

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-333/90-22

Docket No. 50-333

License No. DPR-59

Licensee: Power Authority of the State of New York  
P.O. Box 41  
Lycoming, New York 13093

Facility Name: James A. FitzPatrick Nuclear Power Plant

Inspection At: Lycoming, New York

Inspection Conducted: November 5 - 9, 1990

Inspectors:

P. O'Connell  
P. O'Connell, Radiation Specialist

12-5-90  
date

R. Lance  
R. Lance, Radiation Specialist

12-3-90  
date

Approved by:

W. Pasciak  
W. Pasciak, Section Chief, Facilities  
Radiation Protection Section

12/3/90  
date

Inspection Summary: Inspection conducted November 5 - 9, 1990  
( Inspection Report No. 50-333/90-22 )

Areas Inspected: This inspection was a routine unannounced inspection of the radiation protection program. Areas reviewed included: Status of Previously Identified Items, Organization, ALARA, Plant Tours, and Audits.

Results: Within the scope of this inspection one cited violation and one non-cited violation were identified. The cited violation involved three examples of failure to follow radiation protection procedures. The non-cited violation involved a failure to adequately post radioactive trash receptacles.

## Details

### 1.0 Individuals Contacted

#### 1.1 New York Power Authority

- \*W. Fernandez, Resident Manager
- \*R. Liseno, Superintendent of Power
- \*M. McMahan, Radiological Engineering General Supervisor
- \*J. Solini, Health Physics General Supervisor
- \*G. Tasick, Quality Assurance Superintendent
- \*G. Vargo, Radiological and Environmental Services Superintendent

#### 1.2 NRC

- \*R. Plasse, NRC Resident Inspector
- W. Schmidt, NRC Senior Resident Inspector

\*Denotes those individuals attending the exit meeting on November 9, 1990.

The inspector also contacted other licensee personnel.

### 2.0 Purpose and Scope of Inspection

The inspection was a routine unannounced inspection of the radiation protection program. Areas reviewed included: Status of Previously Identified Items, Organization, ALARA, Plant Tours, and Audits.

### 3.0 Status of Previously Identified Items

- 3.1 89-21-01 Unresolved Item. Quality Assurance (QA) scheduling and conducting audits of the radiation protection (RP) program. - After NRC inspection 50-333/89-21 the licensee forwarded a copy of a QA audit of the RP program, which was conducted November 1988. The inspector verified that the licensee had completed the corrective actions specified in their response letter JAFP-90-0095, dated January 29, 1990. The corrective actions included adding the requirement for periodic audits of the RP program to the QA procedure. The licensee is also developing QA Department Observation/Monitoring Checklists to be used in conducting periodic surveillances of the RP program. This item is closed.
- 3.2 89-21-02 Violation. Failure to adequately survey the drywell mezzanine. - The inspector verified that the licensee had completed the corrective actions specified in their response letter JAFP-90-0095, dated January 29, 1990. The corrective actions included increasing the frequency of surveys of the drywell mezzanine from monthly to weekly and evaluating the adequacy of other routine survey frequencies. During the review of this item no other violation was identified by the inspector and is discussed in Section 6 of this report. This item is closed.

- 3.3 89-21-03 Violation. Failure to follow RP procedures by not taking a scintillation alpha counter out of service due to high background. - The inspector verified that the licensee had completed the corrective actions specified in their response letter JAFP-90-0095, dated January 29, 1990. The corrective actions included having Radiological and Environmental Services (RES) Supervisors periodically review instrumentation results. The inspector independently reviewed instrumentation results and noted no deficiencies. This item is closed.
- 3.4 90-12-01 Unresolved. The final dose assessment for the individual contaminated with Sodium-24 on March 8, 1990. - The inspector reviewed the individual's dose records and noted that the licensee had recorded the dose to the individual as required by the instructions on Form NRC-5. This item is closed.

#### 4.0 Organization

The inspector reviewed changes which were made in the RES Department since the last routine inspection. The licensee has restructured the organization of the RES Department. The new organization involves changes in both supervisory and technician level positions. One of the changes was the splitting of the RES Technicians duties to include either chemistry or health physics. Previously the RES Technicians were qualified in both areas. The splitting of the duties should allow the technicians to become more specialized in either chemistry or health physics.

The inspector reviewed the organization chart for the RES Department. Supervisory changes since the last inspection include expanding the number of Operational Health Physics (HP) Supervisors from two to four supervisors. Instrumentation and Respiratory Protection, which previously had been under the direction of the HP General Supervisor, are now part of the Radiological Engineering group. The restructuring has resulted in an increase from five to six RES Supervisors. At the time of the inspection, all positions were filled.

Discussions with RES Supervisors indicated that the supervisors are now receiving professional training on a more frequent basis. Scheduled and completed training topics include beta dosimetry and internal dosimetry. The organization changes and increased training of RES Supervisors are considered program improvements.

