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New York Power Authority

William Fernandez II
Resident Manager

June 11, 1990
JAFP-90-0456

United States Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555

Attention: Director, Office of Enforcement

SUBJECT: RESPONSE TO NOTICE OF VIOLATION AND PROPOSED IMPOSITION OF CIVIL PENALTY NRC INSPECTION NO. 50-333/90-12

REFERENCE: a) USNRC letter dated May 10, 1990 on the same subject

EXPOSURES: 1) Response to Notice of Violation

2) Long Term Corrective Actions

Gentlemen:

The Authority agrees with the collective findings in the Notice of Violations and proposed imposition of civil penalties promulgated by reference (a).

Funds in the amount of $75,000 for the assessed civil penalty have been transferred electronically to the treasurer of the United States.

The Authority does request that the NRC review the decision basis for the portion of the civil penalty above the base amount. Reference (a) cited several reasons why mitigation of the base penalty was not warranted. As detailed in enclosure (1), several of these reasons are incorrect.

The NRC became involved with the investigative process very promptly after the incident. Accordingly, the NRC became aware of many of the issues in parallel with the Authority.

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Discussions with NRC staff personnel prior to the enforcement conference focused on the desire to discuss the generic problems common to the March 8, 1990 event and the other non-routine radiological events of the past several years. As a result, the broader issues of the event were stressed during the enforcement conference. The Authority believes that it is inappropriate to use the information thus obtained as a basis for escalating or not mitigating the civil penalty above the base amount.

Very truly yours,

WILLIAM FERNANDEZ

WF:ls

Enclosures

cc: R. Liseno
G. Vargo
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R. Beedle (NYPA/WPO)
J. Elmers (NYPA/WPO)
Document Control Center
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NRC Document Control Desk
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CERTIFIED MAIL, RETURN RECEIPT REQUESTED

ENCLOSURE 1

NOTICE OF VIOLATION

A. 10 CFR 20.101(a) limits the total occupational radiation exposure to the hands of an individual in a restricted area to 18.75 rem per calendar quarter.

Contrary to the above, during the first calendar quarter of 1990, specifically on March 8, 1990, a Radiation and Environmental Services (RES) technician working in the Sample Sink area of the Radwaste Building, a restricted area, received a total radiation exposure to the thumb of the left hand of 48.8 rems while providing radiological coverage for a job involving the injection of sodium-24 (Na-24) into the reactor feedwater system during a feedwater flow test. The exposure on March 8, 1990 resulted in a cumulative extremity exposure of the individual for the calendar quarter of 49.06 rems.

B. Technical Specification 6.11 (Radiation Protection Program) states that procedures for personnel radiation protection shall be prepared and adhered to for all plant operations. These procedures shall be formulated to maintain radiation exposures received during operation and maintenance as far below the limits specified in 10 CFR 20 as practicable. The procedures shall address planning, preparation, and training for operation and maintenance activities. They shall also include exposure allocation, radiation and contamination and control techniques, and final debriefing.

1. Radiation Work Permit Procedure (RPP-4), Section 1.0, states, in part, that the purpose of the Radiation Work Permit (RWP) is to achieve good radiation exposure control. Section 6.3.2 states that an RWP is required for jobs where special hazards are involved.

Contrary to the above, neither station approved work procedure NWT-INSOL, Revision 0 (Preparation of Na-24 Injection Solution) nor Radiation Work Permit (RWP) No. 90-0534-S, both of which were established for a special hazards job involving the injection of Na-24 into the reactor feedwater system of March 8, 1990, were adequate to maintain radiation exposure as far below the limits specified in 10 CFR Part 20 as practicable in that the work procedure and the RWP did not achieve good radiological controls. Specifically, these documents did not:

a. require any protective clothing for the Radiation and Environmental Services (RES) technician (providing health physics job coverage) entering and working in the Na-24 preparation and injection area.;

b. provide any requirements for performing personnel contamination monitoring at or near the Na-24 preparation and injection area;

c. inform the workers that Na-24 was a beta radiation emitting isotope necessitating a beta radiation survey of the work area; and

d. provide any special instructions or precautions cautioning against the direct handling of the Na-24 capsule or capsule cap because of the potential for substantial levels of high specific activity contamination remaining on the capsule or cap after the removal of its contents, or as how to deal with a Na-24 leak at the preparation and injection area, should one occur.

2. Station approved work procedure NWT-INSOL, Revision 0 describes the procedural steps for opening the Na-24 shipping cask and preparing the injection solution. Step 15 (a procedure step designed to minimize contamination) requires that the Na-24 capsule cap be removed by using the removal tool and tongs or tweezers, and that the cap be placed in a disposable container.

Contrary to the above, on March 8, 1990, Step 15 of NWT-INSOL, Revision 0 was not adhered to in that:

a. the Na-24 capsule cap was not placed in a disposable container after it removed from the capsule by the vendor employees; and

b. the RES technician picked up the capsule cap with a glove on his right hand (rather than a removal tool, tongs or tweezers) and placed it back on the capsule.

