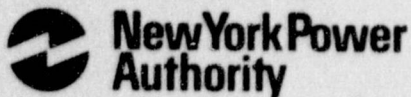


James A. FitzPatrick
Nuclear Power Plant
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P.O. Box 41
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Michael J. Colomb
Site Executive Officer

September 16, 1998
JAFF-98-0306

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

SUBJECT: James A. FitzPatrick Nuclear Power Plant
Docket No. 50-333
Information Regarding NRC Bulletin 96-03
Potential Plugging of ECCS Suction Strainers

- References:
1. NRC letter to the New York Power Authority, "Meeting Summary of May 21, 1998, Regarding Emergency Core Cooling Suction Strainer Modifications (TAC No. M96146)," dated June 4, 1998
 2. NEDO-32686, Regarding Utility Resolution Guidance (URG) for ECCS Suction Strainer Blockage, November 1996
 3. NRC Bulletin 96-03, "Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling Water Reactors," dated May 6, 1996
 4. NYPA Letter, M. J. Colomb to the NRC, "Response to NRC Bulletin 96-03," (JAFF-96-0439), dated October 29, 1996

Dear Sir:

Attachment 1 to this letter is the Authority's response to an NRC letter (Reference 1) resulting from an Emergency Core Cooling System (ECCS) suction strainer meeting held between the Authority and the NRC on May 21, 1998. The Authority will be replacing the suction strainers associated with the Residual Heat Removal (RHR), Core Spray, High Pressure Coolant Injection (HPCI), and Reactor Core Isolation Cooling (RCIC) systems during the upcoming Refueling Outage (currently scheduled to commence on October 16, 1998) at the James A. FitzPatrick Nuclear Power Plant.

Attachment 1 also includes Utility Resolution Guidance (URG) (Reference 2) options chosen by the Authority to address NRC Bulletin 96-03 (Reference 3). Attachment 2 forwards the Nuclear Safety Evaluation (NSE) for the RHR and Core Spray systems suction strainer replacements. Attachment 3 is the NSE for the HPCI and RCIC systems suction strainer replacements.

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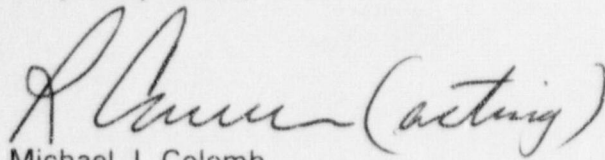
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Attn: Document Control Desk
Subject: Information Regarding NRCB 96-03
Page -2-

Attachment 4 provides the supplement to the Plant Unique Analysis Report (PUAR), documenting re-analysis of the containment structure and torus attached piping. Based on the above noted documents, the Authority is confident that the new strainers will not create any safety issues.

In addition, the Authority is revising a commitment made in response (JAFP-96-0439, Reference 4) to NRCB 96-03. Specifically, the Authority committed to provide a report to the NRC confirming completion and summarizing actions taken relative to NRCB 96-03 no later than 30 days after startup from the upcoming Refueling Outage. The Authority is now extending this commitment for, at the most, one refueling outage (i.e., Fall 2000). The current licensing basis (i.e., 50% strainer blockage) will be in effect until that time. This commitment change is needed in order to leave a small quantity of microporous insulation in the drywell, while awaiting test results associated with this type of insulation. Significant radiation dose savings (i.e., approximately 25 person-rem) are estimated to result from leaving the microporous insulation in place. This estimated dose value is due to the work which would be involved (e.g., extensive scaffolding) in removing the microporous insulation. Attachment 5 provides the basis for this commitment change.

Attachment 6 contains the commitments made by the Authority in this letter. If you have any questions, please contact Mr. Art Zaremba.

