James A. FitzPatrick
Nuclear Power Plant
268 Lake Road
P.O. Box 41
Lycoming, New York 13093

315-342-3840

New York Power Authority

Michael J. Colomb
Site Executive Officer

February 25, 1998
JAFP-98-0074

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, DC 20555

SUBJECT: **James A. FitzPatrick Nuclear Power Plant**
Docket No. 50-333
Reply to Notice of Violation
NRC Integrated Inspection Report 50-333/97-08

Dear Sir:

In accordance with the provisions of 10 CFR 2.201, Notice of Violation, the New York Power Authority submits a response to the notice transmitted by your letter dated January 20, 1998. Your letter refers to the results of the integrated inspection conducted from October 27, 1997 through December 21, 1997 at the James A. FitzPatrick Nuclear Power Plant.

Also discussed in your letter are indications that additional focus and attention are warranted to improve work control activities. The Authority has identified our need to improve in this area and initiated a formal root cause analysis. We believe the results of this analysis will be effective in further improving our performance.

Attachment I, Reply to Notice of Violation, provides the description of the violations, reasons for the violations, corrective actions that have been taken and the results achieved, corrective actions to be taken to avoid further violations, and the dates of full compliance.

There is one commitment contained in this submittal.

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If you have any questions, please contact Mr. Arthur Zaremba, Licensing Manager, at (315) 349-6365.

Very truly yours,

MICHAEL J. COLOMB
Site Executive Officer

MJC:GJB:las

Attachments as stated

STATE OF NEW YORK
COUNTY OF OSWEGO
Subscribed and sworn to before me
This 25 day of Feb., 1998

Nancy B. Czerow
Notary Public

NANCY B. CZEROW
Notary Public, State of New York
Qualified in Oswego County #4884611
Commission Expires 1-26-99

cc: Regional Administrator
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Office of the Resident Inspector
U.S. Nuclear Regulatory Commission
P.O. Box 136
Lycoming, NY 13093

James A. FitzPatrick NPP Project Manager
Project Directorate I-1
Division of Reactor Projects - I/II
U.S. Nuclear Regulatory Commission
Mail Stop 14 B2
Washington, DC 20555

Attachments:

Reply to Notice of Violation

VIOLATION A

Technical Specification 6.8.(A)1 requires that written procedures and administrative policies shall be established, implemented and maintained that meet or exceed the requirements and recommendations of Section 5 of American National Standards Institute (ANSI) 18.7 – 1972 "Facility Administrative Policies and Procedures." Section 5.1.2 of ANSI 18.7 – 1972 states in part, that procedures shall be followed, and the requirements for use of procedures shall be prescribed in writing. Abnormal Operating Procedure (AOP) –23, Direct Current (DC) Power System Ground Isolation specified the sequence that breakers shall be opened to isolate system grounds.

Contrary to the above, on October 23, 1997, procedures were not followed while performing AOP–23, DC Power System Ground Isolation, in that the sequence that breakers shall be opened to isolate system grounds was not followed. Specifically, 71DCB2 Breaker No. 6, was opened prior to opening the breakers for 23MOV-57 and 23MOV-58, the high pressure coolant injection (HPCI) booster pump suction from the suppression pool downstream and upstream isolation valves, respectively, which caused the valves to open inadvertently.

This is a Severity Level IV violation (Supplement I)

ADMISSION OR DENIAL OF THE VIOLATION.

The Authority agrees with the violation.

REASONS FOR VIOLATION

The cause for this violation was personnel error. The performance factor leading to this error was ineffective worker practices. The Nuclear Control Operator (NCO) assigned the duties associated with the performance of AOP-23 did not adequately utilize the practice of self-checking during the work evolutions associated with the procedure. This resulted in procedural steps being performed out of sequence.

Contributing human performance factors which influenced the NCO's actions were:

- Task interruptions and perceived pressure to complete task. Following the pre-job brief, delays were encountered prior to performance of the procedure step. This, combined with an increasing ground condition, caused concern on the part of the NCO to focus his attention on actions which would eliminate the ground. Additionally, the NCO became focused on getting the correct breaker (71DCB2 #6) due to the recognized plant impact of opening the wrong breaker. These distractions contributed to the oversight by the NCO for not opening power supply breakers for 23MOV-57 and 23MOV-58.

