William J. Cahill, Jr.
Vice President

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N Y 10003
Telephone (212) 460-3819

May 22, 1979

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

Director of Nuclear Reactor Regulation
ATTN: Mr. A. Schwencer, Chief
Operating Reactors Branch No. 1
Division of Operating Reactors
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Schwencer:

We appreciated the opportunity to meet with the Regulatory Staff on May 17, 1979 to discuss Consolidated Edison's response to IE Bulletin No. 79-07. The material presented at that meeting provided further demonstration of the very conservative design of Indian Point Unit No. 2. As an Attachment to this letter, we are providing the additional information requested by the Staff at the May 17, 1979 meeting.

Should you or your staff have any further questions, we would be pleased to discuss them at your convenience.

Very truly yours,

William J. Cahill, Jr.
Vice President

attach.

cc: Mr. Boyce H. Grier, Director
Office of Inspection and Enforcement
Region I
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, PA 19406

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Division of Reactor Operations Inspection
Washington, D. C. 20555

Mr. T. Rebelowski, Resident Inspector
U. S. Nuclear Regulatory Commission
P. O. Box 38
Buchanan, N. Y. 10511

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ATTACHMENT

Supplemental Response to
IE Bulletin No. 79-07

Consolidated Edison Co. of N. Y., Inc.
Indian Point Unit No. 2
Docket No. 50-247
May, 1979

I. Original Plant Design

The original seismic analysis for Indian Point Unit No. 2 safety-related piping was performed using conservative static design criteria and span tables that limited the maximum seismic stress to 3000 psi. No computer codes were used for the original seismic design evaluation of Unit No. 2.

II. Plant Modifications

Subsequent to the original design, certain modifications have been made to the piping and piping supports of several Unit No. 2 lines. For some cases, the modifications were based on specific dynamic seismic analyses and for other cases, the modifications were based on dynamic seismic analyses performed for similar lines of Indian Point Unit No. 3. The dynamic seismic analyses were performed by United Engineers and Constructors (UE&C), the architect/engineer for both Unit No. 2 and Unit No. 3, using their computer code UE&C-ADLPIPE-1. This code utilizes an algebraic summation option for intramodal response combinations and the square root of the sum of the squares (SRSS) option for intermodal response combinations. Our specific review of Indian Point Unit No. 2 safety-related piping has determined that eight (8) lines are presently supported in accordance with a UE&C-ADLPIPE-1 dynamic seismic evaluation. These lines are listed in Table 1 together with their line numbers, line sizes and calculated piping stresses.

As indicated in Table 1, UE&C has recently performed reconfirmation analyses for three (3) of the eight (8) lines using their newer seismic computer code UE&C-ADLPIPE-2. A summary of the results of these reanalyses was included in the Power Authority's response to IE Bulletin No. 79-07 dated April 24, 1979. Further details were provided in the meeting with the NRC on May 17, 1979. It can be seen from Table 1 that the difference between the newly calculated total pipe stresses and the originally calculated total pipe stresses is negligible for these three (3) lines and the total maximum stresses remain substantially below allowable stress limits.

III. Lines Requiring Reconfirmation Analysis

For the last five (5) lines listed in Table 1 (i.e., lines nos. 1,2,3,4 and 70), Consolidated Edison is presently contracting UE&C to perform seismic reanalysis using their newer UE&C-ADLPIPE-2 computer code. All required reconfirmation analyses will be completed prior to the completion of the upcoming refueling/maintenance outage for Unit No. 2 scheduled to commence in mid-June, 1979.

IV. New Computer Code Verification

Verification of the UE&C-ADLPIPE-2 computer program was presented in Attachments B and C of Consolidated Edison's original response to IE Bulletin No. 79-07 dated April 24, 1979. Furthermore, additional program verification has been performed by UE&C in conjunction with their more recent work for another nuclear facility. This additional verification was performed by running NRC approved bench-mark cases and is documented in a letter dated May 15, 1979 from E. E. Utley (Carolina Power & Light Company) to Mr. T. A. Ippolito (NRC).

