

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report Nos. 50-220/94-04  
50-410/94-04

Docket Nos. 50-220  
50-410


License Nos. DPR-63  
NPF-54

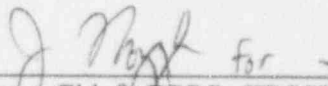
Licensee: Niagara Mohawk Power Corporation  
300 Erie Boulevard West  
Syracuse, New York 13202

Facility Name: Nine Mile Point Units 1 and 2

Inspection At: Lycoming, New York

Inspection Conducted: January 31 - February 4, 1994

Inspector:   
\_\_\_\_\_  
J. Furia, Senior Radiation Specialist,  
Facilities Radiation Protection Section (FRPS),  
Facilities Radiological Safety and Safeguards  
Branch (FRSSB), Division of Radiation Safety  
and Safeguards (DRSS) 2/7/94  
date

Approved by:   
\_\_\_\_\_  
R. Bores, Chief, FRPS, FRSSB, DRSS 2/8/94  
date

Areas Inspected: Licensee's program to maintain occupational radiation exposures of workers as low as reasonably achievable (ALARA), the radiation protection organization and staffing, radiation protection activities during normal operations, and assurance of quality in the area of radiation protection.

Results: ALARA performance at Unit 2 during 1993 demonstrated significant improvement, while good performance was maintained at Unit 1. Significant improvement in radiological housekeeping, especially in the reduction of contaminated spaces at Unit 1, was noted. Post-outage clean-up at Unit 2, however, appears to need additional attention. The radiation

protection programs at Units 1 and 2 were considered effective. Licensee efforts in the area of assurance of quality of radiation protection activities was of high quality.

## DETAILS

### 1. Personnel Contacted

#### 1.1 Licensee Personnel

- \* R. Abbott, Plant Manager, Unit 1
- \* D. Barcomb, Radiation Protection Manager, Unit 2
- \* R. Cole, General Supervisor - Radwaste, Unit 2
- W. Connolly, Quality Verification and Safety Assessment Supervisor
- P. Dunn, Radiation Protection Supervisor, Unit 2
- T. Hogan, Supervisor - ALARA and Radiological Engineering, Unit 1
- \* D. Jenks, Supervisor - Radwaste Operations, Unit 1
- \* R. Magnant, Licensing
- \* C. Merritt, Supervisor - Radwaste Operations, Unit 2
- \* J. Mueller, Plant Manager, Unit 2
- \* N. Rademacher, Operations Manager, Unit 1
- \* K. Rowe, ALARA Supervisor, Unit 2
- \* V. Schuman, Radiation Protection Supervisor, Unit 1
- \* P. Smalley, Radiation Protection Manager, Unit 1
- \* S. Taylor, Radiation Protection Supervisor, Unit 2

#### 1.2 NRC Personnel

- W. Mattingly, Resident Inspector
- \* B. Norris, Senior Resident Inspector
- R. Plasse, Resident Inspector

\* Denotes those present at the exit interview on February 4, 1994.

### 2. Organization and Staffing

Since the last inspection in this area, the licensee has conducted an evaluation of its plant organization and staffing levels, resulting in some significant changes in the organizations for the management of radiation safety and radwaste processing at both units. These changes are scheduled to be implemented in early 1994.

At Unit 1, The Radiation Protection Manager (RPM) will have four supervisors reporting directly to him. Two supervisors will be responsible for radiation protection operations, one will be responsible for equipment and calibrations, and the fourth for ALARA and radiological engineering. The internal dosimetry program is to be transferred to Unit 2, while the respiratory protection program will be unitized. Plans developed in 1993 to transfer the radwaste operations function to the RPM have been dropped. In addition, the RPM will be transferring all responsibilities for all radioactive materials shipments to the Radwaste Operations staff, including the

preparation of all shipment documentation. The RPM will be responsible for providing technicians to conduct radiological surveys in support of these aforementioned activities. The Radwaste Operations staffing levels are planned to be cut in half, resulting in Unit 1 having six radwaste operators. Given the extensive responsibilities that these operators already have, this level of staffing may not be adequate to perform these tasks. The responsibilities include: plant water inventory control; ultrasonic resin cleaning and resin transfers; equipment and fire markups; emergency functions/communications aid; plant equipment operation; outage support work; cross training on plant systems; laundry and radioactive materials shipping and receipt; and, radwaste processing and shipping.

