December 18, 1996

Mr. William J. Cahill, Jr.
Chief Nuclear Officer
Power Authority of the State of
New York
123 Main Street
White Plains, NY 10601

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING REQUEST FOR EXEMPTION FROM SECTION III.G.1, III.L.1, AND III.L.2 of APPENDIX R TO 10 CFR PART 50 (TAC NO. M94518)

Dear Mr. Cahill:

The enclosed request for additional information (RAI) relates to your request for exemption dated January 12, 1996, from the requirements of 10 CFR Part 50, Appendix R as they apply to the James A. FitzPatrick Nuclear Power Plant so that low-pressure injection systems may be used to achieve safe shutdown in six fire areas.

Sincerely,

/S/

Karen R. Cotton, Acting Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket No. 50-333

Enclosure: Request for Additional Information

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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REQUEST FOR ADDITION INFORMATION
REQUEST FOR EXEMPTION FROM SECTION III.G.1,
III.L.1, AND III.L.2 OF
APPENDIX R TO 10 CFR PART 50
JAMES A. FITZPATRICK NUCLEAR POWER PLANT

1.0 BACKGROUND

By letter dated September 5, 1996, the NRC Office of Nuclear Reactor Regulation (NRR) forwarded the results of its evaluation of the post-fire shutdown reassessment of the James A. FitzPatrick Nuclear Power Plant to the licensee, Power Authority of the State of New York (PASNY). As a result of its review, the staff determined that the licensee's proposed use of low pressure injection systems (LPIS):

(a) would not allow hot-shutdown conditions to be maintained, as required by Section III.G.1 of Appendix R to 10 CFR Part 50;

(b) would not allow process system variables to remain within those predicted for a loss of the normal a.c. power source, as required by Section III.L.1 of Appendix R to 10 CFR Part 50; and

(c) would not allow the reactor coolant level to be maintained above the top of the core, as required by Section III.L.2.b of Appendix R to 10 CFR Part 50.

Based on these findings, the staff concluded that PASNY's proposed use of low pressure injection systems as a means of achieving safe shutdown conditions in the event of fire in areas of the plant not requiring an alternative shutdown capability, would not satisfy the requirements of Section III.G and Section III.L of Appendix R to 10 CFR Part 50, and, therefore, recommended that PASNY either:

(a) ensure the availability of a high-pressure injection system (i.e., reactor core isolation coolant (RCIC) or high pressure-coolant injection (HPCI) in the event of fire in these areas, or

(b) seek an exemption from the specific requirements of the regulation not satisfied by the proposed approach.

By letter dated January 12, 1996, PASNY submitted a request for exemption from 10 CFR Part 50, Appendix R to allow the use of low-pressure injection systems as a means of achieving post-fire safe shutdown conditions in the event of fire in a total of six fire areas of the James A. FitzPatrick Nuclear Power Plant: Fire Areas, IX, X, XI, XV, XVII, and XVIII.

Specifically, to allow the use of LPIS as a means of accomplishing the reactor coolant make-up shutdown function, PASNY seeks an exemption from the following specific sections of Appendix R to 10 CFR Part 50:

(a) Section III.G.1, to the extent that the proposed approach will not be capable of achieving and maintaining hot shutdown conditions;

(b) Section III.L.1, to the extent that the proposed approach is not capable of maintaining reactor coolant process variables within those predicted for a loss of normal a.c. power; and

(c) Section III.L.2, because the proposed approach is not capable of maintaining the reactor coolant level above the top of the core.

At the request of NRR, Brookhaven National Laboratory (BNL) reviewed the subject exemption request. Based on our review of this document, we have prepared the following questions, concerns and comments:

2.0 REQUESTED INFORMATION

The post-fire safe shutdown criteria of Sections III.G.1 and III.G.2 are directed at ensuring that at least one train of redundant systems, capable of achieving and maintaining hot shutdown conditions, remains operable in the event of fire in any plant area. Where the protection of systems capable of satisfying the hot shutdown performance criteria of Sections III.G.1 and III.G.2 is not assured, Section III.G.3 requires an alternative or dedicated shutdown capability which is independent (physically and electrically) of the fire area, room, or zone under consideration.

