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February 13, 1990
JPN-90-015

U. S. Nuclear Regulatory Commission
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ATTN: Document Control Desk

Subject. James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Response to NRC Generic Letter 89-13
Service Water System Problems Affecting
Safety-Related Equipment

References: 1. NRC Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment," dated July 18, 1989.

Dear Sir:

Generic Letter 89-13 (Reference 1) requested licensees to supply information about their respective service water systems (SWSs).

Attachment I to this letter is the Authority's response to Generic Letter 89-13 for the James A. FitzPatrick plant. The Attachment includes a summary of the review performed and plans and schedules to enhance and ensure continued SWS reliability.

Should you or your staff have any questions regarding this matter, please contact Ms. Sofia M. Toth of my staff.

Very truly yours,

John C. Brons

John C. Brons
Executive Vice President
Nuclear Generation

STATE OF NEW YORK
COUNTY OF WESTCHESTER

Subscribed and sworn to before me
this 13th day of February 1990.

Mina Holden

Notary Public

MINA HOLDEN
NOTARY PUBLIC, State of New York
Westchester County
No. 4829150
My Commission Expires Aug. 31, 1991

cc: See next page.

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ATTACHMENT I

RESPONSE TO NRC GENERIC LETTER 89-13 SERVICE WATER SYSTEM PROBLEMS AFFECTING SAFETY-RELATED EQUIPMENT

INTRODUCTION

Generic Letter 89-13 requests licensees to ensure that their service water systems (SWSs) comply with 10 CFR 50, Appendix A, GDC 44, 45, and 46 and Appendix B, Section XI.

In response to this generic letter, the Authority evaluated the FitzPatrick plant service water systems. The evaluation included a preliminary review of design bases, operation, maintenance, testing, and training.

This letter addresses the safety-related portions of the Service Water (SW), Reactor Building Closed Loop Cooling Water (RBC), Emergency Service Water (ESW), and Residual Heat Removal Service Water (RHRSW) Systems for the FitzPatrick plant. Safety-related components affected include the following equipment:

Residual Heat Removal(RHR) Service Water Pumps (4)
Emergency Service Water Pumps (2)
RHR Heat Exchangers (2)
Emergency Diesel Generator (EDG) Coolers (4)
Crescent Area Unit Coolers (10)
Electric Bay Unit Coolers (2)
Cable Tunnel and Switchgear Room Unit Coolers (2)
RHR Pump Coolers (4)
Associated safety-related piping and valves

The following summarizes actions the Authority will take for the James A. FitzPatrick Nuclear Power Plant to comply with Generic Letter 89-13 .

IMPLEMENTATION PLAN

Item I: **Surveillance and Control techniques to reduce the incidence of flow blockage as a result of biofouling.**

The historical experience of the FitzPatrick plant with biofouling has been very good. The Lake Ontario water has been largely free of the fouling species (such as Asiatic clams) as described at other power plants.

The Authority is aware of the presence of the Zebra mussel, a new fouling species introduced into the Great Lakes from Europe. As a result of the Authority's concern regarding these mussels, a task force has recently been formed. This group will address technical issues involved in control of this species, including assessing feasibility of water treatment programs using biocides in the service water systems at the FitzPatrick plant. Testing of the Circulating Water/Service Water systems for mussels will begin during the spring of 1990.

The Authority inspected the intake structure and tunnel during the 1988 refuel outage, and no evidence of biofouling was detected. The Authority will continue to inspect portions of the intake area during each subsequent refuel outage. This inspection will seek evidence of biofouling organisms including Corbicula fluminea (Asiatic clams) and Dreissena polymorpha (Zebra mussels). If the inspection reveals evidence of biofouling which could hinder flow during the subsequent operating cycle, steps will be taken to ensure that the safety-related function of the intakes will not be compromised.

During the Authority's review of the service water systems, several low flow areas were identified. Recently the Authority has performed a full flow flush of seldom used portions of the ESW system. A procedure has been written to perform this action on a periodic basis. This action is considered unnecessary for the SW or RHRSW systems, since there are no stagnant lines that feed safety-related equipment.

Some connections between the ESW system and safety-related portions of the RBC are rarely used. These connections have the potential to accumulate fouling deposits. The check valves that form the interface between these systems are part of the Inservice Testing (IST) program and are inspected periodically. Steps will be added to augment these procedures to include verification that adjacent piping is not blocked. Maintenance will be performed as necessary to assure open passage between these systems.

