

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report Nos. 87-02  
87-04

Docket Nos. 50-220  
50-410

License Nos. DPR-63/CPFR-112 Priority - Category C

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

Facility Name: Nine Mile Point 1 and 2

Inspection At: Oswego, New York

Inspection Conducted: January 12-16, 1987

Inspectors: *Damp LeQuia* 2-13-87  
D. LeQuia, Radiation Specialist date

Approved by: *M. Shanbaky* 2/17/87  
M. Shanbaky, Chief, date  
Facilities Radiation Protection Section

Inspection Summary: Inspection on January 12-16, 1987 (Report Nos. 50-220/87-02 and 50-410/87-04)

Areas Inspected: A routine, unannounced safety inspection by one region-based inspector was performed of the licensee's Radiation Protection Program. Areas examined included: status of previously identified items; access to radiologically controlled areas; control of radioactive material, monitoring and surveys; and ALARA.

Results: No violations or deviations were identified. However, several weaknesses in the ALARA area, relative to exposure goal setting and management emphasis on ALARA were identified. In addition, weaknesses in portal monitor control and calibration were identified.

## DETAILS

1.0 During the course of this inspection the following personnel were contacted or interviewed:

### 1.1 Licensee Personnel

- \*T. Roman, Station Superintendent NMP-1
- \*C. Stuart, Superintendent Chemistry - Radiation Protection
- \*E. Leach, Radiation Protection Manager
- J. Aldrich, Operations Superintendent
- F. Hawksley, In-Service Inspection Superintendent-Nuclear
- B. Murtha, Station Shift Supervisor
- \*P. Volza, Supervisor Radiation Support
- \*R. Gerbig, Unit 1 Radiation Protection Supervisor
- L. Ludwig, Unit 1 Supervisor In-Service Inspection
- \*T. Kurtz, Instrument and Support Supervisor - Radiation Protection
- T. Irbing, ALARA Coordinator
- \*D. Long, ALARA Specialist - Unit 1
- \*T. Egan, NC & V Engineer
- \*G. Steiner, Radiation Protection Chief Technician

### 1.2 NRC Personnel

- \*W. Cook, Senior Resident Inspector
- \*C. Marschall, Resident Inspector
- \*W. Schmidt, Resident Inspector

\*Denotes attendance at the Exit Meeting held on January 16, 1987.

Other licensee or contractor personnel were contacted or interviewed during the inspection.

## 2.0 Purpose

The purpose of this routine, unannounced safety inspection was to review implementation of the licensee's Radiation Protection Program in the following areas:

- o Status of Previously Identified Items
- o Access to Radiologically Controlled Areas
- o Control of Radioactive Material, Monitoring and Surveys
- o ALARA

### 3.0 Status of Previously Identified Items

- 3.1 (Closed) Inspector Follow Item (50-220/85-25-03): Licensee to set an alarm point for the Emergency Condenser Exhaust Vent Monitor. Inspector review of Internal Correspondence File Code 16199, dated January 13, 1986, and review of the offsite Dose Calculation Manual, Rev. 3, verified that the licensee has investigated the relationship between the alarm setpoint and the NMP-1 Radiological Environmental Technical Specifications. Based upon their investigation the licensee established a conservative alarm setpoint of 5 mR/hr for the Emergency Condenser Exhaust Vent Monitor. This item is closed.
- 3.2 (Closed) Inspector Follow Item (50-220/85-25-04): Licensee to establish procedure(s) for quantifying releases from the Emergency Condenser Vent. Inspector review of Chemistry Surveillance Procedure No. N1-CSP-19W, "Emergency Condenser Shell Sampling, Analysis and ECV Offsite Dose Calculation," Rev. 2, dated June 16, 1986, verified that the licensee has established procedural methodology for quantifying releases from the Emergency Condenser Vent. This item is closed.
- 3.3 (Closed) Inspector Follow Item (50-220/85-25-05): Licensee to complete calibration of the Emergency Vent Monitor. Inspector review of Emergency Condenser Vent Monitor Calibration Sheets verified that these monitors were calibrated to  $\pm 15\%$  of reference values on June 6, 1986. A calibration frequency of each refueling cycle (approximately 18 months) has been established for these monitors.
- 3.4 (Closed) Inspector Follow Item (50-220/85-25-06): Licensee to establish a mechanism to ensure personnel are informed concerning procedure changes. Inspector review of Administrative Procedure-2 and Office Instruction Procedure OI-7, for the Nine Mile Point Nuclear Station, identified that the licensee now requires that procedure changes be placed in the Master Copy Location and in the procedure Working Copy Location. This makes changes to procedures readily available to personnel to inform them of applicable changes. Based on inspector review of this item, this item is closed.