At Unit 2, seven supervisors, three for radiation protection operations, and one each for ALARA/radiological engineering, calibrations, dosimetry/rad records, and radwaste operations will report directly to the RPM. The dosimetry program will include both the external program and radiological records responsibilities previously under Unit 2, together with the internal dosimetry program, previously under the direction of Unit 1. In addition, the plant decontamination function, previously under the direction of the Maintenance Manager will be transferred to the RPM, to be placed under the direction of the General Supervisor for radwaste operations.

The inspector's review indicated that the above discussed changes did not adversely impact the radiation protection organization. However, it was not apparent that the Radwaste Operations organization at Unit 1 had sufficient staff resources to continue to implement an effective program and take on the additional shipping responsibilities. At the exit meeting on February 4, 1994, the Operations Manager indicated that additional plant operations personnel would be made available to support these Radwaste Operations functions. This item will be reviewed during future inspections of this area.

### 3. Radiation Protection

During 1993, both units undertook refueling outages, Unit 1 in the late winter and early spring, and Unit 2 in the fall. As part of this inspection, ALARA performance at both units, together with a review of other performance indicators, was undertaken.

#### 3.1 Unit 1 Radiation Protection Program

For 1993, Unit 1 had established an ALARA exposure goal of not more than 410.5 person-rem, including an outage goal of not more than 305 person-rem. The success of the outage ALARA performance was discussed in previous inspection reports (50-220/93-04; 50-220/93-17). For all of 1993, total Unit 1 exposure was 398.398 person-rem, continuing a significant downward trend in Unit 1 occupational exposure. All major departments finished 1993 with less than their exposure goal. Significant to meeting their goal was the short refueling outage (less than 55 days), and the success of keeping the unit on line for a significant portion of 1993.

For 1994, a challenging goal of not more than 75 person-rem has been established. The goal does not include any outages, and no refueling outage is scheduled for this year. Discussions with the Operations Manager indicated that a short (approximately one week) forced outage was now anticipated, possibly in mid-April. The ALARA Supervisor indicated that should such an outage be necessary, work packages, including radiation work permits (RWPs) and ALARA reviews were staged and ready, and that such an outage would add less than 10 person-rem to the stations's total exposure.

During this inspection, the licensee was undertaking a spent fuel pool (SFP) clean-up project that included the cutting of irradiated components underwater, and their loading into liners in preparation for transport. This project was contracted out to Waste Chem, Inc., which in turn would be utilizing the TransNuclear Inc. TN-RAM shipping packaging. As part of this inspection, a review of work in progress was conducted. Access to the refueling floor (Reactor Building elevation 340') was controlled under RWP 930519, and its associated ALARA Review 93-328. During direct observations of the work, control rod blades were placed in an underwater shearing/cutting machine, and the processed components transferred to a TN-RAM liner located in the cask pit of the SFP. Three radiation protection technicians were on the refuel floor during these evolutions, and all workers were observed to be very sensitive to the potential for changing radiological conditions. Discussions with the ALARA Supervisor indicated that, to date, total exposure for this job was below the goals established.

In addition to the refuel floor work, the inspector conducted plant walkdowns in the reactor, turbine and radwaste facilities. Of particular note was the licensee's success in decontaminating the general area walkways in the Old and New Radwaste Buildings. Plant radwaste operators could now conduct most of their activities without the need to wear protective clothing, thus reducing the amount of laundry and radwaste generated at the facility.

### 3.2 Unit 2 Radiation Protection Program

Unit 2 conducted its third refueling outage during the fall of 1993. Continued significant improvement in ALARA performance was noted. The licensee established a challenging goal of 285 person-rem for the outage, which was met with a total exposure of 282 person-rem. In addition, other performance indicators including outage length, radwaste volume generated and personnel contaminations were also met during the outage. Significant person-rem savings were realized through improved advance outage planning, temporary shielding of high dose rate areas, flushing of hot spots and the utilization of an underwater lifting system for the reactor disassembly/reassembly path.