V. Justification for Continued Operation

As indicated above, Indian Point Unit No. 2 safety-related piping was designed and constructed in a very conservative manner using static seismic design criteria. This is evidenced by the large number of seismic restraints presently installed at the facility. Only five (5) lines (Nos. 1,2,3,4 and 70) have a present configuration that is based solely on a dynamic seismic analysis utilizing the UE&C-ADLPIPE-1 code.

As demonstrated in Table 1, the present calculated total maximum stresses for these five (5) lines are well within the allowable stress limits. Furthermore, for the three (3) lines listed in Table 1 that have been reanalyzed with the UE&C-ADLPIPE-2 code, the change in the calculated seismic and total maximum stresses has been negligible. In addition, UE&C has performed similar confirmatory reanalyses for seven other Indian Point Unit No. 3 lines (see Power Authority response to IE Bulletin No. 79-07 dated April 24, 1979) and the same results and conclusions were obtained. Accordingly, substantial margins exist between calculated total maximum stresses and allowable stress limits to accomodate variations in the maximum seismic stresses of the magnitude expected from the change in seismic computer code.

Also, the total maximum stress values provided in Table 1 are determined in a very conservative manner. For the line being evaluated, each loading condition (i.e., seismic, pressure, deadweight) is reviewed to determine the maximum stress occurring as a result of that loading condition. The maximum stress values for each loading condition are then combined to determine the total maximum stress for the line. Since the maximum stresses for each loading condition are combined regardless of the point of occurrence in the line, the calculated total maximum stress conservatively envelops the actual maximum stress occurring at any point in the line.

Based on the above discussion, Consolidated Edison firmly believes that the present design of safety-related systems is very conservative and that Indian Point Unit No. 2 is capable of safely withstanding the design basis seismic event. Nevertheless, we are initiating confirmatory reanalyses using the UE&C-ADLPIPE-2 seismic computer code for the last five (5) piping systems presented in Table 1 and, as discussed earlier, will complete these analyses prior to the completion of the unit's upcoming refueling/maintenance outage. When completed, the results of the reanalyses will be provided in a supplemental response to IE Bulletin No. 79-07.

Based on the considerations discussed above, Consolidated Edison concludes that there is reasonable assurance that the health and safety of the public will not be endangered by the continued operation of the facility.

Table 1

Pipe Stress Results Summary

Line Description	Line Number	Line Size (inches)	Primary Stresses (psi) for Upset Condition (OBE)					Comments
			Original		New		Total Allowable	
			Seismic	Total (1)	Seismic	Total (1)		
Pressurizer Surge Line (RCS)	63	14	2,916	11,178	3,102	11,364	19,200	Reanalyzed (2)
Regenerative HX Line (CVCS)	80	3	5,666	10,422	5,750	10,506	19,200	Reanalyzed (2)
Regenerative HX Line (CVCS)	96	3	2,240	7,193	2,184	7,137	19,200	Reanalyzed (2)
Pressurizer Relief Line (RCS)	70	3,4 and 6	4,290	14,369	(3)	(3)	19,200	To be Reanalyzed
Main Steam Atmospheric Relief Lines	1,2,3 and 4	6	5,970	11,354	(3)	(3)	18,000	To be Reanalyzed

Notes:

(1) The total combined loading stresses shown are conservatively determined by adding the maximum stress values calculated for each of the loading conditions.

(2) A reconfirming analysis has already been performed with the UE&C-ADLPIPE-2 code as summarized in the Power Authority's response to IE Bulletin No. 79-07 dated April 24, 1979.

(3) For line 70 and lines 1,2,3 and 4, new seismic stresses of 4547 psi and 6328 psi, and new total stresses of 14,626 psi and 11,712 psi, respectively, have been estimated assuming maximum increase in affected seismic component of 6% based upon maximum increase in seismic component of lines already reanalyzed for Indian Point Unit No. 3. Even if the seismic component is doubled, the total stress is within allowable.