With regard to determining whether a shutdown capability is "redundant" (per III.G.1 and III.G.2) or "alternative" (per III.G.3 and III.L), Generic Letter 86-10 provides the following staff positions:

(a) Response to Question 3.8.3:

"...If the system is being used in lieu of the preferred system because the redundant components of the preferred system do not meet the separation criteria of Section III.G.2, the system is considered an alternative shutdown capability." (emphasis added)

(b) Response to Question 5.1.2

"For the purpose of analysis to Section III.G.2 criteria, the safe shutdown capability is defined as one of the two normal safe shutdown trains.." (emphasis added).

(c) Response to Question 5.2.3

"The only requirement for post-fire operating procedures is for those areas where alternative shutdown is required. For other areas of the plant, shutdown would be achieved utilizing one of the two normal trains of shutdown systems." (emphasis added).

The use of LPIS is not the preferred means of accomplishing the reactor core coolant make-up function in a boiling-water reactor. The normal, preferred, method of shutdown in the event of fire is through the use of e.g., HPCI or

RCIC. In its July 22, 1994 response to a staff request for additional information (RAI) dated May 18, 1994, the licensee concurs with this position, and states that the proposed approach (i.e., LPIS) will only be used when all other means of shutting down the reactor are not available, or when the use of high pressure systems must be avoided. This understanding is reiterated by PASNY in its January 12, 1996 exemption request which states: *"High Pressure Injection Systems would normally be used to achieve and maintain hot shutdown in the event of fire in Fire Areas IX, X, XI, XV, XVII, and XVIII."* In the event that fire prevented the use of the preferred shutdown method (i.e., HPCI or RCIC), PASNY states that Shutdown Method 3, which relies on the use of LPIS (ADS/LPCI or ADS/CS) controlled from the main control room, would be available, and capable of achieving cold shutdown conditions.

The staff has approved the use of LPIS as a means of providing an alternative shutdown capability (Reference: NRC Memorandum, L. S. Rubenstein to R. J. Mattson, dated December 3, 1982, "Use of the Automatic Depressurization (ADS) and Low Pressure Coolant Injection (LPCI) to Meet Appendix R, Alternate Shutdown Goals)." The basis for this acceptance rests, in part, with the defense-in-depth principles for fire protection. Specifically, when alternative shutdown capabilities are provided to satisfy Section III.G.3 of Appendix R, the regulation imposes an additional requirement of fire detection and fixed fire suppression systems in all areas where the alternative shutdown capability is credited for accomplishing required shutdown functions. These additional fire safety features serve to limit the probability of fire growth and damage, thereby minimizing reliance on the "less-than-preferred" alternative capability to accomplish required shutdown conditions. Under the regulations, areas of the plant which do not require an alternate shutdown capability may not be provided with an equivalent level of fire protection.

Based on the above, the proposed use of LPIS to perform the reactor coolant make-up function does not appear to satisfy the hot shutdown performance criterion of Section III.G. Additionally, it appears the proposed approach LPIS is being used in lieu of preferred systems HPCI or RCIC because redundant components of the preferred system do not meet the separation criteria of Section III.G.2. Therefore, please address the following:

1. The proposed LPIS approach does not appear to satisfy the "hot shutdown" performance criterion of Section III.G.1, III.G.2, and III.G.3 of Appendix R to 10 CFR Part 50. Generic Letter 86-10 provides further clarification and staff positions with regard to defining "alternative" and "redundant" shutdown capabilities. In light of these requirements, it appears the proposed approach is providing an alternative shutdown capability for the identified fire areas. Please explain why the use of LPIS is not identified by PASNY as providing an alternative shutdown capability for Fire Areas IX, X, XI, XV, XVII, and XVIII.

2. Fire Areas IX, X, XI, XV, XVII, and XVIII are described in the PASNY revised analysis ("Safe Shutdown Capability Reassessment 10 CFR Part 50 Appendix R, James A. FitzPatrick Nuclear Power Plant," dated November 1992) as satisfying the separation and protection requirements of Section III.G of Appendix R. However, as described above, LPIS appears to be providing an alternative shutdown capability for these areas. Therefore, please explain why Fire Areas IX, X, XI, XV, XVII, and XVIII have not been designated as alternative shutdown fire areas.

3. Section III.G.3 of Appendix R states that for alternative shutdown capabilities, "fire detection and a fixed fire suppression system shall be installed in the area, room or zone under consideration." For Fire Areas IX, X, XI, XV, XVII and XVIII provide information which demonstrates that this requirement of Appendix R is met. or provide justification why this requirement is not met and an exemption for this requirement should be granted (i.e. equivalent safety exists).