. We also proactively established a corrective action to investigate other potential adverse auxiliary feedwater and condensate system hydraulic interactions. The April 13, 1992 motor driven auxiliary feedwater pump anomaly occurred prior to the closeout of the November 1991 event corrective action.

As noted in the subject inspection report, the corrective action to conduct a review of the design for the auxiliary feedwater and condensate system, as noted in SAO 132 report 90-01, was only completed two days before the November 7, 1991 event. The NRC also noted with regard to the November 7, 1991 event that it occurred in a manner not identified in the review and concluded that the interactions between the two systems were not clearly understood. As noted in our previous response, the events of September 1988 and January 1990 were high pressure fast transient events that would not have tripped the motor driven auxiliary feedwater pumps.

In the subject inspection report, the NRC observed that the recommendation that operators should open LCV-1128 slightly to preclude water hammer events was not implemented in the condensate system operating procedures. It was further noted that the auxiliary feedwater system operating procedure also provided no guidance concerning avoidance of a water hammer event when cycling valve LCV-1158.

In reviewing these events and the concerns identified we have determined that the root cause for nonidentification of the adverse auxiliary feedwater and condensate system interaction is due to the events being reviewed as separate from another.

#### CORRECTIVE ACTIONS

Since the summer of 1991, Con Edison has aggressively pursued numerous actions to improve our corrective action program. These changes were summarized in our letter to the NRC dated August 12, 1991 and in a meeting with Region I on February 18, 1992. In these communications we identified the essential elements of the corrective action process and improvement made. A summary of the significant changes to our corrective action program include:

- o Training of plant personnel to better define our expectations for the corrective action process.
- o Daily Management meetings to review repeat maintenance items, all newly written Open Items Reports (OIRs), Significant Occurrence Reports (SORs) and NRC violations to ensure proper documentation of deficiencies and that all operability concerns are properly addressed and priority established.
- o Assignment of trending codes to identified events and deficiencies.

- o Quarterly monitoring of corrective action process effectiveness by Senior Plant Management reviews and Quality Assurance surveillances and audits.
- o Quarterly review of outstanding open items in our Nuclear Commitment Tracking System (NCTS) by Plant Engineering and Independent Safety Review (ISR) to better ascertain priority for these items.
- o Revision to SAO-132 "Analysis of Station Events" to more clearly define the threshold for event investigation and establishment of different levels of investigation to be commensurate with the safety significance of the event.

Our corrective action program improvements resulted from critiques by several entities. These include our Nuclear Facilities Safety Committee, Quality Assurance Audits, our Consolidated Improvement Program Oversight Committee, Systematic Assessment of Licensee Performance and the Institute of Nuclear Power Operations. Although most of these improvements were either not in place or fully established at the time of the earlier observed adverse auxiliary feedwater and condensate system interactions, positive indication of the effectiveness of the program changes is revealed in the system engineer's decision to proactively establish a corrective action to investigate other potential adverse auxiliary feedwater and condensate system hydraulic interactions in response to the November 7, 1991 auxiliary feedwater pump tripping event. This positive impact is further revealed in the actions taken in response to the April 13, 1992 event involving the motor driven auxiliary feedwater pumps anomaly. We therefore expect that these improvements will rectify the root cause determination for the corrective action program failure outlined above by providing appropriate mechanisms to preclude an incomprehensive review of future events and their corrective actions.

In addition, as a result of the April 13, 1992 event and as mentioned in our letter dated July 6, 1992, Con Edison will undertake a quarterly review of outstanding open corrective actions to assess progress towards completion as well as priority of those items.