U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report Nos. 50-220/92-06 and 50-410/92-11

Docket Nos. 50-220 and 50-410

License Nos. DPR-63 and NPF-69

Licensee: Niagara Mohawk Power Corporation
301 Plainfield Road
Syracuse, New York 13212

Facility Name: Nine Mile Point, Units 1 and 2

Inspection At: Scriba, New York

Inspection Conducted: March 30-April 3, 1992

Inspector: Jason C. Jang 4-7-92
Jason C. Jang, Sr. Radiation Specialist Date
Effluents Radiation Protection Section (ERPS)

Approved by: Thomas V. Dragoun for 4/7/92
Robert J. Bores, Chief, ERPS, Facilities Date
Radiological Safety and Safeguards, Division
of Radiation Safety and Safeguards

Areas Inspected: Unannounced safety inspection of the radioactive liquid and gaseous effluent control programs including: management controls, audits, calibration of effluent and process radiation monitoring systems, air cleaning systems, and implementation of the above programs.

Results: Within the areas inspected, the licensee implemented very effective programs. The management commitment to maintaining the operability of effluent radiation monitoring systems was excellent. No safety concerns or violations were identified.

DETAILS

1.0 Individuals Contacted

1.1 Licensee Personnel

* W. Allen, Radiation Assessment Manager, MATS
* J. Blasiak, Chemistry Manager, Unit 2
  R. Carlson, Supervisor (HVAC), Radiation Protection
* P. Chalone, Chemistry Technician C, Unit 2
* G. Corell, Chemistry Manager, Unit 1
* A. Curran, Site Licensing
* R. Field, Senior QA Engineer
* E. Langille, Supervisor, Radiation Engineering, Unit 2
  E. Leach, Sr. Generation Engineer-Chemistry
* M. McCormick, Plant Manager, Unit 2
* G. Montgomery, Generation Engineer, Radiation Protection
  D. Schult, Supervisor, Radiation Engineering, Unit 1
* C. Senska, Chemistry Supervisor, Unit 1
* P. Swafford, Radiation Protection Manager, Unit 2
* W. Wambsgar, Supervisor, QA Audits
  G. Wicks, Generation Engineer (RMS), Radiation Protection
  K. Yackel, I&C Supervisor, Unit 1

1.2 NRC Personnel

W. Schmidt, Senior Resident Inspector
R. Laura, Resident Inspector
W. Mattingly, Resident Inspector

* Denotes those present at the exit interview on April 3, 1992. Other licensee employees were contacted and interviewed during this inspection.

2.0 Purpose

The purpose of this inspection was to review the licensee's capability for measuring radioactive liquid and gaseous effluents during normal and emergency operations.

3.0 Quality Assurance Audits

The inspector reviewed the following audit reports for the radioactive effluent control program, conducted by the Safety Review and Audit Board (SRAB), to determine the implementation of the Technical Specification requirements.

o QA/SRAB Audit 90016 RG/IN, November 26-December 17, 1990
o QA/SRAB Audit 91017 RG/IN, November 4-15, 1991

During the review of these audits, the inspector noted that the 1990 audit covered in detail the radioactive liquid and gaseous effluent control programs and the 1991 audit covered chemistry training and laboratory measurement quality control areas. The 1990 Audit identified several weaknesses in the effluent area. However, none were of safety significance. The appropriate department responded with corrective actions in a timely manner. The 1991 Audit did not identified any findings.

Based on the above reviews, the inspector determined that the licensee met Section 6.5.3.8 Technical Specification requirements.

4.0 Radioactive Liquid and Gaseous Effluent Control Programs

4.1 Program Changes

The inspector reviewed the licensee's organization (Organization Chart published on February 3, 1992) and administrative control for the radioactive liquid and gaseous effluent control programs. The inspector also discussed with the licensee changes made since the last inspection of both units on February 11-15, 1991. The inspector determined that there were no significant changes to the radioactive liquid and gaseous effluent control programs.

4.2 Review of Semiannual Effluent Reports

The inspector reviewed the 1991 semiannual radioactive effluent release reports for Units 1 and 2 (submitted separately by each unit), and determined that the licensee met the Technical Specification (TS) reporting requirements. The inspector noted that the licensee reported inoperable effluent radiation monitors in the Semiannual Effluent Reports as required by the TS.