Very Truly Yours,



Michael J. Colomb
Site Executive Officer

MJC:JJC:las

cc: Regional Administrator
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Attachment I to JAFP-98-0306

Information Regarding Meeting Held with NRC on May 21, 1998

New York Power Authority

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

Docket No. 50-333

DPR-59

Attachment I to JAFP-98-0306
Information Regarding Meeting Held on May 21, 1998

Item 1

"NYPA indicated that following installation of the new strainers, it plans to desludge the suppression pool every other refueling outage. The NRC staff stated that the licensee needs to ensure that the suppression pool cleaning frequency is sufficient to ensure the strainer design basis assumptions for sludge and foreign material accumulation are not exceeded."

Response

Torus Cleaning

In 1988, Fitzpatrick implemented a suppression pool preservation initiative. As part of this initiative, debris (e.g., sludge) has been cleaned from the suppression pool five times since January 1988. The Emergency Core Cooling System (ECCS) suction strainers and all 16 torus bays were cleaned during the 1995 Refueling Outage (RFO 11) (January 1995).

In June 1995, a torus preservation program was established. This program includes cleaning the ECCS suction strainers and all 16 torus bays, and inspections of the ECCS suction strainers.

During RFO 12, which ended in December 1996, the torus was desludged. The total dry amount of the sludge removed was calculated to be 331.4 lbm.

In RFO 13, scheduled to begin in October 1998, the torus will be desludged, as part of the torus drain and decontamination effort, prior to the start of the ECCS strainer replacement modifications.

In RFO 14, scheduled to begin in Fall 2000, the torus will be desludged and the ECCS suction strainers will be inspected. The total amount of dry sludge removed will be determined. This amount of sludge will provide an additional data point to aid in confirmation of the sludge generation rate.

The replacement strainers can accommodate enough sludge to allow FitzPatrick to desludge the torus every other RFO. However, as a conservative measure and as stated above, the Authority will desludge the Fitzpatrick torus during RFO 13 and RFO 14, and inspect the ECCS suction strainers during RFO 14. The Authority will then make a determination as to whether the length of time between torus cleaning can be extended.

Foreign Material Exclusion (FME)

FitzPatrick has a FME procedure (AP-05.06, Reference 1). As stated in this procedure, the torus interior area is a FME Level 1 area where trip and access control is required. The FME Exclusion Area Monitor records applicable equipment and material taken into the torus and verifies that those items are removed. If an item cannot be accounted for, or is dropped into the torus and is not immediately retrievable, then the Job Supervisor initiates required action(s), including a Deviation Event Report, to resolve the problem.

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Information Regarding Meeting Held on May 21, 1998

Per AP-05.06, workers are responsible to ensure that systems and components are not contaminated with foreign material and to ensure cleanliness is as good as or better when closing systems and components, than when the systems were opened. Additionally, training for staff performing work in the Radiologically Controlled Area (RCA) includes briefings on proper FME practices at the FitzPatrick plant.

In Surveillance Test (ST) 39Q (Reference 2), the drywell and eight vent pipes (i.e., downcomers) are inspected for debris and foreign material, loose lagging or fibrous material, and objects which could become missile hazards. Discrepancies identified during inspections are resolved.

Based on the above, procedures have been implemented at FitzPatrick which ensure adequate controls of materials in the drywell, suppression pool, and systems that interface with the suppression pool. Comprehensive FME controls have been established to prevent materials that could potentially impact ECCS operation from being introduced into the suppression pool. Additionally, workers are aware of their responsibilities regarding FME. Effective FME controls have been in place since the last time the suppression pool was cleaned and the ECCS suction strainers inspected.

Conclusion

The Authority believes that the suppression pool cleaning frequency is sufficient to ensure that sludge and foreign material accumulation will not adversely affect ECCS suction strainer performance. In RFO 13 the torus will be desludged. In RFO 14, scheduled to begin in Fall 2000, the torus will be desludged and the ECCS suction strainers will be inspected. Any changes to the cleaning frequency will be evaluated by the Authority.

Attachment I to JAFP-98-0306
Information Regarding Meeting Held on May 21, 1998

Item 2

"NYPA noted that its calculations of available ECCS pump net positive suction head assumed that 2 psi containment overpressure is available throughout an event. NYPA stated it believed using this overpressure credit is consistent with the original plant design basis as accepted by the staff in its safety evaluation of November 20, 1972. However, it was noted that it is not clear what duration for this credit was proposed by the licensee and accepted by the staff. NYPA and the NRC staff plan to review the licensing basis to clarify usage of the overpressure credit."

