

U. S. NUCLEAR REGULATORY COMMISSION

Region 1

Report No. 50-220/82-06

Docket No. 50-220

License No. DPR-63 Priority - Category C

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

Facility Name: Nine Mile Point, Unit 1 (NMP-1)

Inspection At: Nine Mile Point, Unit 1, Oswego, New York

Inspection Conducted: May 18 - 21 and June 22 - 24, 1982

Inspectors: R. L. Nimitz 8/9/82
R. L. Nimitz, Radiation Specialist date signed

R. L. Nimitz for 8/9/82
C. A. Rowe, Radiation Specialist date signed

R. L. Nimitz for 8/9/82
J. White, Senior Radiation Specialist date signed

Approved by: Edward A. Greenman 8/12/82
E. G. Greenman, Acting Chief, Facilities date signed
Radiation Protection Section

Inspection Summary:

Inspection on May 18 - 21, 1982, and June 22 - 24, 1982, (Inspection Report No. 50-220/82-06)

Areas Inspected: Routine, unannounced inspection of the implementation of corrective actions for Health Physics Appraisal Significant Appraisal Findings, implementation of Radiation Protection Action Plan commitments, mitigation of worker radiation exposure during recirculation safe-end repair, radiation protection procedure adherence, and dosimetry control. The inspection involved 66 inspector-hours on site by three region based inspectors.

Results: Of the five areas inspected, one violation was identified in one area (failure to follow Radiation Protection Procedures required by T. S. 6.11; Paragraph 5.1).

Details

1. Persons Contacted

- R. Asay, Vice President, Radiation and Chemical Technology Corporation
- P. J. Dilts, Superintendent, Fabrication Shop, J and K Boiler
- J. Duell, Supervisor, Chemistry and Radiation Protection
- R. Gallagher, Site Coordinator, Newport News Industrial Corporation
- R. Gerbig, Respiratory Protection Coordinator
- J. Gray, Chief Technician, Day
- G. Gresock, Project Manager, Safe-End Replacement
- M. Hedrick, Assistant Supervisor, Training
- D. Helms, Dosimetry and ALARA Coordinator
- W. Klover, Consultant, Excel Corporation
- ** E. Leach, Superintendent, Chemistry and Radiation Protection
- T. E. Lempges, Vice President, Nuclear Generation
- J. T. Pavet, Training Supervisor, Nuclear
- T. Peeling, Assistant Supervisor, Training, Nuclear
- ** T. Perkins, General Superintendent, Nuclear Generation
- ** T. W. Roman, Station Superintendent
- B. Taylor, Supervisor, Instrumentation and Control
- * S. Hudson, NRC, Senior Resident Inspector
- * L. Doerflein, Resident Inspector

*Denotes those individuals present at the exit interview on May 21, 1982.

**Denotes those individuals present at the exit interview on May 21 and June 24, 1982.

In addition, other licensee and contractor personnel were interviewed in the performance of this inspection.

2. Inspection Purpose

The purpose of this inspection was to review the licensee's implementation and adequacy of actions taken to correct selected Radiation Protection Program deficiencies identified during the NRC's Health Physics Appraisal (Inspection Report 50-220/80-11) and to review the implementation of commitments made to NRC Region I to upgrade the Radiation Protection Program at Nine Mile Point.

In addition, as a result of the licensee's decision to replace all ten recirculation loop safe-ends during the outage, the licensee's program for mitigation of worker radiation exposure (ALARA Program) was reviewed.

3. Health Physics Appraisal Corrective Action Review

3.1 References

- NRC81 NRC Region I Health Physics Appraisal Report No. 50-220/80-11, dated March 12, 1981.
- NRC80 Letter from Boyce H. Grier, Director, Region I (NRC), to Thomas E. Lempges, Vice President, Electric Production, Niagara Mohawk Power Corporation (NMPC), dated October 10, 1980.
- NMPC80a Letter from Thomas E. Lempges, Vice President, Nuclear Generation (NMPC) to Boyce H. Grier, Director, Region I (NRC), dated November 26, 1980.
- NMPC80b Letter from Thomas E. Lempges, Vice President, Nuclear Generation (Niagara Mohawk Power Corporation), to Boyce H. Grier, Director, Region I (NRC), dated May 7, 1981.
- NRC82 Letter from Ronald C. Haynes, Regional Administrator, Region I (NRC), to Thomas E. Lempges, Vice President, Nuclear Generation (NMPC), dated April 26, 1982.

