

William J. Cahill, Jr.  
Vice President

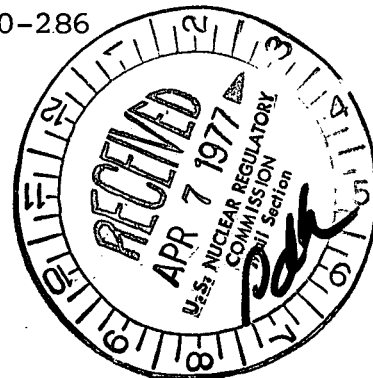
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**REGULATORY DOCKET FILE COPY**

April 5, 1977

Re: Indian Point Unit Nos. 2 and 3  
Docket Nos. 50-247  
50-286

Director of Nuclear Reactor Regulation  
ATTN: Mr. Robert W. Reid, Chief  
Operating Reactors Branch No. 4  
Division of Operating Reactors  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555



Dear Mr. Reid:

Our conceptual design for the Indian Point Unit Nos. 2 and 3 Overpressure Protection System (OPS) was described in our submittals to you of February 28, 1977. This design supersedes the "Reference Mitigating System (RMS)" proposed in our letters of December 10, 1976. We have received your letter of March 25, 1977 and understand that your initial review of the OPS has found that the proposed system meets the design criteria set forth at the November 4, 1976 meeting in Bethesda, Maryland.

Attachment 1 to this letter contains responses to your questions 1 through 8, which were transmitted to us in your letter of February 15, 1977.

Should you or your staff have any further questions regarding these responses, or the proposed OPS, we would be pleased to discuss them with you at your convenience.

Very truly yours,

William J. Cahill, Jr.  
Vice President

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Director of Nuclear Reactor Regulation

Copy to: Mr. George T. Berry  
General Manager and Chief Engineer  
Power Authority of the State of New York  
10 Columbus Circle  
New York, New York 10019

ATTACHMENT 1

RESPONSES TO NRC QUESTIONS

April 5, 1977

Question 1

Provide schematic piping and instrumentation diagrams of all systems which are utilized during plant shutdown and startup operations, indicate primary and alternate flow paths, fluid and heat sources, pressure and flow controllers, RCS pressure protection systems, ECCS and make up systems.

Response 1

The following systems are utilized during plant shutdown and startup operations and can affect RCS pressure.

The Reactor Coolant System (RCS)

The Residual Heat Removal System (RHR System)

The Chemical and Volume Control System (CVCS)

The Component Cooling Water System

The Service Water System

(1). The Reactor Coolant System (RCS):

Schematic piping and instrumentation drawings for the RCS were submitted to the Commission on March 11, 1977, by letter from Mr. William Cahill, Jr. of Con Edison to Mr. Robert L. Baer of the NRC. The information requested for the RCS is included on these drawings.

The Con Edison letter of February 28, 1977 described the proposed conceptual design of the OPS. This is a "long-term improvement" designed to protect the RCS from overpressure incidents. An interim RCS overpressure protection system has also been described in the following Con Edison submittals to the Commission.

(a) Attachment 1 to the Indian Point Unit No. 2 and 3 letters dated October 25, 1976, from Mr. W. Cahill, Jr. of Con Edison, to Mr. R. Reid, of the NRC.

(b) Response to question 5, which appeared in Attachment No. 2 to the Indian Point Unit No. 2 and 3 letters dated February 28, 1977 from Mr. W. Cahill, Jr., of Con Edison to Mr. R. Reid, of the NRC.

The summaries of applicable plant operating procedures for shutdown and startup operations which will reduce the likelihood of possible overpressure transients, were submitted to the Commission as Attachment 1 to the Indian Point Unit 2 and 3 letters of October 25 1976, from Mr. W. Cahill, Jr., of Con Edison, to Mr. R. Reid, of the NRC.

(2) The Residual Heat Removal System (RHR)

The RHR system appears in FSAR figures 6.2-1 and 9.3-1 for both the Indian Point Unit Nos. 2 and 3 plants. FSAR Sections 6.2, and 9.3 describe the flow paths for the RHR system for the Indian Point Unit Nos. 2 and 3 plants.

(3) The Chemical & Volume Control System (CVCS)

The CVCS appears in FSAR figures 9.2-1, 9.2-2 and 9.2-3 for the Indian Point Unit Nos. 2 and 3 plants. Section 9.2 of the FSARs describe the system and its flow paths for the Indian Point Unit Nos. 2 and 3 plants.

(4) The Component Cooling Water System

This system appears in FSAR figure 9.3-1 for the Indian Point Unit Nos. 2 and 3 plants. FSAR Section 9.3 describes the system and its flow paths for the Indian Point Unit Nos. 2 and 3 plants.