### 4.0 Access to Radiologically Controlled Areas

The licensee's methodology for control and access to radiological areas, with particular emphasis on Operator accessibility, was evaluated against criteria contained in the following:

- ° 10 CFR 20.203 "Caution signs, labels, signals and controls;"

- ° Technical Specification 6.12 "High Radiation Area;"
- ° Licensee Procedures:
  - S-RP-5, "Radiation and Radioactive Contamination Control;"
  - S-RP-2, "Radiation Work Permit Procedure;"
  - S-RP-1, "Access and Radiological Control."

Licensee performance relative to these criteria was evaluated by:

- ° Tours of the Unit 1 and 2 Reactor and Turbine Buildings accompanied by Operations and Radiation Protection personnel;
- ° Independent tours of the Restricted Area;
- ° Discussions with Operations personnel;
- ° Review of radiation and contamination surveys;
- ° Review of High Radiation Area control policies;
- ° Discussion with cognizant Radiation Protection personnel.

Within the scope of this inspection, no violations or deviations were identified. The licensee has established strict controls for access to radiological areas of the plant.

Concerning personnel access to contaminated areas:

The licensee's current practice is to post contaminated areas (CA) when contamination reaches 400 dpm per 100 cm<sup>2</sup>. Furthermore, many other areas are posted as a CA based upon their potential for becoming contaminated. The inspector observed during tours of the facility, that these practices have resulted in more contaminated areas than usual for a facility of this type and vintage. The inspector discussed this situation with Operations personnel and Radiation Protection Technicians to determine if protective clothing requirements or other radiological restrictions posed accessibility problems to these areas. They indicated that some inconvenience was experienced, since many of these areas had been "clean" in the past. Inspector review of radiological surveys, for the areas in question, revealed that many posted CAs had only low levels of contamination for extended periods of time. The inspector discussed this concern with licensee management, who indicated that they were aware of this situation, but due to budgetary constraints had not submitted requests for the minor modifications necessary to control and prevent recontamination of these areas following decontamination. Based upon obser-

vation and discussions on this topic, the inspector determined that while the licensee's efforts to minimize contaminated areas were not overly aggressive, they did not appear to significantly hamper personnel accessibility.

#### 5.0 Control of Radioactive Material, Monitoring and Survey

The licensee's program for the control, monitoring and survey of radiological materials was evaluated against criteria contained in the following:

- 10 CFR 20.401, "Records of surveys, radiation monitoring, and disposal;"
- 20 CFR 20.203, "Caution signs, labels, signals and controls;"
- Licensee Procedures:
  - S-RTP-58, "Calibration and Operation of the IRT Portal Monitors, Model PRM-110;"
  - S-RP-2, "Radiation Work Permit Procedure;"
  - S-RP-3, "Performance of Radiological Surveys;"
  - S-RP-5, "Radiation and Radioactive Contamination Control."

Licensee performance relative to these criteria was evaluated by:

- Tours of NMP-1 and NMP-2
- Inspection of radioactive material containers
- Observation of personnel frisking practices
- Observation of the portal monitor operability checks
- Review of portal monitor operability logbook
- Review of portal monitor calibration records
- Review of survey records
- Review of Radiation Work Permits
- Discussions with cognizant personnel
- Inspection of High Radiation Area gates

Inspector review of this area found most radioactive materials to be well controlled. All High Radiation Area gates checked by the inspector were found to be locked and properly posted. Radiation and contamination area boundaries were clearly delineated and posted in accordance with regulations. However, some weaknesses in licensee control of containers for radioactive material and portal monitor calibration and operability checks were observed.

Specific radioactive material control weaknesses included:

- ° Three (3) containers of radioactive material without labels indicating "Caution-Radioactive Material" were observed during a tour of NMP-1. Subsequent surveys of the containers identified that the contents were below 10 CFR 20, Appendix C limits. However, as a precautionary measure, the licensee labelled the containers.
- ° One bag of contaminated trash was left unsurveyed in a general walkway of the Turbine Building. The bag was immediately surveyed by the Radiation Protection (RP) technician accompanying the inspector.
- ° One portion of a High Radiation Area (HRA) barrier rope in the Reactor Building had fallen down. The area was still readily identified as a HRA by the remaining portions of the barrier and suitable postings. Upon notification, licensee personnel took action to correct this problem.