These violations have been categorized in the aggregate as a Severity Level III problem. (Supplement IV)

Civil Penalty - $75,000 (assessed equally among the violations).

REPLY

A. Violation of 10 CFR 20.101(a)

Admission or Denial of the Violation:

The Authority agrees with the violation of 10 CFR 20.101.

Reason for the violation:

The violation occurred due to inadequate radiological controls cited in Part B of the Notice of Violation.

Corrective steps and results:

Corrective actions for this event included decontamination of the worker, examination of the worker by a physician and a detailed assessment of the radiobiologically significant dose received by the worker.

The worker was restricted from further occupational radiation exposure following this event through the end of the calendar quarter ending March 31, 1990. The worker was permitted to resume normal activities that involve or potentially involve occupational radiation exposure with the beginning of the new calendar quarter.

Corrective steps that will be taken to prevent further violation and date when full compliance will be achieved:

Enclosure 2 details the Authority's long-term corrective actions to this Notice of Violation.

B. Violation of Technical Specification 6.11

Admission or denial of the violation:

The Authority agrees with the violation.

Reason for the violation:

The violation cited in B.1 resulted from weaknesses in the radiation work permit (RWP) procedure, the ALARA review process and training. The violation cited in B.2 resulted from inadequate review of work procedures.

Corrective steps and results:

Corrective actions taken prior to the second performance of the sodium-24 (Na-24) feedwater flow test included upgrading of the radiological controls and protective clothing requirements for the work activity and specific training of workers in the unique circumstances of the task. In addition, a review of the adequacy of the radiological controls was performed by an independent radiation specialist.

The Resident Manager reviewed this incident and the implications to maintenance, construction and radiological supervisors and foremen. Especially stressed was the inappropriate reduction of protective radiological controls for personal convenience. In a similar fashion, department supervision counseled the radiological protection staff in the need to maintain a conservative and questioning attitude when dealing with non-routine radiologically sensitive work.

The event was independently evaluated by INPO using their Human Performance Enhancement System (HPES). The review identified weaknesses in procedures (including not using a disposable container), training and supervision similar to those identified in Inspection Report 90-12 and the Authority's own assessment.

Third-party reviews of radiological work requiring an ALARA review are being performed by an independent Certified Health Physicist. Management observations of radiological work practices and the adequacy of radiation work permits have been increased and the Authority has contracted outside radiological protection specialists to assist in job reviews and observations of radiological protection technician performance and worker practices. These reviews of radiologically sensitive work will continue until the long-term ALARA Procedural actions described in Enclosure 1 (paragraph 2A) are implemented.

Corrective steps that will be taken to avoid further violation:

Refer to Enclosure 2 which contains the Authority's long-term corrective actions to this Notice of Violation.

Date when full compliance will be achieved:

Refer to Enclosure 2 for the specific implementation schedule of corrective actions and programmatic upgrades.

C. Other Comments:

After reviewing the transmittal letter of May 10, 1990, the Authority has identified several statements which we believe are in error or require further clarification:

One paragraph states "Although you promptly reported this incident to the NRC, you did not identify several significant contributing deficiencies in the planning and preparation for this evolution ... Specifically you did not identify that inadequate protective clothing requirements in the RWP contributed to the contamination, nor did you identify that a contamination control step in work procedure had not been followed." This statement is incorrect. At the time the incident was reported to the NRC, the investigation was ongoing and incomplete. The reports to the NRC were made as soon as practical following discovery of the potential significance of the event. During the enforcement conference, as documented in your meeting report for Inspection 90-12, inadequate assessment of risk, reductions in protective clothing requirements and weak procedures were addressed (Tab 1.2 of the Authority's presentation). In addition, the Authority stated that an independent human performance investigation was to be performed by INPO. Their report was finalized and transmitted to the Authority on April 26, 1990.

The same paragraph also states that "... your long term corrective actions, as set forth in your presentation at the enforcement conference, were not considered comprehensive, in that weaknesses in the radiation work permit procedure and technician training to improve awareness of risks associated with infrequent job tasks were not addressed." The Authority disagrees with this assessment. Corrective actions relative to the radiation work permit program and technician training were addressed during the enforcement conference, as documented in your meeting report for Inspection 90-12 (Tab 4.4.B 1 and 2 of the Authority's presentation).

While the specific details of these corrective actions were not presented at the time of the enforcement conference, the Authority clearly recognized the need for improvements in these areas. Specific details were not presented because they had not yet been formalized. Detailed plans and procedures could not be developed due to the relative short time interval between the event and the enforcement conference. More time was necessary to ensure that long-term corrective actions were sufficiently comprehensive to address the deficiencies identified in this event in addition to other recent events as discussed with the NRC staff. Due to the complex nature

of some of the issues identified in our analysis of this and other recent events, it was inappropriate to propose specific corrective actions that might not have been comprehensive.