Response

The following discussion provides a chronological history of the FitzPatrick original licensing basis regarding the duration for containment overpressure credit:

1. November 29, 1971 - Atomic Energy Commission (AEC) transmits (Reference 3) to the Authority the following question:

"6.4 Show the margin in required NPSH in terms of overpressure and time that will be available to the core standby cooling system pumps for various amounts of equipment assumed to be operable. Indicate conformance with AEC Safety Guide No. 1."

2. February 9, 1972 - The Authority responds (Reference 4) to Question 6.4, in part, as follows:

"However, it is shown in Figure Q.6.4-1 that less than 2 psig is required for adequate NPSH and approximately 7 psig is available when the additional head is required."

The Authority did not state in words the time in which overpressure is required. However, the following can be attained from the figure provided to the AEC as part of this response:

- a. The requirement to credit containment overpressure in the NPSH analysis begins at approximately 34,000 seconds (9.4 hours).
- b. Credit for containment overpressure is no longer required at approximately 130,000 seconds (36.1 hours).
- c. Based on 'a' and 'b' above, the duration of overpressure credit is approximately 96,000 seconds (26.7 hours).

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3. November 20, 1972 - Safety Evaluation Report (SER) (Reference 5) for FitzPatrick (Docket No. 50-333) is issued from the AEC.

This SER states the following, in parts:

*"The **applicant analyzed** [EMPHASIS ADDED] the availability of adequate net positive suction head (NPSH) for all ECCS pumps in conformance with Safety Guide No. 1 which requires that there be no reliance on calculated increases in containment pressure."*

*" The **analysis show** [EMPHASIS ADDED] that a containment overpressure of less than 2 psi would be required for a period of **about 25 minutes** [EMPHASIS ADDED] during the transient to assure adequate NPSH. A containment overpressure of 7 psi is available during this period."*

Conclusion

The above referenced analysis provided to the AEC from the Authority is described in the Reference 4 response. This response established approximately 26.7 hours as the duration for overpressure credit. Therefore, the AEC SER should have stated "about 25 hours" not "about 25 minutes".

Attachment I to JAFP-98-0306
Information Regarding Meeting Held on May 21, 1998

Item 3

"The NRC staff and NYPA discussed what information will be required to provide the staff with an adequate description of the suction strainer modification. The licensee presently expects to make the modifications under 10 CFR 50.59, so that prior approval by the NRC staff would not be required. Overall, the staff believes the new strainer installation provides a net safety benefit. The staff stated that it would like to receive information sufficient for confidence that the new strainers do not create any safety issues."

Response

Attachment 2 contains the Nuclear Safety Evaluation (NSE) (Reference 6) for the Residual Heat Removal and Core Spray systems suction strainer replacements. Attachment 3 is the NSE (Reference 7) for the High Pressure Coolant Injection and Reactor Core Isolation Cooling systems suction strainer replacements. Attachment 4 provides the updated Plant Unique Analysis Report (PUAR) (Reference 8). Based on the above noted documents and the description provided below, the Authority is confident that the new strainers do not create any safety issues.

Utility Resolution Guidance (URG) Options

Section 3.1.3.4 of the URG (Reference 9) discusses nine "resolution options" available to licensees. The Authority believes that many of these "resolution options" are only partial solutions. As such, the ECCS suction strainers are being replaced during the Fall 1998 RFO.

The following provides a description for how each of the nine "resolution options" items listed in the URG were addressed for Fitzpatrick.

1. Option 1 (URG Section 3.1.3.4.1) - further refinement of fixed debris source terms

To calculate fixed debris quantities all weld locations on high energy lines, 12" in diameter and greater were considered as potential break locations. "Method 3" debris generation methodology, outlined in the URG, was used to determine the insulation debris source in a Zone of Influence (ZOI) around each break location. To simplify the analysis, all potential break locations were conservatively assumed to be double-ended, unrestrained breaks. Depending on the elevation of this material relative to the lowest grating in the drywell, the appropriate URG transport factors were applied to determine debris quantity transported to the pool for each break location.