Specific portal monitor weaknesses included:

- ° Two (2) of the four (4) portal monitors stationed to monitor personnel access and egress from the protected area were found to be out of calibration. (These monitors provide backup personnel contamination monitoring to augment routine hand frisking techniques). Licensee personnel were aware of this situation, but stated that they could not calibrate the other two monitors because a required printed circuit board (delay amplifier) was broken.
- ° Daily operability checks are required to verify operation of the portal monitors. However, inspector observation and review of the operability check process identified the following problems.
  1. Operability checks on all four (4) monitors were not performed on November 6, 1986.
  2. The Technician performing the operability checks did not follow the requirements of Procedure S-RTP-58 "Calibration and Operation of the IRT Portal Monitors, Model PRM-110 "(i.e. Sensitivity not adjusted per procedure).

3. The Technician used the wrong check source. S-RTP-58 requires a 900 nCi, Cs-137 source. The source actually used was a 1.4 uCi mixed radionuclide.
4. A document "Interim Guidance for PRM-110M," dated March 1981, which was located in the front of the Operability Check Logbook, conflicted with the operability check requirements of procedure S-RTP-58 (Rev. 2, dated December 8, 1986).
5. The Instrument Support Supervisor had not signed the Operability Check Logbook as required to document his reviews. (This deficiency was corrected during the week of the inspection).
6. Questioning of the Technician performing the operability checks identified that on-the-job training had been given. However, it appears that this training was not effective.

Inspector review of Procedure S-RTP-58 found it to be technically weak and to contain several typographical errors. This indicates a weakness in the procedure review process.

The inspector discussed these weaknesses and procedure noncompliances with licensee management, who stated that the following actions will be taken: 1) revising procedure S-RTP-58 to enhance it technically and remove existing errors; and 2) improving procedure compliance. The inspector indicated that this area would be reinspected during a future inspection.

## 6.0 ALARA

The licensee's ALARA program was evaluated against criteria contained in the following:

- 10 CFR 20.1, "Purpose;"
- Regulatory Guide 8.8, "Information Relevant To Ensuring That Occupational Radiation Exposures At Nuclear Power Stations Will Be As Low As Is Reasonably Achievable" (ALARA);
- Regulatory Guide 8.10, "Operating Philosophy For Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable;"
- Licensee Procedures:
  - AP-3.2.1, "Administrative Procedure For Maintaining Occupational Exposure To Radiation And Radioactive Materials As Low As Reasonably Achievable;"
  - S-RP-7, "Incorporating ALARA Requirements Into Work Planning And Initiation;"

- S-RP-8, "Post Job ALARA Evaluation;"
- S-RTP-92, "Establishing and Evaluating Exposure Goals".

The licensee's performance relative to these criteria was evaluated by:

- Discussions with the ALARA Coordinator and ALARA support personnel;
- Attendance at a Unit-1 ALARA Committee meeting;
- Review of station exposure and goals for 1985;
- Review of 1986 yearly and outage manrem goals;
- Review of the "Annual ALARA Review Report," dated January 24, 1986;
- Review of the Site ALARA Committee "Meeting Notes," dated February 12, 1986;
- Review of ALARA "Meeting Notes," dated September 22, 1986;
- Review of "NMP-1 Outage ALARA Performance," report dated September 24, 1986;
- Review of the "Site ALARA Committee Meeting Notes," dated January 9, 1987.
- Review of the "1987 Exposure Goal" memo dated January 12, 1987.
- Discussions with Operations personnel;
- Review of applicable procedures;
- Discussions with In-Service Inspection Supervisory personnel.

Inspector review of this area found all essential elements of an ALARA program to be in place. Pre-job, on-the-job and post-work ALARA reviews were being conducted to plan and evaluate exposure reduction efforts. These efforts have allowed the licensee to reduce exposures for specific tasks, such as control rod drive removal/rebuild/replacement from 2.1 man rem per drive unit to approximately 1.8 man rem per drive unit. In addition, the inspector found internal auditing of the ALARA program to be effective in identifying programmatic strengths and weaknesses.

