

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-333/92-16

Docket No. 50-333

License No. DPR-59

Licensee: New York Power Authority
P.O. Box 1
Lycoming, New York 13093

Facility Name: James A. FitzPatrick Nuclear Power Plant

Inspection At: Lycoming, New York

Inspection Conducted: August 18-21, 1992

Inspector:

RL Nimitz
R. L. Nimitz, Senior Radiation Specialist,

9/3/92
date

Approved by:

S. Sheehan
for W. Pasciak, Section Chief
Facilities Radiation Protection Section

9/4/92
date

Areas Inspected: The inspection was an announced Radiological Controls Inspection. The following areas were reviewed: radiological controls organization and staffing; personnel qualifications and training; performance improvement initiatives including management oversight; radiological controls for the outage including external and internal exposure controls, and radioactive material and contamination controls; and the ALARA program.

Results : Observations of on-going activities indicated generally good radiological controls were implemented. There was a need to improve oversight and resolution of self-identified concerns. Also, there was a need to improve the program for control of portable HEPA ventilation systems. There were no violations identified.

Details

1.0 Individuals Contacted

1.1 New York Power Authority

- *H. Salmon, Jr., Resident Manager
- *R. Barrett, General Manager, Operations
- *J. DeRoy, Maintenance Manager
- *C. Gannon, Radiological and Environmental Services (RES) Manager
- *M. Colomb, General Manager, Support Services
- *G. Tasick, QA Manager
- *A. Zaremha, Operational Review Manager
- *T. Teifke, Security/Safety Manager
- *D. Simpson, Training Manager
- J. Hamblin, Training Support Supervisor
- T. Bergene, ALARA Coordinator
- P. Policastro, Radiation Protection Supervisor
- A. Jarvis, Senior Chemical Engineer, Plant Chemist
- J. Goldstein, Senior Chemical Engineer
- K. Peper, Radiological Engineer

1.2 NPC

- *W. Cook, Senior Resident Inspector
- R. Plasse, Resident Inspector

* Denotes those individuals attending the exit meeting on August 21, 1992.

The inspector also contacted other licensee personnel.

2.0 Purpose and Scope of Inspection

This inspection was a routine, announced radiological controls inspection. The following areas were reviewed:

- performance enhancement initiatives
- organization, staffing, training and qualification
- radiological controls for the outage including:
 - contamination monitoring and control including radioactive material control
 - external and internal exposure controls
 - High Radiation Area access control
- ALARA
- plant tours

3.0 Performance Enhancement Initiatives Including Management Oversight

3.1 Background

As a result of previous radiological events at the station, including the results of external and internal evaluations of the radiological protection program, the licensee initiated a performance enhancement program to improve the overall effectiveness of the radiological controls program. The performance enhancement efforts included internal improvement efforts and a contractor assessment of program performance. The contractor assessment was completed in September 1991.

3.2 Resolution of Contractor Performance Enhancement Recommendations

The inspector met with cognizant licensee personnel and discussed the enhancement efforts.

- A contractor performed a comprehensive evaluation of the on-site radiation protection program from August 1991 through September 1991. The program assessment report was issued in November 1991. The inspector reviewed the results of the contractor assessment and discussed the current status of the recommendations for performance enhancement contained in the contractor assessment. The following observations were made:
 - The assessment contained about 200 recommendations for improvement. Of the 200, the licensee determined that 74 of the recommendations were related to areas in need of major programmatic improvement. Of the 74 items, 44 were indicated as completed with the remaining items to be tracked by the licensee's Results Improvement Program (RIP). The RIP is a program to track and provide for monitoring of all issues important to station performance. Long-term contractors have been hired to augment the staff to resolve the assessment recommendations. Four individuals were working to upgrade program procedures. In addition, the licensee was developing an administrative procedure for use in closing out assessment findings. The licensee indicated that all items associated with areas in need of major programmatic improvement would be completed by September 15, 1992, and that the remaining items would be completed by December 15, 1992.
 - Numerous short-term actions had been taken to immediately address areas identified in the assessment report which could benefit from prompt improvement actions (reference NRC Inspection Report No. 50-333/91-27, dated December 19, 1991).

The inspector's review of the results of these prompt actions indicated they were beneficial in improving performance (e.g., relieving the ALARA coordinator of respiratory protection responsibilities in order to allow this individual to focus on the ALARA Program.)