In addition, the licensee's Action Plan Progress Reports, which were submitted to NRC Region I in accordance with an NRC letter (NRC80) and provided the status of Radiation Protection Program improvement, were also reviewed during the inspection. The reports reviewed covered the period December 1980 through May 1982.

3.2 Corrective Action Review

The inspectors reviewed actions taken with respect to selected Health Physics Appraisal Significant Appraisal Findings. The findings reviewed were those that would effect the adequacy of Radiation Safety and Control for the Recirculation Safe-End replacement. The findings reviewed were as follows:

- 3.2.1 There are insufficient numbers of qualified personnel, particularly supervisors and technicians, to assure that adequate radiological controls are established and implemented for normal operations. (Appraisal Finding A.4, 50-220/80-11-04).

Findings

The licensee has increased the number of qualified professional and technician level staff. The staff now includes three Assistant Supervisors of Chemistry and Radiation Protection, 15 additional technicians, a

Dosimetry/ALARA Coordinator, and a Respiratory Protection Coordinator.

In addition, based on discussions with licensee radiation protection and training representatives, additional training was provided to the staff to increase their level of technical knowledge.

The licensee's actions taken to increase the Radiation Protection Staff during the current outage is discussed in Section 4 of this report.

This finding remains open, pending a complete review of the qualifications of the additional permanent personnel (50-220/80-11-04).

- 3.2.2 The method of posting radiologically controlled areas does not provide sufficient information for adequate exposure control. (Appraisal Finding C.1.a, 50-220/80-11-09).

Findings

The licensee's response to this appraisal finding (NMPC80b) stated that Procedure RP-3 was established which requires that Radiation and High Radiation Areas be conspicuously posted at all directions of approach.

The licensee established and implemented Procedure RP-3, Revision 0, "Performance of Radiological Surveys," on May 21, 1981. The procedure provides specific guidance for posting of Radiation and High Radiation Areas. In addition, the procedure references RP-1, Revision 3, "Access and Radiological Control," dated December 14, 1981. Procedure RP-1 provides guidance for posting Airborne Radioactivity and Contamination Areas. Tours of the Controlled Areas did not identify any posting problems.

This finding is closed.

- 3.2.3 No independent verification by the licensee of the calibration of the whole body counter was performed. Existing procedures relating to the frequency established for counting personnel are not followed. (Appraisal Finding C.2.a, 50-220/80-11-11).

Findings

The licensee's response to this appraisal finding (NMPC80b) stated that a methodology and procedures for independent verification of the calibration of the whole body counter would be developed within 30 days of receipt of a phantom and sources.

The review of this finding indicated a phantom and source were received by the licensee in January 1982, and the calibration was verified at that time. However, as of May 1982, a non-approved handwritten procedure for the verification was in place.

Licensee representatives were notified of the above. This finding remains open (50-220/80-11-11).

In a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, Region I, the licensee committed to establish and implement the procedure by June 30, 1982.

Review of whole body count records indicated personnel were scheduled and whole body counted at the frequency specified in existing procedures.

- 3.2.4 Procedural guidance and action levels which specify when excreta bioassay samples are to be taken have not been developed. (Appraisal Finding C.2.c, 50-220/80-11-13).

Findings

The licensee's response to this appraisal finding (NMPC80b) stated that procedure guidance for excreta bioassay has been drafted and will be included in S-RTP-10, when issued in June 1981, consistent with the requirements of ANSI Standard N343-1978.

Review of licensee Procedure S-RTP-10, Revision 0, "Calculation of Internal Radiation Exposures", dated July 15, 1981, indicated the procedure did not contain action levels which specify when excreta bioassay samples are to be taken. The procedure did reference an ANSI standard for collection, handling, and performance criteria of indirect bioassay samples.

Licensee representatives were notified of the above. This finding remains open (50-220/80-11-13).

The licensee's corrective actions for this matter are addressed in Section 3.2.5.

- 3.2.5 There are no procedures for collecting, handling, analyzing, and evaluating bioassay samples. (Appraisal Finding C.2.d, 50-220/80-11-14).

Findings

The licensee's response to this appraisal finding (NMPC80b) stated that procedures for collecting, handling, analyzing, and evaluating bioassay samples will be developed by the end of 1981.

Review of this finding (discussed in 3.2.4) indicated no specific procedures for collection, handling, analyzing, and evaluating bioassay samples was established. An ANSI standard, which provided guidance in these matters, was referenced in Procedure S-RTP-10; however, technicians were not trained in the referenced standard.