However, chronic weaknesses and noncompliance with procedural requirements continue to impede progress in the ALARA program. Specific weaknesses identified by the inspector include:

1. Failure to conduct one of the required quarterly Site ALARA Committee meetings during 1986 (AP-3.2.1, Step 4.2.4.1).
2. Failure to ensure attendance of required personnel at Site ALARA and Unit-1 ALARA meetings (AP.3.2.1, Steps 4.2.2.1 and 4.3.2.1).
3. Unchallenging exposure goals for 1985 and poor goal setting for 1986.
4. Failure to ensure timely response from the In-Service Inspection Group, to ALARA Group concerns.

Administrative Procedure AP-3.2.1, requires quarterly Site ALARA Committee meetings. Contrary to this, a meeting for the second quarter of 1986, was not convened. A procedure change was not submitted to get relief from this requirement. This is an indication of poor procedural compliance by the licensee.

Attendance at ALARA Committee meetings has been poor, particularly for the Operations (33% attendance); Technical Support (33%); and Nuclear Engineering Groups (0%). Station management has been aware of these attendance problems for more than one (1) year, as evidenced by findings in the 1985, "Annual ALARA Review Report," dated January 24, 1986. This audit was the second formal audit of the Site ALARA Program. Additional indications of poor attendance were identified in the ALARA Committee "Meeting Notes," for September 22, 1986, when a meeting was held to discuss the "large goal overrun" associated with the outage. While this meeting was probably one of the more important ones for 1986, those Departments or Groups responsible for 74% of the exposure accumulated during the outage failed to attend the meeting. Another indication of lack of emphasis on ALARA occurred in February 1986, when it was recognized that two Site ALARA meetings would be necessary to discuss preparation for the 1986 refueling outage. However, a quorum of six (6) personnel from the sixteen (16) permanent committee members could not be achieved. The inspector discussed this item with licensee management, who indicated that they would improve attendance at ALARA meetings.

In 1985, an exposure goal of 360 man rem was developed. By September, with station exposure only at approximately 175 man rem, ALARA personnel realized the goal wasn't challenging and requested that the goal be re-evaluated. A new goal of 318 man rem was developed and distributed on November 15, 1985. However, by this time it was known that a major Radwaste System Modification (estimated at approximately 90 man rem) would not be completed. This new goal of 318 man rem was not challenging to station personnel. The plant completed the year with a total man rem expenditure of 236 man rem.

In 1986, an exposure goal of 987 man rem was established. However, by September, the goal was increased to 1462 man rem due to high exposures received during the outage. The station ended the year with 1285 man rem. The licensee has experienced difficulty in setting reasonably accurate exposure goals due to the following : 1) incomplete engineering packages; 2) poor pre-job planning; 3) under estimating man rem exposures for jobs; 4) work scope plans being submitted by contractors late in the planning process, and 5) changes in work scope. These problems have reduced the effectiveness of the ALARA goal as a meaningful management tool, with which to gauge the success of the ALARA program. The inspector discussed these weaknesses with licensee management, who indicated they were aware of the reasons for these shortcomings in goal setting. To help alleviate these problems the licensee has developed a new method of goal setting, using fifteen individual department goals rather than just job functional goals. They are also in the process of developing a computer program to allow more dynamic tracking of exposure and its relationship to the goal. These efforts should help to improve goal setting and exposure control. The inspector indicated that the licensee's goal setting methodology would be reevaluated in a future inspection.

Another indication of poor management emphasis on ALARA concerns the In-Service Inspection Group (ISI). The exposure estimate for this group was 24 man rem. Final outage exposure ran to 221 man rem, far in excess of pre-outage estimates. On September 22, 1986, the ALARA Coordinator formally requested (NMP Letter 20353) the ISI group to respond concerning why exposures were much higher than anticipated. However, no response had been received by the ALARA Group at the time of this inspection; nearly four months after the letter was sent. The inspector discussed this with ISI supervisory personnel, who indicated that they were working on it, but that the response had a low priority. Additional management attention would have ensured a more timely response.

In summary, the licensee needs to improve their goal setting methodology and exposure tracking mechanisms. Some progress is being made in this area. Additional management attention and emphasis on the ALARA program overall is necessary to ensure the success of exposure reduction efforts at the station.

#### Exit Meeting

- 7.0 The inspector met with licensee management personnel at the conclusion of this inspection to discuss the results. At no time did the inspector provide written material to the licensee.