- Lack of physical, orderly procedure place-keeping contributed to performing the AOP-23 procedure step out-of-sequence.

CORRECTIVE ACTIONS THAT HAVE BEEN TAKEN

- A root cause evaluation was performed on the events associated with this violation to identify specific cause, evaluate the extent of conditions that contributed to the occurrence of the violation relative to recent similar plant occurrences, and develop lessons learned. The Operations Manager has reviewed the results of this evaluation with Operations shift personnel. The Operations Manager emphasized, during this review and in night order entries, the importance of good procedure place-keeping to ensure proper procedure use.

- The NCO responsible for the error has been counseled.

- Abnormal Operating Procedures AOP-22, DC Power System A Ground Isolation, and AOP-23, DC Power System B Ground Isolation, have been revised to improve the human factors associated with performing this procedure.

RESULTS ACHIEVED

Actions taken have: 1) increased operator sensitivity to the issues associated with the cause of this violation; 2) raised operator awareness to potential task distractions or interruptions which may result in errors, and 3) increased emphasis to operators on proper procedure place-keeping.

CORRECTIVE ACTIONS TO BE TAKEN

- Administrative Procedure AP-12.03, Administration of Operations, will be revised to formally state management's expectations for procedure place-keeping and provide examples of acceptable techniques. **(Scheduled Completion Date – March 15, 1998)**

DATE WHEN FULL COMPLIANCE WAS ACHIEVED

Full compliance was achieved on October 23, 1997, subsequent to Control Room recognition that missed steps to AOP-23 had occurred. Control Room actions included re-closure of breaker 71DCB2 #6 and restoration of HPCI suction paths to normal lineup.

VIOLATION B

Technical specification 3.7.D.2 states, in part, that, with one or more of the containment isolation valves inoperable, maintain at least one isolation valve operable in each affected penetration that is open and restore the inoperable valve(s) to operable status within 4 hours; or isolate each affected penetration witnin 4 hours by use of at least one deactivated automatic valve secured in the closed position.

Contrary to the above, on October 24, 1997, maintenance activities to repair a ground problem were conducted which rendered the primary containment isolation function of the outboard high pressure coolant injection steam isolation valve inoperable and Technical Specification 3.7.D.2 requirements were not taken. After a maintenance error caused an invalid engineered safeguards feature actuation signal to occur in the same logic circuitry, operators recognized the failure to complete TS requirements and isolated the valve approximately 16 hours later.

This is a Severity Level IV violation (Supplement I).

ADMISSION OR DENIAL OF THE VIOLATION

The Authority agrees with the violation.

REASON FOR VIOLATION

The cause for this violation was personnel error. When listing the required Technical Specification actions to be taken for testing on the "B" HPCI logic circuit in support of DC ground troubleshooting activities, operators failed to recognize that the "B" HPCI logic Primary Containment Isolation System (PCIS) function of the outboard HPCI steam isolation valve was also being rendered inoperable. This resulted in failure to take the appropriate actions required by Technical Specification 3.7.D.2. LCO action statement.

Contributing causal factors leading to this human performance error were:

- Less than adequate development of the Work Planning Package. The work planning package assessment and development was not commensurate with the level of risk associated with the maintenance activities.

- Inadequate work practices. The pre-work technical reviews by Operations staff of the planned DC ground troubleshooting efforts failed to identify the Primary Containment Isolation System (PCIS) function that was affected. Operators incorrectly concluded that the HPCI seven day shutdown LCO, declared on 10/22/97 in support of ongoing scheduled HPCI work, would envelope the DC ground troubleshooting activity.

- Procedure deficiency. Surveillance Test Procedure ST-2M, ECCS Trip System Bus Power Monitors Functional Test, and Abnormal Operating Procedure AOP-23, DC Power System B Ground Isolation, used to de-energize the HPCI logic, did not contain guidance associated with entry into T.S. LCO 3.7.D.2.