In pre-conference discussions, NRC staff members stressed the importance of addressing the root causes of the March 8, 1990 event as related to other similar non-routine events at FitzPatrick. The Authority agreed and consequently avoided addressing this most recent event as an isolated incident. Special emphasis was given to the broader implications of the March 8, 1990 overexposure.

The Authority undertook a considerable effort to accurately assess the actual dose received by the worker from the March 8, 1990 contamination event. This assessment involved outside consultants including a recognized expert in radiation dosimetry and a licensed physician. On the basis of these assessments, we believe that the actual dose received by the worker was 17.39 rems as opposed to the 49.06 rems cited. A considerable body of scientific evidence published by the International Commission on Radiological Protection (ICRP Report 23) and others, indicates that the critical tissue in the case of the extremities (the basal layer of the epidermis) is at a depth considerably greater than the present NRC Regulatory Guidance of 7 mg/cm^2. In this particular case the depth of this layer is on the order of 64 mg/cm^2. The use of the 49.06 rem dose assessment is, we believe, inappropriate given the circumstances of the exposure and misrepresents the radiobiological significance of the contamination event.

ENCLOSURE 2

Long-Term Corrective and Preventive Actions to Improve Management Control and Oversight of Non-Routine Radiologically Significant Activities

1. **Organization and Personnel Responsibility Improvements**
Management controls on non-routine radiologically significant activities will be strengthened through the procedures and programs described below. These improvements include progressively higher management approvals proportional to increased radiological risk, especially for first-time or infrequently performed tasks.

As a result of the several radiological events over the past few years, the Authority recognizes that organization and personnel responsibilities and accountabilities need to be clarified, improved and/or changed to ensure that they are not fragmented or diluted. To address these needs, a staffing study and organizational review has been initiated with completion scheduled by the end of 1990. In addition, the expectations and responsibilities required of all personnel to produce a high level of professionalism will be better defined and promulgated by the end of 1990.

2. **Procedures and Programs**

A. **ALARA Review**

The existing ALARA Review process will be enhanced significantly. The present procedure is used for various types of ALARA Reviews including design activities, operations, modifications, maintenance and special evolutions such as the sodium-24 feedwater flow test. Presently, the procedure only requires escalated management approval on the basis of collective dose (i.e. man-rem) and does not address overall radiological risks (e.g. high dose rates, high airborne or contamination potential.)

The ALARA process and procedure is to be enhanced to require expanded radiological assessments for specific types of work (e.g. spent fuel pool work) as well as for those conditions when actual or anticipated radiological conditions are above some trigger level.

The radiological assessments will include a review of the plant operating experience data base, an evaluation of credible abnormal or accident scenarios and contingency plans for such scenarios. The procedures will also require progressively higher levels of management approval based on overall radiological risk, rather than the current requirement for such approvals that is based strictly on collective dose.

This effort will be completed by September 30, 1990.

B. **Radiation Work Permit**

As a result of management assessments previous to this event, the Authority had already decided to undertake a major upgrade of the FitzPatrick radiation work permit (RWP) program. The primary purpose of this upgrade is to enhance the effectiveness of the RWP procedures while reducing the unnecessary administrative burden imposed by the existing system. One expected benefit of this upgrade is to allow additional technician resources to be focused on in-plant observation and job coverage.

This upgrade will provide clearer guidance on minimum acceptable protective requirements and instructions for RWP job coverage and require progressive management approval for variances from normal protective requirements. The procedure will also formalize when supervisory approval is required prior to work commencements.

The Authority expects implementation of the upgraded RWP program by December 31, 1990.

C. **Procedures for Radiological Work Activities**

The structure and quality of vendor procedures for the performance of the sodium-24 feedwater flow test was less than adequate because the procedures were not in the Authority's normal format. In addition, radiological controls were not integrated into the vendors procedure which was considered to be the governing document for the test procedure.

The radiological assessment process defined in 2A above, will include guidelines and thresholds above which radiological controls need to be fully integrated into non-routine significant radiological work procedures, rather than relying on a general reference to radiological requirements.

3. Training

A. Technician Training

As a result of the non-routine radiological events over the past few years, the need to upgrade the qualification and training (especially continuing training) programs for radiological technicians has become quite evident.

The present union job description, training and qualification program is defined for a combined radiological/chemistry technician. This program has resulted in a dilution of the specific skills required for radiological technicians. Changes in the overall program are being pursued to increase the overall effectiveness. These changes include:

- Higher qualification standards to become a technician.

- A redefined qualification/apprentice program in which an individual would specialize in radiation protection or chemistry.

- Additional instructors to expand the continuing training program which will support the specialization of technicians.

These changes are subject to union negotiation and as a result, an exact date for completion can not be set. Never the less, this overall upgrade should be in effect by December of 1990.

B. Supervisory Training

The procedures for management control and oversight of radiologically significant activities are contained in different plant procedures. Specific training for the radiological protection management staff will be conducted to review the requirements of each of these procedures. In addition, training in observation techniques has been or will be completed for the radiological protection management staff.

First-line radiological protection supervisors will attend applicable portions of the upgraded continuing training program for radiological protection technicians.