

December 15, 1989

Docket No. 50-333

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Mr. John C. Brons  
 Executive Vice President - Nuclear Generation  
 Power Authority of the State of New York  
 123 Main Street  
 White Plains, New York 10601

Dear Mr. Brons:

SUBJECT: ISSUANCE OF AMENDMENT (TAC NO. 75377)

The Commission has issued the enclosed Amendment No. 147 to Facility Operating License No. DPR-59 for the James A. FitzPatrick Nuclear Power Plant. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated December 11, 1989 and addressed in the Temporary Waiver of Compliance issued by the NRC by letter dated December 11, 1989.

The amendment changes the trip level setpoint for the High Pressure Coolant Injection System steam line high flow isolation and related Bases.

A copy of the related Safety Evaluation is enclosed. A Notice of Issuance and Final Determination of No Significant Hazards Consideration and Opportunity for Hearing will be included in the Commission's next regular bi-weekly Federal Register notice.

Sincerely,

Original signed by Robert A. Capra

David E. LaBarge, Project Manager  
 Project Directorate I-1  
 Division of Reactor Projects - I/II  
 Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 147 to DPR-59
2. Safety Evaluation

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1/1

cc: w/enclosures  
 See next page

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

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*Robert A. Capra for*

David E. LaBarge, Project Manager  
Project Directorate I-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

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2. Safety Evaluation

cc: w/enclosures  
See next page

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

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 147  
License No. DPR-59

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Power Authority of the State of New York (the licensee) dated December 11, 1989, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
  
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-59 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No.147, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance to be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Bruce A. Boger, Assistant Director  
for Region I Reactors  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: December 15, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 147

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Revise Appendix A as follows:

Remove Pages

57  
70b

Insert Pages

57  
70b

## JAFNPP

### 3.2 BASES (cont'd)

High radiation monitors in the main steam line tunnel have been provided to detect gross fuel failure as in the control rod drop accident. With the established setting of 3 times normal background, and main steam line isolation valve closure, fission product release is limited so that 10 CFR 100 guidelines are not exceeded for this accident. Reference Section 14.6.1.2 FSAR. During the Hydrogen Addition Test, the normal background Main Steam Line Radiation Level is expected to increase by approximately a factor of 5 at the peak hydrogen concentration as indicated in note 16, Table 3.1-1. With the hydrogen addition, the fission product release would still be well within the 10 CFR 100 guidelines in the event of a control rod drop accident.

Pressure instrumentation is provided to close the main steam isolation valves in the run mode when the main steam line pressure drops below 825 psig. The reactor pressure vessel thermal transient due to an inadvertent opening of the turbine bypass valves when not in the run mode is less severe than the loss of feedwater analyzed in Section 14.5 of the FSAR, therefore, closure of the main steam isolation valves for thermal transient protection when not in the run mode is not required.

The HPCI high flow and temperature instrumentation are provided to detect a break in the HPCI steam piping. Tripping of this instrumentation results in actuation of HPCI isolation valves. Tripping logic for the high flow is a 1 out of 2 logic.

The trip settings of approximately 300 percent of design flow for this high flow or 40°F above maximum ambient for high temperature are such that uncovering the core is prevented and fission product release is within limits.

The RCIC high flow and temperature instrumentation are arranged the same as that for the HPCI. The trip setting of approximately 300 percent for high flow and 40°F above maximum ambient for temperature are based on the same criteria as the HPCI.

The reactor water cleanup system high flow temperature instrumentation are arranged similar to that for the HPCI. The trip settings are such that uncovering the core is prevented and fission product release is within limits.

The instrumentation which initiates ECCS action is arranged in a dual bus system. As for other vital instrumentation arranged in this fashion, the specification preserves the effectiveness of the system even during periods when maintenance or testing is being performed. An exception to this is when logic functional testing is being performed.

The control rod block functions are provided to prevent excessive control rod withdrawal so that MCPR does not de-

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TABLE 3.2-2 (Cont'd)

