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February 11, 1982
IPN-82-16

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing

Subject: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
Environmental Qualification of Safety-Related
Electrical Equipment -
Request for Additional Information



Dear Sir:

This letter provides the information requested in the enclosure to your January 7, 1982 letter.

The May 9, 1973 Analysis of High Energy Lines, already submitted to the NRC, evaluated a spectrum of postulated main steam line and feedwater pipe breaks located in several areas outside the containment building. As a result of this analysis, several different recommendations were made to preclude the potential adverse effects of these highly unlikely events.

Attachment I to this letter contains data applicable to a steam line break located in the auxiliary feedwater pump room. Of the breaks considered, the worst case analyzed was the double-ended guillotine in the 4 (four)-inch steam supply line to the auxiliary feedwater turbine driven pump.

Also enclosed as Attachment II, please find a copy of the May 9, 1973 Analysis of High Energy Lines.

If you or your staff have any questions regarding this submittal, do not hesitate to contact us.

Very truly yours,

J.P. Bayne
for J.P. Bayne
Senior Vice President
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ATTACHMENT I

RESPONSE TO REQUEST FOR ADDITIONAL
INFORMATION CONCERNING SAFETY-RELATED ELECTRICAL EQUIPMENT
ENVIRONMENTAL QUALIFICATION

POWER AUTHORITY OF THE STATE OF NEW YORK
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-286
FEBRUARY 11, 1982

Auxiliary Feedwater Pump Room-Steam Line Break Information

1. The recommendations of the May 9, 1973 Analysis of High Energy Lines covered the installation of two redundant valves in the main steam supply line to the auxiliary feedwater turbine driven pump outside the auxiliary feedwater pump room. Each valve will be signaled to close automatically by its own temperature sensor located in the auxiliary feedwater pump room (refer to Section 4.1 of the above mentioned analysis).

The recommended modifications have been implemented and constitute part of this response. However, a reanalysis was not performed to take credit for these modifications. Therefore, some of the parameters given below, although they would improve the findings of the May 9, 1973 Analysis, were not incorporated in the original analysis.

Following are the specific responses to items 1.a through 1.n, as identified in your letter, with respect to the pipe break:

- | | |
|---|----------------------------|
| a. Type of fluid: | steam |
| b. Temperature: | 556°F |
| c. Pressure: | Saturated @ 1,100 psig |
| d. Source of fluid: | Steam Generators 33 and 32 |
| e. Flow rate: | 650,000 pounds per hour |
| f. Pipe internal diameter: | 3.826" inches |
| g. Wetted perimeter of break: | .0797 feet |
| h. Total pipe internal volume: | Not applicable |
| i. Exit flow area, if break is not a pipe: | Not applicable |
| j. Area of flow restriction: | Double-ended break |
| k. Differential elevation from the source to the pipe break: | Approximately 100 feet |
| l. Total flow resistance: | Not applicable |

m. and Means to stop fluid flow:
n.

Redundant temperature operated gate valves existing in separate compartments outside the auxiliary feedwater pump room. The valves open throat area is 11.5 square inches. The full open flow coefficient is $C_v=12.9$. The specified valve closure time is 5-10 seconds. The time delay until initiation of valve closure is approximately 2 seconds.

2. With respect to the compartments being analyzed:

- a. The auxiliary feedwater pump room consists of one compartment.
- b. The conditions assumed in the analysis are as follows:

| | |
|--|-----------------------|
| i. initial temperature: | Ambient (70°F) |
| ii. initial pressure: | Ambient (14.7 psia) |
| iii. initial humidity | Ambient |
| iv. free air volume | 15,000 cubic feet |
| v. number of vents & vent areas | 21 sq. ft. (one vent) |
| vi. minimum pressure to initiate flow to the next compartment: | Not estimated* |

* The 1973 Analysis considered only one 3' by 7' door opening under pressure to provide ventilation. The ventilation for this area, which consists of a 6' x 5' louver in the north wall and fans in the South wall (both are thermostatically controlled to maintain room temperature below 100°F), was not considered.

3. Assumptions used in the analysis:

- a. and The discharge coefficient to the atmosphere is equal to
b. 1.0.

The flow rate was calculated using Moody's table for saturated steam.

The pressure and temperature transients were calculated using CMRSP computer program and checked against a modified version of CONTEMPT-PS.

ATTACHMENT II

ANALYSIS OF HIGH ENERGY LINES

POWER AUTHORITY OF THE STATE OF NEW YORK
INDIAN POINT 3 NUCLEAR POWER PLANT
DOCKET NO. 50-286
FEBRUARY 11, 1982