The semiannual effluent reports provided the total released radioactivity in liquid and gaseous effluents, including projected radiation dose to the public as required. The projected radiation doses to the whole body and organs of the public were well below regulatory limits specified in the licensee's Technical Specifications. The inspector also reviewed available 1992 effluent release records and determined that these records did not contain anomalous measurements, omissions or trends. The inspector had no further questions in this area.

4.3 Radioactive Liquid and Gaseous Effluent Controls

The inspector reviewed selected licensee's procedures and radioactive liquid discharge permits and gaseous effluent release documents to determine the implementation of the TS and the Offsite Dose Calculation Manual (ODCM) requirements for Units 1 and 2. The inspector also discussed with the licensee various aspects of the radioactive effluent control programs, such as communication with Radwaste Operations.

The inspector determined that the radioactive effluent control procedures were sufficiently detailed to allow performance of all necessary steps. The inspector also determined that the reviewed discharge permits were complete and met the requirements for sampling and analyses at the frequencies and lower limit of detections established in the TS. The inspector was informed that the last batch of Unit 1 liquid radwaste was discharged in 1990.

The inspector reviewed selected monthly gaseous effluent monitoring system (GEMS) results. The GEMS has the capability to perform isotopic analysis for gaseous effluent streams at any time. The licensee set the monitoring frequency at twice a day. The total amounts of daily noble gas release varied from 2.03E+4 μCi to 3.94E+6 μCi, indicating the wide range of variation. The GEMS has the capability of quantifying actual amounts of isotopic releases in real time monitoring. The licensee, therefore, is able to project the dose to the public accurately. The general industry practice is to conduct an isotopic analysis on a grab sample once a month, and then use the isotopic mix to calculate the total amount of release for each isotope and calculate the project dose to the public. Because the isotopic mix is varying, depending on operating conditions, it is difficult to calculate an accurate dose projection to the public using this technique. Therefore, the GEMS is superior to the general industry practice in terms of accurate dose projection calculation.

The inspector noted that the Chemistry Department personnel conducting the radioactive liquid and gaseous effluent control program had excellent knowledge in the areas of: (1) dose projection calculation; (2) quantifying the total amount of gaseous effluent release using RMS; (3) protection of the public health and the environment; and (4) ODCM requirements.

Based on the above reviews, the inspector determined that the licensee has conducted excellent radioactive liquid and gaseous effluent control programs.

4.4 Calibration of Effluent/Process Radiation Monitoring Systems (RMS)

The inspector reviewed the licensee's most recent calibration results for the following effluent/process radiation monitors to determine the implementation of the Technical Specification requirements for Units 1 and 2.

Unit 1:
- o Liquid Radwaste Effluent Radiation Monitor
- o Service Water Effluent Radiation Monitor
- o Main Steam Line Radiation Monitors
- o Stack Gaseous Effluent Monitors (Low and High Ranges)
- o Emergency Condenser Vent Monitor
- o Offgas Radiation Monitor
- o Containment Spray Heat Exchanger Raw Water Effluent Radiation Monitors

Unit 2:
- o Liquid Radwaste Effluent Radiation Monitor
- o Service Water Effluent Radiation Monitor
- o Cooling Tower Blowdown Line Monitor
- o Main Steam Line Radiation Monitors
- o Radwaste/Reactor Building Vent Monitors (Low and High)
- o Main Stack Gaseous Effluent Monitors (Low and High Range)

The I&C, Chemistry, and Radiation Protection Departments had the responsibility to perform electronic and radiological calibrations for the above effluent/process radiation monitors. The inspector also reviewed several quarterly channel function tests for the above effluent radiation monitors. All reviewed calibration results were within the licensee's acceptance criteria.

The inspector, however, noted that the RMS calibration program appeared to be overly conservative in the calibration range, but not in the operation range, for acceptance criteria for the monitor efficiency. The inspector also noted that the licensee did not use statistical analysis to obtain a conversion factor. Statistical analysis, such as linear regression, is a good method to calculate the conversion factor for the entire range (calibration and operation ranges). The licensee stated that the acceptance criteria for the monitor efficiency, and the use of statistical method, will be reviewed in the future and will be applied in the calibration procedure, as necessary.

During the review of the above RMS calibration results, the inspector noted that the licensee did not apply the attenuation correction factor for the Unit 1 containment spray heat exchanger raw water effluent radiation monitors. The inspector, however, noted that the licensee had the results of a study of the

correction factor for a similar case. The licensee stated that the correction factor for those monitors will be applied in the near future with appropriate evaluation. The inspector stated that this calibration technique will be reviewed during a subsequent inspection.