#### 5.0 ALARA

The inspector noted several improvements in the ALARA program. Two procedures, REP-1 "ALARA Review" and PSO-11 "Pre-job Preparation and Briefing", were upgraded to define and address supervisory and ALARA review of radiologically sensitive tasks. A new procedure, REP-10 "Radiological Review of Procedures" was implemented. This procedure provides guidance to RES personnel reviewing work procedures to ensure

that radiological concerns are addressed within the procedure being reviewed. The inspector reviewed several ALARA reviews and noted that they appeared comprehensive. The ALARA group appeared to be knowledgeable and effective in job planning.

The ALARA goal for 1990 was significantly exceeded early in the year due to the refueling outage person-rem exceeding the goal by 360 person-rem. The additional exposure was mainly accredited to the installation of a new Traversing In-core Probe system, weld overlays inside the drywell, and increased scope of In-service Inspection work. The additional work caused the outage to be extended 35 days, which also contributed to the additional exposure. At the time of the inspection the exposure for the site was 848 person-rem, with a revised 1990 annual goal of 882 person-rem. Although exposures at the site are significantly above the average for boiling water reactors, the licensee is taking actions, such as system decontamination and cobalt reduction, which should be helpful in reducing personnel exposures in the future.

#### 6.0 Plant Tours

The inspector conducted several tours of the facility to verify proper posting of areas including verifying dose rates throughout the plant. The general housekeeping and definition of contaminated areas within the plant was good. The inspector noted that the licensee had installed several additional locked barriers to limit personnel access into High Radiation Areas (HRAs). This was considered a good initiative.

While conducting tours throughout the Reactor Building and Turbine Building, the inspector noted that the licensee had several receptacles for radioactive trash which did not have the proper posting required by 10 CFR 20.203. The radiation caution symbols on the receptacles were black and white, not the required coloring of magenta or purple with a yellow background. The licensee promptly initiated corrective actions of retagging the receptacles with appropriate radiation caution symbols. The inspector determined that, due to the minor safety significance and the prompt corrective actions taken by the licensee, the violation met the criteria, specified in 10 CFR 2, Appendix C, V. A., for a non-cited violation. (50-333/90-22-01)

On November 5, 1990 the inspector noted that the safety posting on the north entrance to the screen house was not visible to individuals entering the building due to the door being propped open. The posting specified that all individuals entering the building needed to wear hard hats and safety glasses. This was immediately relayed to licensee supervision. On November 7, 1990 the inspector noted the posting discrepancy had not been corrected. The licensee's initial corrective action of closing the door was inadequate and did not correct the deficiency. The licensee stated that they would correct the discrepancy. This item will be reviewed during a future inspection.

During several tours in the yard, the inspector noted many examples of yellow plastic booties and disposable yellow rain suits that had been discarded. These are the same type of booties and rain suits that are used in the Radiologically Controlled Area (RCA) as protective clothing. When several RES Technicians were asked regarding the use of yellow material in non-radiological areas, they stated that licensee policy allows the use of yellow material outside the RCA.

During review of the licensee's logs for "Daily Green Bag Checks" for the period from July 10, 1990 through September 10, 1990, the inspector noted frequent examples of the technicians finding contaminated disposable booties, gloves, maisslin, and smears in the clean trash inside the RCA. The frequent placement of contaminated articles in the clean trash in the RCA by station personnel increases the possibility that contaminated material may inadvertently be removed from the RCA. The inspector expressed concern that licensee personnel could not easily distinguish between potentially contaminated disposable protective clothing inadvertently removed from the RCA and material which never entered the RCA. If yellow protective clothing were to be inadvertently removed from the RCA licensee personnel would not identify the material based on the color. The licensee stated they would review their policy of allowing the use of yellow disposable protective clothing outside of the RCA.

The inspector reviewed the licensee's program for controlling the keys to HRAs. Instructions regarding issuance of HRA keys are written in RPP-10, "Operation of the RES Department Issue Room". The inspector noted that RPP-10 has several references to procedure RPP-21 regarding the appropriate method for issuing HRA keys. The inspector determined that procedure RPP-21 did not exist. The licensee stated that they were developing RPP-21 and that RES Standing Order 09 (RES-SO-09) "HRA Key Control" was the appropriate reference. The licensee made a temporary procedure change to correct the references. The inspector noted that licensee personnel had been using RPP-10 for over one month and no one noticed the incorrect references. These discrepancies should have been noted if licensee personnel had been closely following the procedure. It appeared that more emphasis needs to be placed on reading procedures and being knowledgeable of procedure requirements.

Fifteen master HRA keys exist which the operators use on their plant tours. The inspector noted that the licensee's key control program does not address these keys, however, an informal inventory is done monthly on these keys. The licensee has agreed to include these keys in their HRA key control procedure. This item will be reviewed at a later date.

The inspector conducted an inventory of the HRA key locker on November 7, 1990 and noted that two HRA keys were missing. Upon review by the on-shift RES Supervisor, it was found that an individual had taken the two keys home at the end of his shift. Licensee procedure RES-SO-09 states in step 7.1.10 that HRA "keys are not to be taken from site."