Item II: **A test program to verify the heat transfer capability of all safety-related heat exchangers cooled by service water.**

The Authority has established a program with written procedures for performance testing of safety related heat exchangers using lake water at the FitzPatrick plant. The procedures are currently being refined. They are not identical to those described in the generic letter, since the Authority intends to use existing instrumentation to perform these tests. These are recent procedures, and, as of this letter, have not been implemented for all heat exchangers. Baseline performance of these tests will be completed before the end of 1990.

The Authority has an eddy current testing program that assures heat exchanger tube integrity. This program includes cleaning, testing, and implementation of corrective actions. These tests have been performed regularly on the EDG coolers. This process will be performed on an RHR Heat Exchanger and various nonsafety-related heat exchangers, during the 1990 refuel outage.

The FitzPatrick plant has implemented performance tests on the Crescent Area Unit Coolers since the winter of 1988, on a biweekly basis. Other actions to ensure operability of these components include regular flushing of the coolers and periodic manual cleaning. The frequency of subsequent testing and corrective actions is based upon performance test results. Modifications are in progress to improve heat exchanger performance, reduce personnel exposure during testing, and improve the accuracy of these tests.

Another technique used to ensure operability of service water systems at the FitzPatrick plant is surveillance testing.

The Emergency Diesel Generator (EDG) Coolers are functionally tested monthly along with the EDGs to assure operability of the heat exchangers, valves, and piping associated with this system. The test load on the coolers is similar to the load expected during an accident.

The RHR Service Water pumps are tested monthly for operability along with associated valves and piping. Design pump flow is verified downstream of the RHR heat exchangers assuring that no flow blockage exists.

The Emergency Service Water pumps are tested quarterly for operability. These pumps are also tested for operability in the monthly EDG tests. Valves on this system are cycled monthly.

The Authority intends to meet the guidance provided by the Generic Letter in implementing programs such as Performance Testing, Water Treatment, Eddy Current, etc. These programs may be modified and expanded based on the data and assessment of the results.

Item III: **Inspection and maintenance program for service water system piping and components.**

As part of the Inservice Inspection program for the FitzPatrick plant, safety-related piping is pressure tested and visually inspected periodically to ensure piping integrity in accordance with the requirements of ASME Section XI. Similarly, pumps and valves with safety-related functions are tested periodically by the FitzPatrick plant IST program.

The testing of the EDG Cooler and RHR Heat Exchanger tubing will be part of the eddy current inspection program. This program involves opening, cleaning, and inspecting the heat exchanger tubes, channels, and other accessible areas for degradation. The frequency of these inspections is based upon historical data from previous examinations.

The air-to-water heat exchangers are not currently in the eddy current inspection program. These heat exchangers are undergoing performance testing to verify their heat transfer capability. The cleaning of these components is based upon the results of the performance tests and is not tied to a particular schedule.

Recent localized inspections of the RBC system have indicated possible fouling from corrosion products on the closed loop side. The only safety-related heat exchangers supplied by this system are the RHR Pump Coolers. Two mechanical seals in these coolers will be inspected for fouling and degradation during the 1990 refuel outage. Based upon the results of these inspections, these components may be added to the preventive maintenance program. The addition of corrosion inhibitors to the system is under consideration.

For the fouling and corrosion of piping, a program will be developed for inspection of piping. Since the amount of piping is considerable, it will be necessary to determine those areas most likely to contain corrosion and silting. Nondestructive test methods for determining fouling are being developed by EPRI. The inspection program for piping will be in place before startup following the 1991 refuel outage.

Item IV: Service water system licensing bases review.

The Authority will review licensing bases, plant modifications, and equipment specifications for the SWS. Subsequent to this review, a system walkdown will be performed to ensure that the as-built configuration of the SWS is in accordance with the FitzPatrick licensing bases (Please note that the FitzPatrick plant licensing bases for the service water system was established prior to the issuance of GDC 44, 45, and 46.). A single active failure analysis will be performed on the SWS. This review will be completed by January 31, 1992.

Item V: Maintenance practice, operating and emergency procedures, and training.

The Authority will review procedures and training material related to the SWSs to ensure that safety-related functions are addressed and maintained. This will include but not be limited to the review of operating and maintenance procedures; abnormal and emergency procedures; inspection procedures; and training manuals. Also, applicable concerns raised in NUREG-1275, Volume 3, "Operating Experience Feedback Report - Service Water System Failures and Degradations," dated November, 1988, will be reviewed. This review will be completed by January 31, 1992.