2. Option 2 (URG Section 3.1.3.4.2) - replacing the existing strainers with alternate passive designs such as the stacked disk or star strainer designs

FitzPatrick will be installing large stacked disk passive strainers (PCI Sure-Flow™). Strainer sizes (i.e., surface areas) are provided in Attachments 2 and 3.

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3. Option 3 (URG Section 3.1.3.4.3) - Installation of jacketing to reduce the insulation debris source term, along with an appropriate attachment mechanism to hold the jacketing in place

FitzPatrick is not planning on installing additional jacketing or enhanced attachment mechanisms.

4. Option 4 (URG Section 3.1.3.4.4) - reduction in transient debris source terms

FitzPatrick specific values have been generated for debris sources. The more conservative of either the URG generic values or FitzPatrick specific values are utilized when calculating NPSH margin. The following lists resulting values:

Suppression Pool Sludge:	1000 lbm (total amount removed in RFO 12 was 331.4 lbm)
Dirt/Dust:	150 lbm
Rust Flakes:	50 lbm
Paint Chips (from ZOI):	85 lbm
Paint Chips (long term degradation):	170 lbm
Miscellaneous Debris:	15 ft ² plastic (i.e., reduction in strainer surface area)

5. Option 5 (URG Section 3.1.3.4.5) - pursuing licensing basis changes with the NRC

FitzPatrick is installing the replacement strainers utilizing the existing licensing basis (i.e., 50% strainer blockage) under 10 CFR 50.59 (see Attachments 2 and 3). FitzPatrick will update the licensing basis as committed to in Attachment 6.

6. Option 6 (URG Section 3.1.3.4.6) - reevaluation of ECCS suction line penetration loads without reopening the licensing basis for containment loads

Attachment 4, "ECCS and RCIC Suction Strainer Replacement Modification Supplement to the Plant Unique Analysis Report (PUAR)," describes the containment structure, torus attached piping and torus shell reanalysis.

7. Option 7 (URG Section 3.1.3.4.7) - partially replace fibrous insulation with Reflective Metal Insulation (RMI)

FitzPatrick will be replacing existing mineral wool insulation with Nukon™ during the upcoming Fall 1998 RFO. This will reduce the head loss associated with the fibrous debris loading of the strainers. FitzPatrick will not be replacing fibrous insulation with RMI during the upcoming RFO.

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8. Option 8 (URG Sections 3.1.3.4.8 and 3.3) - Install a backflush system
Fitzpatrick will not be installing a backflush system.
9. Option 9 (URG Sections 3.1.3.4.9 and 3.4) - Install self-cleaning strainers
FitzPatrick will not be installing self-cleaning strainers.

References

1. AP-05.06, System Internal Cleanliness and Foreign Material Exclusion
2. ST-39Q, Drywell Inspection
3. AEC Letter to PASNY, Regarding Additional Information Needed on Final Safety Analysis Report, dated November 29, 1971
4. PASNY Letter to the AEC, Regarding FSAR Supplement 4, dated February 9, 1972
5. AEC Report, "Safety Evaluation of the James A. FitzPatrick Nuclear Power Plant, Docket No. 50-333," issued November 20, 1972
6. JAF-SE-98-013, "Residual Heat Removal and Core Spray Suppression Pool Suction Strainer Replacement," Revision 1, approved September 11, 1998
7. JAF-SE-98-025, "High Pressure Coolant Injection and Reactor Core Isolation Cooling Suppression Pool Suction Strainer Replacement," Revision 0, approved July 28, 1998
8. JAF-RPT-MULTI-03000, Revision 1, "ECCS and RCIC Suction Strainer Replacement Modification Supplement to the Plant Unique Analysis Report," dated July 28, 1998
9. NEDO-32686, Regarding Utility Resolution Guidance (URG) for ECCS Suction Strainer Blockage, November 1996