- Drawing deficiency. The electrical elementary drawing for the HPCI PCIS logic contained a misleading label (i.e.; the logic was described as "manual steam valve isolation" not PCIS isolation) which contributed to operators failing to recognize that HPCI PCIS isolation logic was being de-energized.

CORRECTIVE ACTIONS THAT HAVE BEEN TAKEN

- A root cause evaluation was completed to identify the cause for the violation, contributing conditions, and develop lessons learned. The results of this evaluation were reviewed with all licensed shift personnel. Included in the review was the need for operators to reassess special work evolutions for new LCOs as emergent work occurs and assure they understand the potential consequence of work being released.

- Surveillance Test Procedure ST-2M, was revised to identify the Containment isolation function(s) being placed in the inoperable condition as a result of fuse removal in various trip logic circuitry.

- Procedure revisions have been completed to Abnormal Operating Procedures AOP-22, DC Power System A Ground Isolation, and AOP-23. Changes included revising DC ground isolation circuit procedure Attachment 2 to include functions effected by the breaker, and inclusion of T.S. LCOs required to be taken prior to isolation of the breaker to properly bound the extent of the activity.

- HPCI elementary drawing number 1.61-142 was revised to accurately reflect that relay 23A-K35 is associated with PCIS isolation logic.

- Persons designated as Qualified Technical Reviewers (QTRs) and/or Qualified Safety Reviewers (QSRs) within the Technical Services, Operations, Maintenance, and Instrument and Controls Departments, whose responsibilities include conducting procedure reviews, were counseled on the results of the root cause evaluation. Included was reinforcement of management's expectations regarding QTR and QSR responsibilities for procedure technical accuracy and completeness.

- Deviation Event Report (DER-97-1649)) was generated following completion of the root cause evaluation to review and identify additional potential weaknesses in the work package planning and development process that were not addressed by the root cause evaluation. Corrective actions resulting from this DER included:

  - The Work Control Center supervisor has discussed management expectations for recognizing and understanding the potential plant impact and consequences of all work being released by Work Week Managers.

CORRECTIVE ACTIONS THAT HAVE BEEN TAKEN (cont'd.)

- The issues associated with the failure(s) within the work package planning and development process to perform a detailed review of the HPCI PCIS logic prior to the issuance of the work to the field were reviewed with the Work Package Planners during the Central Planning Department Manager's weekly tailgate meeting.

RESULTS ACHIEVED

The results of the actions taken have reinforced management's expectations for: maintaining independence when involved in procedure and process technical reviews to ensure compliance with Technical Specifications and NYPA commitments during special evolutions; and that emergent work must be methodically assessed for compliance with Technical Specifications.

CORRECTIVE ACTIONS TO BE TAKEN

- A review is being conducted of other Surveillance Test Procedures and Operating Procedures to identify conditions where fuse removal occurs, and assure resulting T.S. impact is captured.
  (Scheduled Completion Date – March 31, 1998)

- The licensed operator initial training and continued training programs are being updated to include scenarios involving fuse isolation, circuit analysis and assessment of its impact with respect to T.S. compliance.
  (Scheduled Completion Date – March 15, 1998)

- Administrative Procedure AP-10.03, Work Package Planning, is being revised to provide added guidance for work package planning and preparation. Specifically, the level of detail and instruction, and depth of review used in the work control package planning and preparation process should be dependent on the impact of the work on high risk or potential high risk evolutions.
  (Scheduled Completion Date – April 15, 1998)

- Actions will be taken to formally establish the responsibilities of the Operations Planner for review of work packages.
  (Scheduled Completion Date – March 31, 1998)

DATE WHEN FULL COMPLIANCE WAS ACHIEVED

Full compliance was achieved on October 25, 1997, following the reinsertion of fuses, re-energizing the HPCI PCIS trip logic, and exiting from the HPCI LCO.

VIOLATION C

10 CFR 50.49(f) requires each item of electrical equipment important to safety to be environmentally qualified by testing or by combination of testing and analysis.
10 CFR 50.49(j) requires that a record of the environmental qualification be maintained in an auditable form to permit verification that each item of electrical equipment important to safety is qualified for its application and meets its specified performance requirements when it is subjected to the conditions predicted to be present when it must perform its safety function.