**INSTRUMENTATION THAT INITIATES OR CONTROLS  
THE CORE AND CONTAINMENT COOLING SYSTEMS**

Item No.	Minimum No. of Operable Instrument Channels Per Trip System (1)	Trip Function	Trip Level Setting	Total Number of Instrument Channels Provided by Design for Both Trip Systems	Remarks
29	1	RCIC Steam Line/ Area Temperature	$\leq 40^{\circ}\text{F}$ Above max. ambient	2 Inst. Channels	Close Isolation Valve in RCIC Subsystem
30	1	RCIC Steam Line Low Pressure	$100 > P > 50$ psig	2 Inst. Channels	Close Isolation Valves in RCIC Subsystem
31	1	HPCI Turbine Steam Line High Flow	$\leq 160$ in $\text{H}_2\text{O}$ dp	2 Inst. Channels	Close Isolation Valves in HPCI Subsystem
32	1	RCIC Turbine High Exhaust Diaphragm Pressure	$\leq 10$ psig	2 Inst. Channels	Close Isolation Valves in RCIC Subsystem
33	1	HPCI Turbine High Exhaust Diaphragm Pressure	$\leq 10$ psig	2 Inst. Channels	Close Isolation Valves in HPCI Subsystem
34	1	LPCI Cross-Connect Position	NA	1 Inst. Channels	Initiates annunciation when valve is not closed
35	1	HPCI Steam Line Low Pressure	$100 > P > 50$ psig	2 Inst. Channels	Close Isolation Valve in HPCI Subsystems
36	1	HPCI Steam Line/ Area Temperature	$\leq 40^{\circ}\text{F}$ above max. ambient	2 Inst. Channels	Close Isolation Valve in HPCI Subsystem

Amendment No. ~~14, 46, 66, 124~~, 147



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 147 TO FACILITY OPERATING LICENSE NO. DPR-59

POWER AUTHORITY OF THE STATE OF NEW YORK

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

INTRODUCTION

By letter dated December 11, 1989, the Power Authority of the State of New York (PASNY), the licensee for the James A. FitzPatrick Nuclear Power Plant, requested an emergency Technical Specification (TS) amendment in order to change the differential pressure setpoint specified for the High Pressure Coolant Injection System high steam flow isolation. Specifically the change would affect Item 31 in Table 3.2-2 on page 70b, by changing the value from 106 in. H<sub>2</sub>O dp to 160 in. H<sub>2</sub>O dp. A Temporary Waiver of Compliance incorporating this change was issued by letter from B. A. Boger to J. C. Brons, dated December 11, 1989.

DISCUSSION

The purpose of the HPCI steam line isolation is to limit reactor coolant inventory loss and the offsite radiological consequences in the event of a break in the HPCI piping. The analytical limit for determining if a break exists in the HPCI system piping is stated in FSAR Section 7.4.3.2.7 as a HPCI steam line flow of 300 percent of rated steam flow. At the FitzPatrick plant, the HPCI steam line flow rate is sensed by differential pressure elbow taps on the HPCI steam line.

Determination of the differential pressure setpoint that will result from a steam flow of 300 percent was most recently addressed in Amendment No. 68, which was issued by letter dated March 4, 1982. A correction to the calculational methods used by the licensee in that amendment resulted in a change of the setpoint from 230 in. H<sub>2</sub>O to 106 in. H<sub>2</sub>O.

During the recently completed 1989 mid-cycle maintenance outage, a significant amount of maintenance, including replacement of the HPCI turbine controller, was performed. Upon return to service, HPCI was tested in accordance with Technical Specification 4.5.C.1. HPCI failed this test due to an auto-isolation high steam line flow. The cause of this isolation was attributed to improper venting of the instrumentation. Since subsequent testing was successful, no additional investigation was performed.

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Repeat of the same isolation signal during a surveillance test conducted on December 4, 1989, led the licensee to investigate other possible causes of the event. The HPCI system was put through a series of tests with additional instrumentation installed to isolate the root cause of the inadvertent isolations. At this time, the proximity of the normal start-up steam flow transient to the isolation setpoint was detected and confirmed. Because the installed steam line elbow tap dp instrumentation used to sense steam flow does not behave linearly with the actual start-up steam flow transient, the possibility existed that the instrumentation may be generating an isolation signal during any normal HPCI start-up. This apparent randomness to the generation of isolation signals made it very difficult to isolate the root cause of the inadvertent isolation and pointed out the need to use more extensive temporary test instrumentation and detailed data analysis.

### EVALUATION

General Electric Company Nuclear Services Information Letter (SIL) No. 475, Revision 2, "RCIC and HPCI High Steam Flow Analytic Limit," was issued November 28, 1988. Its purpose is to describe the test method and calculational method used for determining instrument setpoints which will ensure that isolation will occur when steam flow reaches 300 percent. This method uses measured data from the as-built HPCI system to determine the rated flow elbow tap instrument reading, and then applies several factors to calculate the elbow tap instrument reading corresponding to 300 percent rated steam flow. Using this method, it was determined that isolation was actually occurring at a differential pressure corresponding to approximately 200 percent and that the proper setpoint (corresponding to 300 percent steam flow) was 160 in. H<sub>2</sub>O dp.