- All performance enhancement action items are being tracked (with due dates) by computer and the inspector noted that monthly status briefings on the progress of the radiological controls enhancement program were provided to the Resident Manager and the Executive Vice-President, Nuclear Generation and that any schedule changes for the enhancement program require concurrence of these two individuals.

Based on the above review, the inspector concluded that overall there was a good level of management attention to the improvement of the Radiological Controls Program and efforts were underway to track and provide for periodic review of program enhancement recommendations.

3.3 Management Oversight

The inspector reviewed selected aspects of radiological controls program oversight. The following observations were made:

- The licensee was establishing and staffing a corporate radiological controls oversight group. The group will perform assessments of the radiological controls program at the licensee's James A. FitzPatrick and Indian Point Unit 3 facilities. At the time of this inspection, procedures for performing the assessments were not yet established. Personnel staffing the group were also apparently to undergo self-assessment training. The establishment of the group was considered a good initiative.
- A follow-up assessment of the station's radiological controls program will be conducted by the original contracted assessment group in October 1992. The purpose of this second assessment is to determine the status of the original findings. This was considered a good licensee initiative.
- The licensee established the following task forces to review and make recommendations for performance improvement:
 - ALARA Working Group
 - Radiation Protection Working Group

The following matters were brought to the licensee's attention:

- The inspector's review of the Radiological Incident Report (RIR) Program indicated continuing weaknesses associated with the review and resolution of concerns identified by this important program for self-identification and corrective action of radiological concerns.

For example, the following matters were identified:

- There were four examples of inadequate control of access to High Radiation Areas, principally associated with weaknesses in control of keys, identified this year as of the date of this inspection. Although only one event (February 1992) involved access to an area greater than 1,000 millirem/hour (mr/hr), the occurrence of the subsequent events, which involved control of access to areas greater than 100 mr/hr, indicated weak corrective actions, in that keys to these areas were not controlled consistent with program expectations. The licensee has developed a plan to address this matter.
- The assessment performed by an individual of the loss of control of a High Radiation Area key on May 21, 1992, and included in an RIR closure documentation package, indicated that no previous similar events had occurred. In fact previous similar events had occurred on February 29, 1992, and April 27, 1992.
- The RIR process was controlled by an internal radiological controls department procedure. The internal departmental procedure did not provide effective controls over RIRs submitted to other departments for review and resolution. For example, one RIR issued on April 27, 1992, was sent, shortly thereafter, to another department for corrective actions. The RIR was lost and, as of August 20, radiological controls department management was unaware that it was lost. They were aware, however that it was not complete. It was noted, however, that the RIR procedure specifies that corrective action plans from other departments be submitted within 10 working days, also indicating weaknesses in program implementation. The inspector did note that an effort was underway to incorporate RIRs into the station Deviation Event Report program which would provide for improved tracking and oversight of RIRs. The program would not replace the RIR program, but provide for tracking of findings.

- The licensee's radiological controls department had in place a procedure for performing self-assessments. The procedure, Standing Order No. 8, Radiological Oversight, states that Health Physics General Supervisors are to perform tours on a regular basis and document the results of their tours. The inspector's review indicated that as of August 20, 1992, only 3 tours had been performed and documented as outlined in the standing order. This indicated weak implementation of the internal departmental self-assessment process. The inspector did note, however, that Plant Standing Order No. 58 provided for tours of the station by all managers and that, on the average, about two tours were being performed and documented per week.

It was not apparent, however, that the scope and depth of reviews performed under Standing Order No. 58 would be an acceptable substitute for those performed under Department Standing Order No. 8, which are to be performed by experienced radiological controls personnel. The implementation of the licensee's RIR program will be reviewed during a future inspection (50-333/92-16-01).

4.0 Organization and Staffing

The inspector reviewed the organization and staffing of the on-site Radiation Protection Group. The review principally focused on changes in the organization since the previous inspection of this area (reference NRC Inspection Report No. 50-333/92-07, dated April 17, 1992) and criteria contained in the following:

- Technical Specification 6.2, Organization;
- Regulatory Guide 8.8, Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable.

The evaluation of the licensee's performance in this area was based on discussions with cognizant personnel, review of on-going work and review of documentation.

Observations of on-going work activities indicated generally good oversight of activities by radiological controls technicians and adequate staffing to support work activities. No violations were identified. There were no significant organizational or staffing changes since the previous NRC inspection.

