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24 March 1971

Regulatory File Cy.

Mr. Edson G. Case, Director
Division of Reactor Standards
U.S. Atomic Energy Commission
Washington, D.C. 20545

Re: Contract No. AT(49-5)-2667
Indian Point Nuclear Generating Unit 3
Consolidated Edison Company of New York, Inc.
AEC Docket No. 50-286

Dear Mr. Case:

Dr. W. J. Hall, Dr. W. H. Walker and I have reviewed the Final Safety Analysis Report for the Indian Point Nuclear Generating Unit 3 and we call attention below to a number of points for which additional information is needed before we can complete our review and prepare our final report. It is possible that we may have additional questions if we visit Unit 3. We shall discuss with your staff whether a visit to Unit 3 is needed, since we have previously inspected Indian Point Unit 2.

1. Dynamic analysis of structures

The description presented in Section 5.1.3.5 indicates that the containment structure was modeled as a simple cantilever in order to determine the moments and shears resulting from the seismic excitation. The approach described generally, and more specifically beginning on page 5 of A-26, appears satisfactory.

No indication is given of the method of dynamic analysis employed for other Class I structures. The applicant should provide a list of the Class I structures and a description of the method of dynamic analysis employed for that structure, along with the applicable damping values, and other applicable design criteria. Where interconnected structures, or structures and equipment, were

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analyzed, the model employed, as well as details of the analysis carried out, should be provided.

2. Damping

The damping employed in the analysis of structures and piping is listed in Table A.1-1. The applicant should confirm that these damping values were used for both the OBE and DBE analyses.

3. Structural stress criteria

The description of the general seismic design criteria given is presented on page A.1-8 and it is indicated that "Primary steady state stresses... are limited so that the function of the component, system or structure shall not be impaired as to prevent a safe and orderly shutdown of the plant". It goes on further to state that for functional adequacy of the structures, stresses do not exceed yield when subjected to the DBE. Stress calculation summaries at critical locations are presented in Section 5A of the FSAR, and these are extremely helpful. We presume that the allowable stress values listed in the tables, such as Table 3.3 of Section 5A, are those corresponding to yield. All of the allowable stresses cited there are in general rebar or steel stresses. The applicant should indicate what stresses were permitted in the concrete.

4. Piping

As noted in our PSAR review, the piping criteria were to be based on the Westinghouse topical report WCAP-5890 Revision 1. The discussion of the design of Class I vessels and piping in the FSAR on page A1-11 indicates that the design is governed by a later version of this Westinghouse topical report, namely report WCAP-7287. We should like to have a copy of this report provided for review. The applicant indicates that it was to be available by the end of 1970.

A description of the analysis procedures for Class I piping is given on page A.3-10 et seq. wherein it is indicated that all piping greater than 6 inches in diameter, or special piping 2 inches in diameter and greater, will be dynamically analyzed. The indication in the FSAR is that this analysis has not been carried out as yet. The applicant should provide the details of the methods of analysis employed and a summary of the stress calculations at critical locations indicating the sources of stresses, including the magnitudes of the seismic stresses, in order that these can be studied in arriving at an evaluation of the adequacy of the design. This information is needed, and is in addition to any topical reports.

5. Buried piping

A description of the attention given to buried piping is presented on page A.3-9. The applicant should describe the nature of the "parametric study" that was carried out, and the basis of ascertaining that the buried piping design was adequate. In addition, the applicant should indicate the special provisions taken to protect the piping at points where it entered structures or other major points of discontinuity.

6. Critical controls and instrumentation

The seismic design of critical controls and instrumentation is discussed beginning on page A.3-6. The criteria applicable to such evaluation are contained in Westinghouse proprietory report WCAP-7397-L which we have available and will review with regard to this plant. With respect to that particular topical report, the applicant should indicate the manner in which the horizontal and vertical excitations are considered to act concurrently, and the approach followed to ensure the adequacy of the instrumentation. It is our understanding from reviewing the topical report that the excitation in the two directions was handled independently.

7. Class I equipment

The general approach described in the section beginning on A.3-3 for equipment appears satisfactory. It is noted that the appropriate vertical seismic excitation as a function of frequency is considered concurrently with horizontal excitation. The point in question is that of connecting piping to equipment, and the applicant should indicate the manner by which the support motions of piping are taken into account in cases where they connect to equipment or are otherwise mounted independently. The applicant should also indicate the criteria that are employed to ensure the adequacy of the anchor and hold-down devices for such equipment.

8. Class I items and other than Class II structures

The applicant should indicate whether there are Class I equipment items located in Class II structures. If so, the protection afforded such equipment items should be described in detail.

Respectfully submitted,

N. M. Newmark

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cc: W. J. Hall
W. H. Walker

Nathan M. Newmark
Urbana, Illinois 61801

DATE OF DOCUMENT:	DATE RECEIVED	NO.:
3-24-71	3-26-71	2 of 2

LTR. x MEMO: RT: OTHER:

TO: Edson G. Case

ORIG.: 1 signed & 8 conf'd CC: OTHER:

ACTION NECESSARY ☐ NO ACTION NECESSARY ☐ CONCURRENCE ☐ COMMENT ☐ DATE ANSWERED: BY:

CLASSIF: U POST OFFICE REG. NO:

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DESCRIPTION: (Must Be Unclassified)
Ltr furnishing comments re review of FSAR for Indian Point Nuclear Generating Plant Unit # 3.....
....Req addl info.....

ENCLOSURES:

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Dr. Morris (3)			
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