Based on the above review, the inspector determined that the licensee conducted an effective radiation monitor calibration program.

4.5 Operability and Reliability of Effluent RMS

Previously, the licensee had many inoperable effluent RMS experiences (See Inspection Reports 50-220/89-24; 50-410/89-23, and 50-220/91-05; 50-410/91-05 for details). The management commitment to maintaining the operability of the effluent RMS was noted during the previous inspection conducted on February 11-15, 1991. The inspector, therefore, examined the operability and reliability of the effluent RMS to determine whether the management commitment was being met.

The inspector toured the following effluent RMS to determine their operability during this inspection.

Unit 1:
- o Liquid Radwaste Effluent Radiation Monitor
- o Service Water Effluent Radiation Monitor
- o Old General Electric Stack Monitoring System (OGESMS)
- o Radioactive Gaseous Effluent Monitoring System (RAGEMS)

Unit 2:
- o Liquid Radwaste Effluent Radiation Monitor
- o Service Water Effluent Radiation Monitor
- o Cooling Tower Blowdown Line Radiation Monitor
- o Radwaste/Reactor Building Vent Monitors

The inspector noted that the Unit 1 RAGEMS was inoperable because the functional tests were not completed. The licensee was performing the final tests during the inspection period. Channel A of Unit 2 Service Water Effluent Monitor (SWEM) was inoperable because the flow switch was out of service. The installation of the flow switch was in progress during this inspection. Channel B of Unit 2 SWEM was operable. These two inoperable RMS were expected to be operable within two weeks. Overall, however, the inspector concluded that the operability of the effluent RMS has improved drastically since the last inspection conducted on February 11-15, 1991.

The inspector also noted that the Unit 1 RAGEMS had been repaired and upgraded (as defined in the licensee's Nuclear Commitment Tracking System Nos. 503320-00 through 503320-20) since the previous inspection. About ten specific important improvements were made (e.g., software and mechanical enhancements) to improve the operability. The inspector stated that these efforts were accomplished due to the management commitment and support for maintaining the operability of effluent RMS.

Although the calibration results were within the acceptance criteria, performance of a systematic trending analysis (RMS results versus measured effluent sample activity) is required to assess the RMS reliability. The inspector conducted an independent evaluation during this inspection using radioactive liquid release permits to determine the reliability for the Unit 2 Liquid Radwaste Effluent Radiation Monitor. A grab sample (Liquid Release Permit No. 2, March 23, 1992) counting result using a Ge gamma spectrometry system in the chemistry laboratory was 2.41E-6 μCi/ml. The RMS result should be 4.02E-5 μCi/ml when one applied a conversion factor (4.35E-8 μCi/ml/cpm) for the liquid radwaste effluent radiation monitor. The RMS result was 4.05E-5 μCi/ml. The comparison result was excellent. The inspector evaluated this comparison for all liquid release permits commenced during March 1992. These comparisons between the monitoring results and the grab sample counting results were in excellent agreement.

Based on the above reviews, the inspector concluded that the licensee's commitment to maintain the operability and reliability for all effluent RMS was demonstrated since the last inspection. The inspector was informed by the licensee that the management support will be continued to maintain the operability for all RMS.

5.0 Air Cleaning Systems

The inspector reviewed the licensee's most recent surveillance test results to determine the implementation of the following air cleaning systems for Units 1 and 2. The surveillance tests for these air cleaning systems were required by the Technical Specifications.

Unit 1:
- o Emergency Ventilation Systems
- o Control Room Air Treatment System

Unit 2:
- o Standby Gas Treatment System
- o Control Room Outdoor Air Special Filter Train System

The following surveillance results were reviewed. The inspector also discussed with the responsible individual (Radiation Protection Department) the technical aspects for testing the air cleaning systems. The inspector noted that the responsible individual had an excellent knowledge in the area of the air cleaning systems. All reviewed test results were within the licensee's Technical Specification acceptance criteria.

- o Visual Inspections
- o In-Place HEPA Tests
- o In-Place Charcoal Tests
- o Air Capacity Tests
- o Pressure Drop Tests
- o Laboratory Tests for the Iodine Collection Efficiencies

Based on the above reviews, the inspector determined that the responsible individual had an excellent commitment to maintain knowledge of the current practices in this area. The inspector had no further questions.

6.0 Exit Interview

The inspector met with the licensee representatives denoted in Section 1.1 of this inspection report at the conclusion of the inspection of April 3, 1992. The inspector summarized the purpose, scope, and findings of the inspection.