Contrary to the above, from March 3, 1993, to November 4, 1997 electrical equipment important to safety was improperly removed from the environmental qualification program. Specifically, high pressure coolant injection system pressure switches located in junction box JB-R2250E were removed from the environmental qualification program based on a nonconservative assumption in the calculations prepared to document the basis for the removal of certain components from the environmental qualification program.

This is a Severity level IV violation (Supplement I).

ADMISSION OR DENIAL OF THE VIOLATION

The Authority agrees with the violation. However, details provided in the text of the violation summary require correction and/or additional clarification.

The closing paragraph provides the location of the HPCI pressure switches. It should be noted that the subject switches are installed on Instrument Rack 25-50, located in Reactor Building elevation 242', adjacent to junction box JB-R2250E.

This paragraph also states that "...pressure switches...were removed from the environmental qualification program based on a non-conservative assumption in the calculation prepared to document the basis for the removal of certain components from the environmental qualification program." It should be noted that the non-conservative assumption in Calculation JAF-CALC-HPCI-00820 related to an assumed post-accident operating time for the HPCI components and did not impact the conclusion made with regards to the subject components being removed and remaining off the Environmental Qualification Component List (EQCL). The cause for the removal was that the component safety function to maintain electrical integrity following a HPCI/RHR steam line break was not recognized. Details of this cause are provided in the following Reason For Violation summary.

REASONS FOR VIOLATION

In 1988, the Authority completed an Environmental Qualification Component List validation effort. The process was proceduralized in a NYPA approved vendor procedure. The validation effort confirmed that HPCI pressure switches 23PS-86A, B, C, and D were required to be EQ. This was based on the safety function of these switches to initiate HPCI steam line isolation on high turbine exhaust pressure. This is not an accident mitigating safety function, however, false actuation of these switches during HPCI operation following a small break Loss of Coolant Accident (LOCA) would cause an inadvertent HPCI system isolation.

A 1993 JAF calculation (JAF-CALC-HPCI-00820) was performed to support the basis for removal of several HPCI components from the EQCL, including pressure switches 23PS-86A, B, C, and D. The calculation considered that a small break LOCA does not create a harsh environment in the Reactor Building (RB) crescent area where the switches are located and therefore, the subject pressure switches were removed from the EQCL.

In 1996, a Deviation Event Report was initiated due to an identified non-conservative assumption made in calculation JAF-CALC-HPCI-00820. The non-conservative assumption was evaluated and the calculation revised. As a result, several HPCI motor operated valves (MOVs) that were deleted from the EQCL in 1993 were added back to the List. It should be noted that the non-conservative assumption did not impact the original conclusions made with regard to the removal of the subject pressure switches from the EQ Program.

The consideration (EQ basis) lacking in both the 1993 and 1996 reviews was the requirement that the switches must maintain electrical integrity following a HPCI/RHR steam line break in the RB because the switches share common circuitry with the HPCI steam line auto isolation logic. They are not separately fused, therefore, it is postulated that a common mode failure (short to ground) caused by a HPCI/RHR steam line break and a single failure will disable the steam line auto isolation logic and prevent isolation of the breaker. Had this "not-fail" safety function consideration been included in the EQ evaluations for the subject switches, they would have remained in the EQ Program in 1993.

The cause for the violation was personnel error. A root cause analysis of this event identified the following human performance causal factors:

- Worker Practices - Incorrect interpretation of drawing information. During the EQ component evaluation effort in 1988, the consequence of the failure of the pressure switches to maintain electrical integrity (a "Not-Fail" safety function) following a reactor building HELB was not recognized. As a result, this "Not-Fail" safety function" was not identified in evaluation.

REASONS FOR VIOLATION (cont'd.)