5.0 ALARA

5.1 General

The inspector reviewed selected aspects of the licensee's ALARA Program. The following matters were discussed:

- special training, including use of mock-ups
- radiation protection personnel review of work packages and dose reduction methods
- exposure goals development and monitoring
- availability of portable ventilation systems to minimize use of respiratory protective equipment
- use of lessons learned from post-job evaluations of completed work activities, particularly those that contributed the majority of total aggregate exposure during previous outages.

The evaluation of licensee's performance in this area was based on review of documentation and discussions with cognizant personnel with respect to criteria contained in the following:

- 10 CFR 20.1, Purpose;
- Regulatory Guide 8.8, Information Relevant to Ensuring that Occupational Radiation Exposure at Nuclear Power Stations Will Be As Low As Is Reasonably Achievable;
- Regulatory Guide 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable;
- NUREG/CR-3254, Licensee Programs for Maintaining Occupational Exposure to Radiation As Low As Is Reasonably Achievable;
- NUREG/CR-4254, Occupational Dose Reduction and ALARA at Nuclear Power Stations; Study on High Dose Jobs, Radwaste Handling and ALARA Incentives.

The following positive observations were made:

- Ten senior ALARA personnel were brought in during the outage to assist in planning for the 1992 outage. The personnel acted in the capacity of ALARA planners.
- The licensee performed a chemical decontamination of primary piping in the drywell during the current refueling outage, including recirculation loops, reactor water clean-up and residual heat removal system piping. The efforts resulted in an average dose rate reduction of about 30% and maximum contact dose reduction factor on piping of about 13. The decontamination was expected to save about 347 person-rem.

A savings of about 295 person-rem was realized as of the date of this inspection. A similar decontamination had been performed in 1988. The licensee was evaluating the need to decontaminate the fuel pool cooling system. This evaluation is expected to be completed and a decision made regarding decontamination prior to the next refueling outage.

- The reactor cavity was repainted in order to reduce personnel exposure during decontamination efforts and enhance decontamination of the reactor cavity following drain down.
- Hot spots were being tracked and significant hot spots were being decontaminated.
- An ALARA suggestion program was initiated in late 1991 to solicit ALARA suggestions. For 1992, there were a total of 220 suggestions submitted. Licensee ALARA personnel responded to each suggestion with a memorandum and also provided an award for suggestions that were adopted.
- Upon plant restart, the licensee plans to inject depleted zinc into the primary system. The zinc will be depleted in zinc 64 which, according to the licensee, will result in reduced radiation dose rates due to the lower production rate of zinc 65 from neutron activation of zinc 64. Natural zinc is about 48% zinc 64 while depleted zinc is about 4% zinc 64.
- The licensee initiated review of repetitive tasks in order to identify cost effective means to potentially reduce accumulated personnel exposure over the life of the facility. These were being reviewed by the ALARA working group.
- The licensee developed and implemented an integrated training program for radiation workers. The program lasted about 3 and 1/2 days. About 250 licensee personnel have attended the program which provided for planning and performance of a "radiological work activity" on a mock-up. The entire activity was video taped for later critique. Simulated radioactive contamination was used as were radiation survey meters that were controlled by instructors to provide simulated radiation fields. This program, started in February 1992, was considered a very good initiative to improve work performance in radiological controlled areas. This program should benefit ALARA planning and in-field radiological worker practices in the future.

The following observations were discussed with the licensee:

- The inspector's tours of the drywell identified significant amounts of graffiti on walls, some of it in elevated radiation levels. The inspector indicated that the drawing of graffiti in elevated radiation fields could contribute to unnecessary personnel exposure.
- There appeared to be a need for enhanced efforts to establish a cobalt reduction program.
- The inspector reviewed ALARA Summary Reviews for the month of July 1992, for those jobs which indicated greater than 125% of the exposure estimate. The review, and discussions with ALARA staff personnel, indicated that 28% of the identified activities with total exposure in excess of estimated values appeared to involve weaknesses in the engineering program. For example, one job indicated 42 engineering change notices had been initiated. Another job indicated that a wrong valve was installed. These observations and discussions with ALARA staff personnel indicated there was a potential for increased total aggregate exposure for a work activity which may be attributable to weaknesses in original job planning and engineering review.

The licensee indicated that above matters would be reviewed.

