



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

POWER AUTHORITY OF THE STATE OF NEW YORK

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

INTRODUCTION

In a letter dated March 25, 1988, the Power Authority of the State of New York (the licensee) proposed to reduce the augmented inspection frequency for the reactor vessel feedwater nozzle in the James A. FitzPatrick Nuclear Power Plant (FitzPatrick).

Augmented inspection of feedwater nozzles became necessary because inspection of feedwater nozzle/sparger systems between 1974 and 1980 disclosed cracking in the bore and inner radius of feedwater nozzles in 18 of the 23 operating BWR plants in the United States. The staff's review of this matter and its recommendations were documented in NUREG-0619 (Reference 1). The staff's position was forwarded to licensees in a letter dated November 13, 1980 and in Generic Letter 81-11.

DISCUSSION

The licensee has changed some hardware within the feedwater system to conform to the guidance in NUREG-0619 and Generic Letter 81-11. The licensee has removed the stainless steel cladding from the feedwater nozzle and installed double-piston-ring, triple-thermal-sleeve spargers, but has not rerouted the Reactor Water Clean Up (RWCU) System nor modified the low-flow controller. These modifications were reviewed by the staff and deemed acceptable in a letter to the licensee, dated July 21, 1986. For FitzPatrick-type spargers, NUREG-0619 provides the following inspection frequency: (1) ultrasonic inspection at every other refueling outage, (2) visual inspection of the sparger at every fourth refueling outage and (3) liquid penetrant inspection following either 9 refueling outages or 135 startup/shutdown cycles. The licensee proposed to perform the ultrasonic inspection once every 10 years and in lieu of penetrant inspection, perform a visual inspection every inspection period (40 months).

The licensee's justifications for these changes are (1) no reportable flaws were revealed during two previous ultrasonic inspections and one remote visual inspection, and (2) workers accumulated significant exposure. Radiation fields in the area of the feedwater nozzle are approximately 250-800 mr/hr. The cumulative radiation dose for feedwater nozzle inspection varies from 5 to 7 person-rem.

In Attachment 2 to the March 25, 1988 letter, the licensee provided a fatigue analysis to demonstrate that the flaw growth during operation of the feedwater system will comply with the flaw growth criteria in Generic Letter 81-11. The fatigue analysis is documented in General Electric Report NEDC-30799-P

(Reference 2). The staff documented its evaluation of this report in its letter to the licensee dated July 21, 1986. This evaluation indicates that the potential for the flaw growth in the existing feedwater system is within the criteria in Generic Letter 81-11.

#### CONCLUSION

After considering the FitzPatrick hardware changes, the previous inspection results, the worker exposure and the fatigue analysis, the staff concludes that the inspection frequency during the second inspection interval may be modified to permit ultrasonic inspection during every third refueling outage rather than every other refueling outage. However, the frequency for the visual and penetrant inspections must be performed in accordance with NUREG-0619.

#### REFERENCES

- (1) "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking," U.S. Nuclear Regulatory Commission, NUREG-0619, November 1980.
- (2) Liffengren, D. J. and Myers, T. W., "James A. FitzPatrick Nuclear Power Station Feedwater Nozzle Fracture Mechanics Analysis to Show Compliance with NUREG-0619," Generic Electric Company, NEDC-30799-P, (Proprietary), December 1984.

Dated:

PRINCIPAL CONTRIBUTOR:

B. Elliot

September 13, 1988

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: RELIEF FROM AUGMENTED INSPECTION OF FEEDWATER  
NOZZLE/SPARGER

Re: James A. FitzPatrick Nuclear Power Plant (TAC 67829)

We have reviewed your letter dated March 25, 1988 requesting that the augmented inspection frequency for the reactor vessel feedwater nozzle be reduced. Your letter proposed that an ultrasonic inspection be performed once every ten years instead of every other refueling outage as required by NUREG-0619. Based on the information you provided including previous inspection results, worker exposure information, and a fatigue analysis, we have concluded that, during the second inspection interval, the frequency for performing ultrasonic inspections may be modified to every third refueling outage.

Your March 25 letter also requested that of the frequency of visual and liquid penetrant inspections be modified. We have reviewed this request and do not find it acceptable. These inspections must be performed in accordance with NUREG-0619.

Our Safety Evaluation supporting the above conclusions is enclosed.

Sincerely,

original signed by

Harvey Abelson, Project Manager  
Project Directorate I-1  
Division of Reactor Projects, I/II

Enclosure:  
As stated

cc: See next page

\*SEE PREVIOUS CONCURRENCE

PDI-1  
\*CVogan 8/10/88

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\*MYoung  
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RCapra  
9/13/88

*Handwritten signatures and dates:*  
HAW 9/13/88  
~~8809/1900 H6~~  
ZAP

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Power Authority of the State of New York

James A. FitzPatrick Nuclear  
Power Plant

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#### CONCLUSION

After considering the FitzPatrick hardware changes, the previous inspection results, the worker exposure and the fatigue analysis, the staff concludes that the inspection frequency during the second inspection interval may be modified to permit ultrasonic inspection during every third refueling outage rather than every other refueling outage. However, the frequency for the visual and penetrant inspections must be performed in accordance with NUREG-0619.

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