- Worker Practices – Document use practice. The 1993 and 1996 EQ evaluations were performed using Engineering and Design Procedure EDP-20, Procedure For Establishing If Plant Electrical Equipment Is Within The Scope Of 10 CFR 50.49 (EQ). Section 3 of the instructions for the evaluation (EDP-20, Attachment 1 form) provides specific instructions to identify component safety functions and designates "not-fail" as the safety function of components whose failure will prevent the accomplishment of the safety function of other safety related components due to fusing and circuit configuration. The evaluations did not correctly identify the "not-fail" safety function to maintain electrical integrity for the subject pressure switches. The engineers utilized a 1988 EQ component list evaluation report as a basis for the EDP-20 evaluation and did not review the applicable drawings to the extent that the error in the 1988 report was caught.

- Worker Practices – Less than adequate review/verification process. The review processes used following the 1988, 1993, and 1996 EQ evaluations were inadequate in that they did not identify the failure of the evaluations to identify the safety function to maintain electrical integrity for the subject switches.

CORRECTIVE ACTIONS THAT HAVE BEEN TAKEN

- A root cause evaluation was performed to identify the conditions that caused or contributed to the occurrence of this violation, the recommended corrective actions and identification of lessons learned. The evaluation was prepared by and reviewed with Engineering Department personnel responsible for implementation of the EQ program. Individuals involved in the 1988, 1993, and 1996 inadequate worker practices are no longer involved in the implementation of the EQ Program.

- Work Activity Control Procedure WACP-10.1.11, Environmental Qualification Program For Harsh Environment Plant Electrical Equipment, Attachment 1, "Environmental Qualification (EQ) Component List", was revised to include HPCI pressure switches 23PS-86A, B, C and D.

- Engineering and Design Procedure EDP-20, Procedure For Establishing if Plant Electrical Equipment Is Within the Scope of 10 CFR 50.49 (EQ), Attachment 1, "Evaluation Form For Identification of Plant Electrical Equipment Requiring Environmental Qualification", was completed for HPCI pressure switches 23PS-86A, B, C, and D.

- Addendum No. 7 to EQ Reference No. 310, "Addition of Component ID's 23PS-86A/B/C/D which were inadvertently deleted from the EQ Component List by WACP-10.1.11, Revision 17-1" was generated to reinstate the subject switches in the EQ file for Static-O-Ring pressure switches.

RESULTS ACHIEVED

An ongoing extent of condition review has identified four additional components having "not-fail" safety functions that were incorrectly removed from the EQCL. These components are being reinstated into the Program. The DER process will be used to report and track component EQ classification revisions resulting from this review.

CORRECTIVE ACTIONS TO BE TAKEN

- Complete the extent of condition review to identify similar control circuit configuration(s) that may involve components not being included in the EQ Program. **(Scheduled Completion Date - March 15, 1998)**

- To improve worker practices for selection of appropriate input for use with EDP-20 evaluations, a revision will be made to EDP-20 to: (1) list the root cause evaluation for this violation as a management expectation under the Requirements Section of the procedure; and (2) provide additional clarification to emphasize that a review of the plant drawings must be performed to ensure that safety function of components whose failure will prevent the accomplishment of the safety function of other safety related components due to fusing and circuit configuration is identified. **(Scheduled Completion Date - April 30, 1998)**

- This violation and its root cause evaluation are being included as required reading on Engineering Department personnel Task Qualification Sheets for performance of Engineering Department Procedure EDP-20. This will assure that all prospective engineers, and all engineers presently qualified to perform EDP-20, will have reviewed the conditions associated with this violation. **(Scheduled Completion Date – March 15, 1998)**

- The Engineering Support Personnel (ESP) Training Program Review Committee (TPRC) will review this violation for possible inclusion into the ESP Training Program. **(Scheduled Completion Date – June 30, 1998)**

DATE WHEN FULL COMPLIANCE WAS ACHIEVED

Full compliance will be achieved upon completion of the current ongoing EQ review, scheduled to be completed by March 15, 1998. Should reviews identify additional EQ Program revisions requiring an extension to this date, the Authority will submit a revised response to this violation.

Attachment II
Reply to Notice of Violation
NRC Integrated Inspection Report 50-333/97-08

List of Commitments

Commitment No.	Action	Due Date
JAFP-98-0074-01	Should EQ reviews identify additional EQ Program revisions requiring an extension to the scheduled full compliance date of March 15, 1998, the Authority will submit a revised response to this violation.	March 15, 1998