- The inspector noted that the average aggregate radiation exposure for the station has been decreasing over the past 5 years consistent with industry performance. However, although this decline has followed industry performance, the licensee's average aggregate exposure (considering a sliding 3 year average (e.g., 1991, 1990, and 1989; 1990, 1989, and 1988; 1989, 1988, and 1987)) for each of the past 5 years has, based on licensee data provided to the inspector, averaged about 200 person-rem greater than industry averages (also based on a sliding 3 year average) for each of the years. The cause of the apparent excess was not immediately apparent to the inspector. However, the data appeared to indicate a need for enhanced ALARA efforts which the licensee was pursuing, as discussed above. This matter will be reviewed during future inspections.

5.2 ALARA Suggestions Program

The inspector also reviewed the effectiveness of the ALARA suggestion program and feed back to personnel who provided exposure reduction suggestions to the ALARA group. The inspector reviewed the licensee's actions on suggestions provided by one individual on or about March 30, 1992, April 2, 1992, and April 4, 1992.

The suggestions submitted covered the following areas:

- reduction of the radiation exposure of radiation protection technicians who control access to the drywell
- decontamination of plant systems and improvement in housekeeping to reduce exposure
- revision of the radiation work permit (RWP) program to reduce paperwork and relocation of the RWP sign-in area
- use of improved air sampling techniques to reduce exposure to radiation protection personnel performing air sampling
- general decontamination (dust in drywell) and housekeeping

The inspector discussed these issues with cognizant licensee personnel to determine what actions were taken to address them.

Regarding exposure reduction for personnel at the drywell radiation protection control point, the licensee had, prior to placement of the control point in that location, evaluated the acceptability of placing the control point there relative to other locations. Considered in this evaluation were such matters as industrial safety concerns, access control, and the potential for equipment damage. The licensee concluded that the location was appropriate. The licensee subsequently shielded radiation sources (e.g., fuel pool cross connect to residual heat removal system) in the area and, additionally, placed a shadow shield at the drywell on March 30, 1992, to reduce exposure to personnel at that location. The licensee also subsequently performed a survey of general area radiation dose rates at the dry well access control point using thermoluminescent dosimeters to evaluate average radiation levels in the area and concluded that levels were about 1 mr/hr. Considering the need to effectively control access to the drywell, a decision was made to allow the control point to remain in the area.

The inspector questioned licensee personnel about further dose rate reduction efforts at the location and concluded that the licensee was reviewing and planning to decontaminate some currently shielded piping (fuel pool cross connect to the residual heat removal system) and that because of the general nature of the radiation fields it would be ineffective to attempt further dose reduction efforts (e.g., construction of a shielded control booth for the technicians to work in) at that location outside of the decontamination of the shielded piping.

The inspector noted that the shielded piping had been scheduled for decontamination during the current outage but because of schedular constraints, and the need to maintain a cooling system, a decision was made not to decontaminate the lines during this refueling outage. Based on the above review, it appeared that the licensee was sensitive to the ALARA concern raised and attempted to be responsive to the concern raised.

Regarding system decontamination, the inspector concluded that the licensee had previously decontaminated the applicable major drywell primary systems and had performed a chemical decontamination of primary systems during the current outage which has saved about 300 person-rem. The inspector concluded that the licensee was taking action to reduce radiation fields. The inspector also noted that the licensee was establishing a hot spot tracking program to provide for identification, tracking, and decontamination, as appropriate, of hot spots.

Regarding revision of the radiation work permit process, the inspector concluded that weaknesses in the radiation permit system had been identified during the contractor assessment performed in late 1991 and that a procedure upgrade group was working to improve procedures. The individual's comments for improvement of the radiation work permit were transmitted to the working group. The inspector concluded that the licensee appeared to be responsive to this concern.

Regarding use of improved air sampling methods, the inspector's discussion determined that the licensee subsequently calibrated air samplers for use with long sampling lines to improve accessibility and reduce technicians' need to be in close proximity to the work location thereby reducing personnel exposure. The licensee also purchased, and was testing for use, lapel air samplers which were to be worn by workers thereby eliminating the need for technicians to sustain exposure when collecting air samples. It appeared that the licensee was responsive to this concern.