Licensee representatives were notified of the above. This finding remains open. (50-220/80-11-14).

Based on a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, the procedures would be established and implemented by July 15, 1982, and appropriate training completed by July 31, 1982.

- 3.2.6 Surveillance records do not contain sufficient data and were not organized or maintained in a manner to allow adequate evaluation of the radiological status of the facility. (Appraisal Finding D.2, 50-220/80-11-20).

Findings

The licensee's response to this finding (NMPC80b) stated that presentation of data in survey records has been improved by incorporating maps and sketches into surveys and that requirements for posting survey results and a re-organization of survey records by area would be defined by procedure by June 30, 1981.

Posting of survey results is discussed in Section 3.2.2 of this report.

The review of survey records indicated the radiation work permits and associated survey maps were being

filed by area. However, Radiation Survey Log Sheets were still filed by number. The re-organization of survey records by area was, as of May 1982, not defined by procedure.

Licensee representatives were notified of the above. This finding remains open (50-220/80-11-20).

Based on a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, Region I, the re-organization of survey records would be defined by procedure by July 15, 1982, and appropriate training completed by July 30, 1982.

- 3.2.7 The method for, frequencies of, and locations of radiation and contamination surveys were inadequate. (Appraisal Finding D.3, 50-220/80-11-21).

Findings

The licensee's response to this finding (NMPC80b) stated that Procedure RP-3 (approved May 15, 1981) details the methods for performing surveys and that survey schedules will be defined by procedure by June 30, 1981.

Review of Procedure RP-3, "Performance of Radiological Surveys", indicated the procedure detailed the method for radiation and contamination surveys. However, as of May 1982, no survey schedules were defined by procedure.

Licensee representatives were notified of the above. This finding remains open (50-220/80-11-21).

Based on a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, Region I, radiation survey schedules would be defined by procedure by July 15, 1982, and appropriate procedure training completed by July 31, 1982.

- 3.2.8 Methods did not exist to ensure that contamination related problems are identified, evaluated, and corrected sufficient to preclude recurrence. (Appraisal Finding D.4, 50-220/80-11-22).

Findings

The licensee's response to this finding (NMPC80b) stated that a procedure for identifying long-term, corrective action for recurring problems, including an incident reporting form was approved and would be implemented by May 31, 1981.

Review of this finding indicated contamination step-off pads are now checked daily for contamination. Procedure APN-12, "Administrative Procedure for Maintaining Occupational Exposure to Radiation and Radioactive Material", dated April 29, 1981, requires that an incident report be completed for an uncontrolled spread of contamination and corrective actions taken to prevent recurrence.

This finding is closed.

- 3.2.9 Procedures do not exist to describe the methods used to count air samples, and there is no evidence to indicate that all significant isotopes were identified for air samples. (Appraisal Finding D.6, 50-220/80-11-24).

Findings

The licensee's response to this finding (NMPC80b) stated that the appraisal concerns expressed with regard to air sampling records and the uniform methodology to record evaluation of identified peaks will be included in Procedure S-CRP-1. In addition, the licensee's response (NMPC80b) to a violation identified during the appraisal, which was transmitted to the licensee in an NRC letter (NRC81), stated that a specific procedure for counting air samples (S-CRP-1), will be developed to refine counting requirements and was scheduled for completion by September 30, 1981.

The review of this finding indicated that as of May 1982, no Procedure S-CRP-1 was established and implemented. In addition, no other procedure was identified which addressed the finding concerns.

Licensee representatives were notified of the above. This finding remains open (50-220/80-11-24).

Based on a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, Region I, a procedure would be established and appropriate training completed by July 31, 1982.

- 3.2.10 The licensee's procedures do not provide sufficient guidance for Health Physics personnel issuing Radiation Work Permits and do not specify a time limitation for Extended Radiation Work Permits. (Appraisal Finding D.7, 50-220/80-11-25).

Findings

The licensee's response to this finding (NMPC80b) stated that a combination of procedure revisions and training will be used to upgrade the quality of RWP's. Procedure RP-2 would be revised by the end of 1981 to require re-issuance of Extended RWP's annually.

The review of this finding indicated that as of May 1982, Procedure PP-2 had not been revised to require re-issuance of Extended RWP's annually.

The extent of training was not reviewed.

Licensee representatives were notified of the above. This finding remains open. (50-220/80-11-25).

- 3.2.11 The licensee does not have positive management controls established that would assure that individuals and equipment are adequately monitored for contamination prior to leaving contamination areas or the licensee's restricted area, and most personnel do not adequately monitor themselves prior to leaving the restricted area. (Appraisal Finding D.10, 50-220/80-11-28).