(5) The Service Water System

The system appears in FSAR figure 9.6-1 for the Indian Point Unit Nos. 2 and 3 plants. FSAR Section 9.6.1 describes the system and its flow paths for the Indian Point Unit Nos. 2 and 3 plants.

INDIAN POINT UNIT NOS. 2 and 3

Question 2

Provide the failure modes and effects analysis of the overpressure protection system for startup, shutdown, and testing operations which defines the limiting combination of initiating event and additional single failure or operator error subsequent to initiation of the pressure transient.

Response 2

At the present time, RCS pressure response and transient analyses are being performed on a generic basis. These analyses are expected to be completed by April 30, 1977, and the results will be submitted to the Commission shortly thereafter.

INDIAN POINT UNIT NOS. 2 and 3

Question 3

Discuss the basis for determining the most limiting initial conditions for analysis of the pressure transient. Items that must be considered include, but should not be limited to: RCS pressure, reactor coolant temperature, pressurizer temperature, pressurizer level and accumulator level.

Response 3

See response to Question 2.



Question 4.

Were approved systems computer codes used to model the overpressure transients as presented in the generic report? If so, were any major modifications required? If the methods utilized have not been previously approved for system transient analyses, provide model descriptions, flow charts, program listing, and sensitivity studies to verify the performance of the codes.

Response 4

See Response to Question 2

Question 5

Provide the value of the backpressures assumed in the relief valve discharge pipes when calculating relief capacity. Discuss relief capacity sensitivity to this parameter.

Response 5

See Response to Question 2.

INDIAN POINT UNIT NOS. 2 AND 3

Question 6

Provide the degree of relief capacity installed in the RHR system that could provide additional protection in the event of an overpressure transient. Provide the water relief capacity of the valve. Is the RHR system automatically isolated on RCS high pressure? Provide the pressure setpoints for the RHR system relief valve opening and its automatic isolation.

Response 6

This question was answered previously in the Con Edison submittal of February 28, 1977, from Mr. William Cahill Jr. of Con Edison to Mr. Robert Reid of the NRC. Specifically, Response 6e for the Indian Point Unit No. 2 and 3 submittals of February 28, 1977 stated that the RHR relief valve for each plant has a discharge capacity of 50,000 pounds per hour at 350°F. The RHR relief valve is set to automatically open at approximately 600 PSI.

Response 6C of the Indian Point Unit Nos 2 and 3 letters, dated February 28, 1977 discussed the interlocks, setpoints and alarms associated with each isolation valve.

Response 10b for the Indian Point Unit No. 2 submittal of February 28, 1977 discussed the automatic isolation feature for the RHR isolation valves for the Indian Point Unit No. 3 plant. For the Indian Point Unit No. 3 plant, the RHR isolation valves, 730 and 731, automatically close when the RCS pressure is above 550 psi.

Question 7

Describe the instrumentation and alarms available to enable the operator to detect and quickly terminate an overpressure transient. Describe the indication of pressurizer relief valve or RHR system relief valve operation.

Response 7

The Con Edison letters to the NRC of February 28, 1977 described the proposed conceptual design of the OPS. This system is a "long-term improvement" designed to quickly detect and terminate a potential overpressure event.

The instrumentation and alarms that are either presently installed, or will be installed in the near future, as an "interim fix", have been described in previous Con Edison submittals to the Commission. Specifically, refer to Responses 5a, 5b, 5c, 5d, 6f, & 9c of the Con Edison letters to the Commission for Indian Point Unit Nos. 2 and 3, dated February 28, 1977.

Other components which make up part of the "interim fix" are described in Attachment 1 to the letters sent to the Commission on October 25, 1976 for Indian Point Unit Nos. 2 and 3.

At the present time, the pressurizer power operated relief valves have red (open) and green (closed) indication lights in the Central Control Room (CCR). When the pressurizer power operated relief valves and/or the RHR relief valve are in operation, the level in the pressurizer

relief tank will rise. There is a PRT level indicator and a PRT level alarm located in the Central Control Room, which will enable the operator to detect and terminate this postulated overpressure transient.

INDIAN POINT UNIT NOS. 2 & 3

Question 8

When power is removed from valve motor operators under administrative control provisions, describe the status lights and indicators available to verify their proper alignment. When administrative controls call for removing power from a valve motor operator or a pump, is this accomplished from the control room or from a motor control center?

Response 8

Refer to responses 3c, 3f, 3g, 3h, 9a, 9c, & 9e of the Con Edison letters to the Commission of February 28, 1977 for Indian Point Unit Nos. 2 and 3.