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Docket No. 50-286

Richard C. DeYoung, Assistant Director
for Pressurized Water Reactors
Directorate of Licensing

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., INDIAN POINT NUCLEAR GENERATING UNIT NO. 3, ACRS REPORT INPUT FROM FSAR REVIEW AND EVALUATION

Plant Name: Indian Point Unit No. 3
Licensing Stage: OL-Final ACRS Report
Docket Number: 50-286
Responsible Branch and Project Manager: PWR-1, H. Specter
Requested Completion Date: March 2, 1973
Applicant's Response Date Necessary for Completion of Next Action Planned on Project: N/A
Description of Response: Report
Review Status: Complete

The FSAR submitted by the applicant has been reviewed and evaluated by the Structural Engineering Branch, Directorate of Licensing. Our sections of the safety evaluation are enclosed. This evaluation is based on information provided by the applicant through Amendment No. 25, dated January 30, 1973.

The Structural Engineering Branch found that the information relative to structural aspects is adequate and we do not expect any unresolved items to arise before the ACRS meeting takes place.

R. R. Maccary, Assistant Director
for Engineering
Directorate of Licensing

Enclosure:
Structural Evaluation of FSAR

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DATE ▶	3/2/73	3/2/73	3/2/73			

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CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3

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Structural Evaluation of FSAR

3.3 Wind and Tornado Criteria

(FSAR Section 5.3.1.6 and Appendix A, page A.2-3)

The applicant has considered in the design of Seismic I structures the effects of tornado loads. Tornado wind loading was taken as a 300 mph tangential wind traveling with a translational velocity of 60 mph. Also considered as a separate and combined loading condition is a 3 psi pressure drop external to the structure. The wind loading and pressure drop parameters are consistent with the generally accepted criteria used for nuclear power plants. ASCE Paper No. 3269 was utilized to determine the loads resulting from these wind and tornado effects. We believe that the methods of converting wind and tornado velocities into forces on the structures are in accordance with the state-of-the-art. The wind and tornado criteria are acceptable.

3.4 Water Level (Flood) Design Criteria

(FSAR pages 2.5-3 and 2.5-4)

The applicant has established that the severest flooding condition corresponds to the elevation of 15 feet above mean sea level. Since this elevation is lower than the critical elevation of 15'-3" at which water will start seeping in the lowest of buildings, the applicant

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concludes that the flooding will not present a hazard to the safe operation of the plant. We concur with this conclusion.

3.5 Missile Protection Criteria

(FSAR page 5.1-2-10)

The tornado generated missiles include a spectrum of possible items that could be dislodged during tornadic winds and become missiles. The applicant's missiles include two horizontal missiles: a 4" x 12" x 12' wooden plank traveling end-on at 300 mph and an automobile weighing two tons with a contact area of 20 sq. ft. traveling not more than 25 feet off the ground at 50 mph, and two vertical missiles: a 4" x 12" x 12' wooden plank at 90 mph and a passenger car weighing two tons at 17 mph less than 25 feet above the ground. We find that the missile criteria proposed by the applicant are adequate on the basis that they have been used on previous plants and represent the present state of knowledge in providing an acceptable means of damage assessment.

3.8 Design of Seismic Class I Structures

(FSAR Appendix "A")

The review and evaluation of the Seismic Class I structures included the structural foundations, the containment, the auxiliary building, the control room, the intake structure, and a portion of the pump-house. The structures were built from a composite of structural steel

and reinforced concrete members. In general, the structures were designed as continuous systems. The various structural components that were integrated into the continuous structures consist of slabs, walls, beams, and columns.

The analyses were based on elastic analysis procedures with the design being executed using the working stress design method and the ultimate strength design method. The design method for reinforced concrete followed that of ACI 318-63, with the use of specific loading combinations applicable to nuclear power plant design conditions. For the structural steel the AISC Specifications were utilized.

The loading combinations used for the design of the structures included normal dead and live loads, accident loads, wind and tornado loads, the flood loads, the missile loads and the earthquake loads.

The applicant has specified and utilized numerous loading combinations for the normal loading conditions as well as for the severe loading conditions that include the accident, the tornado and/or the design basis earthquake.

The design criteria and the design methods are very similar to those used for Indian Point Unit No. 2.

MAR 2 1973

As a result of the review and evaluation of the criteria and the procedures related to the design and construction we find that the Seismic Class I structures have been adequately designed.

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