Therefore, increasing the setpoint to 160 in. H<sub>2</sub>O dp will result in a more reliable HPCI System since it will no longer be susceptible to inadvertent isolations from high steam flow. It will, however, trip at the flow value which would indicate a break in the steam line to the HPCI turbine. The effect of the change is to restore the instrumentation setpoints to the conditions which are assumed to exist in the design criteria.

Based on this analysis, the staff finds the proposed TS change acceptable.

### STATEMENT OF EMERGENCY CIRCUMSTANCES

The emergency situation developed as a result of the time involved in conducting tests, analyzing test data, research, indepth assessment of previous test failures and resulting changes, and discussions with industry technical representatives which were conducted when, from the routine monthly surveillance test conducted on December 5, 1989, it became obvious to the licensee that repeated surveillance test failures were occurring. Following this test the system was maintained in an inoperable status until effective corrective action could be accomplished. Once the problem was determined, insufficient time was available to process the resulting TS change without exceeding the 7-day Limiting Condition for Operation specified in TS Section 3.5.C.1.b.

The proposed TS change is required to allow the licensee to change the HPCI steam line high flow setpoint to 160 in. H<sub>2</sub>O dp. If the amendment is not issued, the plant would be required to conduct a normal shutdown and place the reactor in the cold condition with pressure below 150 psig within 24 hours, since operability of the HPCI System could not be assured. In this condition, testing of the HPCI System could not be conducted since steam at rated pressure would not be available.

Based upon the above, we conclude that the licensee has adequately addressed the standards of 10 CFR 50.91(a)(5) with regard to demonstrating the need for an emergency license amendment. We further conclude, based on the efforts required to perform the extensive analyses (including recently completed confirmatory testing) of the HPCI system, that the licensee has not abused the emergency provision by failing to make timely application for the amendment.

#### STAFF CONCLUSION

The staff has concluded that the licensee has made a timely amendment application once the problem was discovered and analyzed, that the licensee has justified the need for emergency action, and that the proposed setpoint change is necessary and proper.

#### FINAL DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

The foregoing evaluation demonstrates that the actions and evaluations taken by the licensee will enhance the reliability and operability of the HPCI System by preventing unnecessary isolations while, at the same time, maintaining the required isolation capability when it is required. We, therefore, conclude that operation of the facility in accordance with the proposed amendment would not:

- a. Involve a significant increase in the probability or consequences of an accident previously evaluated. The HPCI system is designed to mitigate the consequences of a small break Loss-of-Coolant accident and as backup to the Reactor Core Isolation Cooling (RCIC) system for Loss-of-Feedwater transients by providing a source of high pressure coolant injection into the reactor. The proposed change will reduce the probability that the HPCI system would be unavailable upon demand due to inadvertent isolation.

Changing the HPCI high steam flow instrument setting cannot initiate any previously evaluated accidents. The probability and consequences of a HPCI steam line break going undetected or unisolated is unchanged, because this break would result in steam flows significantly in excess of the proposed isolation setpoint.

The 300 percent rated flow isolation signal is relied upon in the licensee's high energy line break (HELB) analysis to limit the amount of steam released into the reactor building. Since the proposed amendment does not change the 300 percent analytical limit, it does not result in a change to HELB environmental parameters for the reactor building or affect any of the results of the HELB analysis.

- b. Create the possibility of a new or different kind of accident from any accident previously evaluated. Changing the HPCI high steam flow instrument setting cannot initiate any type of accident. The HPCI system is designed for standby service and only functions to mitigate accidents by providing a high pressure source of water to the reactor. No new failure modes are created by the proposed change in instrument setpoint.

In addition, the proposed change restores the HPCI system high steam line flow setpoint to the value assumed in the system analyses.

- c. Involve a significant reduction in a margin of safety. The proposed change provides greater assurance that the HPCI system would be available to mitigate an accident as designed. HPCI would also be less likely to fail surveillance tests due to inadvertent isolations. This improved reliability reduces the number of unnecessary tests performed on the HPCI and other ECCS systems as required when HPCI is inoperable. There is no reduction of any margin of safety.

#### STAFF CONSULTATION

The appropriate representative of the State of New York was notified of this amendment. The State of New York contact had no comments.

#### ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area, as defined in 10 CFR Part 20, and changes to the surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final no significant hazards consideration finding with respect to this amendment. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

CONCLUSION

We have concluded, based on the consideration discussed above, that: (1) this emergency situation could not be avoided; (2) the licensee acted in a timely manner with respect to responding to this emergency, (3) the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of a new or different type of accident from any evaluated previously, and does not involve a significant reduction in the margin of safety; (4) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; and (5) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: December 15, 1989

PRINCIPAL CONTRIBUTOR:

D. LaBarge