Regarding general decontamination and house keeping, the inspector's review noted that during outages about 16 % of the station's radiological controlled area (RCA) was contaminated and that during non-outage periods, about 10 % of the RCA was indicated as contaminated. The inspector's review noted contamination levels in the drywell, on the average, appeared to be low, but isolated high contamination zones were present. The licensee hired a decontamination coordinator in February 1992 (three months prior to the ALARA suggestion submittal) to coordinate station decontamination efforts. The licensee has a goal to reduce station RCA contamination to at least 5 % for 1994. The licensee plans to completely vacuum clean the drywell after completion of insulation work this outage to clean-up dust. The inspector further noted that NRC inspections conducted September and October of 1991 (reference NRC Diagnostic Team Report dated, December 3, 1991) and April of 1992 (reference NRC Inspection Report No. 50-333/92-80) identified a number of weaknesses in the area of housekeeping and radiation protection that were similar to the individual's concerns outlined in the ALARA suggestion.

As a result of concerns identified by the NRC, including housekeeping (fire protection issues), a stop work order was issued by the licensee on March 18, 1992, for all outage activities to address the concerns identified. As of the date of this inspection, licensee corrective actions were on-going. Consequently, the inspector concluded that efforts were underway to address concerns identified by in the ALARA suggestion but the on-going efforts were underway when the suggestion was submitted.

Based on the above review, the inspector concluded that the licensee was acting to address concerns raised in ALARA suggestions. However, the inspector did note that, at the time of this inspection, there was no approved procedure for ALARA suggestions and that, although the licensee's ALARA staff was responding by memorandum to the individuals who made ALARA suggestions, the responses, at times, gave little indication that the concerns were being acted on. For example some responses said that the suggestion was a duplicate or was not an original suggestion and provided no information (feed back) as to whether the concern was being acted on in any manner. The inspector noted that a draft procedure had been established and was under review. The licensee indicated that this matter would be reviewed.

6.0 External and Internal Exposure Controls

The inspector toured the radiologically controlled areas of the plant and independently reviewed the following elements of the licensee's external and internal exposure control program:

- posting, barricading and access control, as appropriate, to Radiation, High Radiation, and Airborne Radioactivity Areas;
- High Radiation Area access point key control;
- personnel adherence to radiation protection procedures, radiation work permits, and good radiological control practices;
- use of personnel contamination control devices;
- use of dosimetry devices;
- use of respiratory protection equipment;
- adequacy of airborne radioactivity sampling and analysis to plan for and support ongoing work;
- timeliness of analysis of airborne radioactivity samples including supervisory review of sample results;
- installation, use and periodic operability verification of engineering controls to minimize airborne radioactivity;
- records and reports of personnel exposure;
- adequacy of radiological surveys to support pre-planning and on-going work; and
- radioactive material and contamination controls including hot particle controls.

The review included the criteria contained in applicable licensee procedures and 10 CFR 20, Standards for Protection Against Radiation.

The inspector's review indicated generally good radiological controls were implemented for the work activities reviewed. Planning and preparation for work activities appeared to be good. There appeared to be good radiation protection oversight of these activities. There were no intakes by personnel of airborne radioactive material in excess of 40 mrem for 1991 or as of the date of this inspection.

The following observations were made:

- During tours of the reactor building on August 18, 1992, the inspector observed a HEPA ventilation system in service on the 300 foot elevation of reactor building. The system was taking suction on a header in the drywell. The header provided multiple suction lines to ventilate local work activities and reduce potential airborne radioactivity.

The inspector's review of the testing of the unit indicated the following:

- A daily check sheet being used by a junior technician to log visual daily check results indicated that the technician recorded results for a charcoal filter when none was in place in the unit. In addition, no results were entered for a roughing filter which was installed.
- The generic daily check sheet did not contain acceptance criteria for charcoal, HEPA or roughing filters.
- The actual procedure controlling the use of the devices and daily checks had no clear requirements for verifying proper operation of the units. All criteria were recommendations.

The licensee immediately initiated actions to ensure the HEPA system was operating properly, verify that no other systems exhibited similar concerns, and revised and clarified the procedure for periodic checking of HEPA system's operation. The system in question was found to meet manufacture's recommendations. A procedure revision was initiated on August 21, 1992.

7.0 Plant Tour Observations

During tours of the drywell on August 19, 1992, the inspector noted that a section of grating was missing from a catwalk on the upper elevation of the drywell. The licensee informed the inspector that the grating was immediately replaced.

8.0 Exit Meeting

The inspector met with licensee representatives denoted in section 1 of this report on August 21, 1992. The inspector summarized the purpose, scope, and findings of the inspection.