This was identified as a violation of Technical Specification 6.11, Radiation Protection Program, which states, that "Procedures for personnel radiation protection shall be prepared and adhered to for all plant operations." (50-333/90-22-02)

While reviewing the corrective actions for a previous violation (50-333/89-21-02), the inspector reviewed seven of the weekly surveys of the drywell entrance mezzanine for the period from August 14, 1990 through October 29, 1990. It was noted that neutron surveys had not been done for the weeks of August 14, October 22, and October 29, 1990. Table 1 of licensee procedure RPP-5, "Plant Radiological Surveillance Program", requires a neutron radiation survey in addition to a gamma radiation survey of the drywell entrance mezzanine whenever the reactor is critical. This survey is required on a weekly basis. When the inspector asked the Chief RES Technician why the neutron surveys had not been done, she stated that the survey was not required and showed the inspector a weekly survey cover sheet which did not include the requirements for the neutron survey. The reactor was critical during the August 14, 1990 through October 29, 1990 time period. This is another example of a violation of Technical Specification 6.11, Radiation Protection Program, which states, that "Procedures for personnel radiation protection shall be prepared and adhered to for all plant operations." (50-333/90-22-02)

The inspector noted that the Chief RES Technician was not aware of the procedure requirement to perform neutron surveys at the drywell entrance mezzanine while the reactor is critical. RES supervision reviewed and approved the incomplete surveys as having been properly completed. It appeared that RES Supervision needed additional training regarding the requirements of licensee procedures. In addition, the surveys which did include neutron dose rate measurements did not always list the type and serial number of the neutron survey instrument as specified in the Radiation Protection Manual.

The inspector reviewed the licensee's assessment of an offgas leak at the Hydrogen Analyzer in the Turbine Building after a concern was raised by the Resident Inspector. The leak occurred over several days and the licensee had some difficulty identifying its exact location. Several air samples were taken and the charcoal cartridges were checked for noble gas. On October 31, 1990 the leak was identified in an instrument cabinet and a work party was sent into the area to fix the leak. The charcoal cartridge from the air sample taker in the work area showed 75% MPC for noble gas. Based on this air sample, the area was posted as an Airborne Radioactivity Area and MPC-hours were assigned to the workers.

Licensee procedure RPP-9, "Radiological Survey Techniques", designates, in Section 6.5.2, "the use of charcoal cartridge unsuitable for noble gas sampling." The procedure allows noble gas samples to be collected "either by opening an evacuated Marinelli beaker or by emptying and recapping a collection bottle filled with water in the area to be sampled." This is another example of a violation of Technical Specification 6.11, Radiation Protection Program, which states, that "Procedures for personnel radiation protection shall be prepared and adhered to for all plant operations." (50-333/90-22-02)

The inspector discussed with several technicians and managers in the RES and Chemistry departments the technique used to measure noble gas in an area of the plant. Chemistry personnel were aware that a charcoal filter is used to qualitatively show the presence of noble gas and not to quantify the amount of noble gas. Discussions with RES personnel indicated that RES personnel used a charcoal cartridge to determine noble gas concentrations. The charcoal cartridge sample results were used as the basis for posting the area as an Airborne Radioactivity Area and assigning MPC-hour exposures to personnel. Discussions with RES personnel indicated a lack of awareness of the content of RPP-9, due partially to the infrequency of encountering situations at the station where remote noble gas sampling is required.

On November 8, 1990 the inspector asked the licensee how they assessed the airborne concentrations for the work to fix the offgas leak on October 31, 1990. Initially, the licensee stated that the charcoal cartridge samples were used for this purpose. After the inspector noted that it was inappropriate to monitor noble gas concentrations with charcoal cartridges and that RPP-9 states that charcoal cartridges are unsuitable for that purpose, the licensee stated that an ionization chamber survey instrument was also used to measure the noble gas concentration. However, the licensee had not evaluated how the survey instrument would respond to a noble gas cloud, and therefore could not demonstrate that they could quantify noble gas concentrations in this manner.

On November 9, 1990 the licensee provided the inspector with a document detailing how they evaluated the airborne concentrations in the work area of the Turbine Building on October 31, 1990. The licensee's evaluation states that a concentration of one MPC would be equivalent to 2.5 mrem/hr. The evaluation also stated that the highest open window versus closed window ion chamber general area reading in the work area was less than 1 mR/hr. Therefore, the evaluation concluded, the highest airborne concentration was less than 40% of the MPC. However, this assessment is inaccurate in that the MPC values for noble gasses are based on being submerged in an infinite semispherical cloud of radioactive material. Based on the average path length of the more energetic photons given off by the noble gases, the semispherical cloud would have to be several times larger than the entire Turbine Building in order to be considered infinite. The 2.5 mrem/hr per MPC-hr is not accurate for small localized area with a concentration of noble gas. Using this approach would underestimate the airborne concentrations.

The Chemistry Superintendent stated that a study involving the use of Marinelli beakers had been performed approximately ten years ago that demonstrated results of sampling for noble gases using Marinelli beakers to be unreliable. The apparent inability to quantify noble gas measurements is a program weakness. The licensee stated that they would review this item. This item will be reviewed during a future inspection.