At the conclusion of the outage, a post outage radiation protection report was

generated that identifies not only the outage ALARA successes, but also those outage jobs that were not as successful, and offers suggestions for improvement during future outages. Various outage ALARA goals, and actual results are listed below:

<u>JOB</u>	<u>Goal (Rem)</u>	<u>ACTUAL (REM)</u>
ISI/Erosion & Corrosion	44.0	49.0
Reactor Disassembly/Reassembly	24.0	26.6
CRD Exchange/Rebuild/HCU Work	23.5	23.0
Snubber Reduction	20.0	17.1
SRV Exchange	7.5	6.7
Flex Hose Removal/Replacement	6.0	1.8
IRM/SRM Detector Work	5.0	3.8

Several of the jobs that did not reach the expected level of success occurred on the refuel floor or in the refueling cavity. Significant among these were the decontamination of the refueling cavity, and the work on the refueling bridge, both of which can be traced to problems with plant systems during the outage. In the case of the cavity decon, due to maintenance activities on the auxiliary boiler and the hot water heating system, the use of strippable coatings for cavity decon had to be prohibited. The use of these coatings at the end of the second refueling outage had proven to be highly successful, and their use at the end of the third refueling outage was anticipated to have equal success. With the hot water heating system inoperable, the Reactor Building ventilation system was unavailable, and the Standby Gas Treatment System (SGTS) became the only available ventilation system. Concerns with the potential effects the painting on of the strippable coating would have on the SGTS charcoal beds prevented the use of the coatings.

Significantly higher than anticipated dose rates at the refuel bridge were the result of the inoperability of both the Reactor Water Clean-Up System (RWCU) and Spent Fuel Pool Clean-Up Systems at the same time. With both systems inoperable, zinc-65 levels (the result of the use of zinc injection chemistry at the plant) increased significantly, causing dose rates on the bridge to increase by a factor of 2.5. This problem was further compounded when the refueling mast was bent during refueling operations, and a large number of plant personnel, especially supervisory personnel, began conducting direct observations on the refueling bridge.

The ALARA goal for I&C Maintenance was significantly exceeded during the outage

(actual: 17.347 person-rem; goal: 12.000 person-rem), in part, due to a procedure that required the individual testing of In-Core Instrument connectors, which required I&C personnel to wait undervessel for extended periods of time. A change to this procedure was a major agenda item during the first post-outage ALARA Committee meeting.

As part of this inspection, the inspector toured various plant facilities. In general, all radiological postings were found to be appropriate, and plant radiological housekeeping was effective. At the time of this inspection, a steam leak resulted in a large section on the Reactor Building 175' and 215' elevations to be posted as contaminated or highly contaminated areas. Radiation protection response to this changing plant condition was effective.

One area for enhancement identified was the large area of the refuel floor (Reactor Building elevation 353') that was still posted as a contaminated area due to the presence of large quantities of outage equipment awaiting decontamination. A similar situation was noted following the first refueling outage in early 1991, and it appeared the licensee had successfully addressed the issue following the second refueling outage in 1992. At the exit meeting for this inspection, the licensee provided the inspector with a copy of its "Action Plan for Refuel Floor Cleanup". The plan indicated a goal of February 15, 1994, for the removal of all identified equipment from the refuel floor, and February 22, 1994, for the completion of area decontaminations for all open areas of the refuel floor. The inspector will review the progress of this activity during the next inspection in this area.

#### 4. Assurance of Quality

As part of this inspection, a review of all audits, surveillances and surveys conducted by the licensee in the radiation protection and radwaste areas since October 1, 1993, was conducted. The inspector's review indicated that, in general, the licensee continued to maintain a very successful assurance of quality program in the radiation protection and radwaste program areas. During this period, the Unit 2 third refueling outage was taking place. Audit report 93024, "Radiation Protection, Radwaste and Radiological Environmental Monitoring Program (REMP)", dated January 10, 1994, documented the findings of the licensee's most recent audit of these program areas. The audit was conducted during the period December 6-10, 1993, which immediately followed the Unit 2 refueling outage. The audit was conducted by a team of 5 licensee auditors and a technical specialist from another commercial utility. No safety significant deficiencies or findings were identified in this report.

In addition to the audit, two surveillances, documented as Quality Surveillance Reports (QSRs), and four surveys, documented as Quality Verification and Safety Assessment (QVSA) reports, were conducted at Unit 1. Three surveillances and 44 surveys were conducted during the same period at Unit 2, with the disparity in

number of surveys caused by the outage at Unit 2. No deficiencies of any safety significance were identified in these surveillances and surveys.

5. Exit Interview

The inspector met with the licensee representatives denoted in Section 1 at the conclusion of the inspection on February 4, 1994. The inspector summarized the purpose, scope and findings of the inspection. The licensee concurred in the findings of the inspection.