Findings

The licensee's response to this finding (NMPC80b) stated that access control technicians have been assigned to exit points for surveillance of frisking techniques and equipment monitoring and will be assigned during major maintenance construction activities.

The review of personnel and equipment frisking indicated equipment was being frisked properly, personnel were frisking properly, and that a technician was assigned to each access control point.

This finding is closed.

- 3.2.12 Procedures do not exist for the calibration, operation, or setting of alarm points for the count rate instruments normally used to monitor personnel and equipment leaving restricted areas. (Appraisal Finding D.12, 50-220/80-11-30).

The licensee's response to this finding (NMPC80b) stated that Procedures S-RTP-51 and S-RTP-71, dated June 15, 1981, provide guidance for the above finding concerns.

The review of the procedures indicated they provided the described guidance.

This finding is closed.

- 3.2.13 Adequate accountability, control, labeling, and leak tests do not exist for all radioactive test and calibration sources. (Appraisal Finding D.13, 50-220/80-11-31).

Findings

The licensee's response to this finding (NMPC80b) stated Procedure N1-RTP-35 will be revised by June 30, 1981, to address the above.

The review of this finding indicated the licensee completed a source inventory in June 1981 and that the procedure had been revised to address the above. However, as of May 1982, the procedure was still in draft.

Licensee representatives were notified of the above. This finding remains open. (50-277/80-11-31).

Based on a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, Region I, the procedure would be established and implemented by June 30, 1982.

- 3.2.14 The licensee does not exercise control over or provide source checks for all survey instruments. (Appraisal Finding D.14, 50-220/80-11-32).

Findings

The licensee's response to this finding (NMPC80b) stated that additional check sources would be ordered and survey instrument response readings posted by June 30, 1981.

The review of this finding indicated the above actions were taken.

This finding is closed.

- 3.2.15 The calibrator used to calibrate portable radiation survey instruments was not adequately maintained, technicians were not adequately trained in its theory or use, and the device could not be used to calibrate the higher ranges due to source decay. (Appraisal Finding D.18, 50-220/80-11-36).

Findings

The licensee's response to this finding (NMPC80b) indicated procedure review would be undertaken based on test results provided by Victoreen and that a new calibrator had been ordered.

The review of this finding indicated Procedure S-RTP-14, "Calibration of High and Low Level Instrument Calibration Wells", was established September 30, 1981, a new calibrator had been received, and a procedure (S-RTP-3) had been established for the new calibrator on March 31, 1982.

Based on the review, the licensee has addressed the hardware concerns adequately. However, the training of personnel in this area was not reviewed.

This finding remains open. (50-277/80-11-36).

- 3.2.16 The instruments used to monitor personnel and equipment for contamination could not detect the licensee's release limits, and the detector types used did not meet the ANSI 323 recommendations. (Appraisal Finding D.22, 50-220/80-11-40).

Findings

The licensee's response to this finding (NMPC80b) indicated Procedure RP-3 was in place which addressed the finding concerns.

The review of this finding indicated the licensee established and implemented Procedure RP-3, "Performance of Radiological Surveys", on April 15, 1981, which addressed the appraisal finding.

This finding is closed.

3.3 Action Plan Progress Report Review

As discussed in Section 3.1, the inspectors reviewed the licensee's correspondence to the NRC dealing with status of improvements to the Radiation Protection Program. From this correspondence, the following actions were reviewed:

- 3.3.1 The licensee's Action Plan Progress Report, dated October 31, 1981, stated that Administrative Procedures for Radiation Protection Training were tentatively scheduled for completion January 1982, concurrent with a union/management agreement on job specifications for technicians.

Findings

Draft Administrative Procedures were completed the last quarter of 1981. As of May 1982, and due to union/management discussions, the procedures remain to be finalized.

This matter remains open (50-277/82-06-01).

Based on a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, Region I, the Administrative Procedures for training would be established and implemented 60 days after Article 23 of the union contract was finalized. In addition, the licensee will establish and implement appropriate Administrative Procedures for Training of Contractor Radiation Protection Technicians by June 30, 1982.

- 3.3.2 The licensee's Action Plan Progress Report, dated July 8, 1981, indicated a Respiratory Status Report, which summarized records for individuals, would be developed by the Respiratory Protection Coordinator and was scheduled for completion by September 30, 1981.

The licensee's Action Plan Report, dated November 19, 1981, stated that the Respiratory Status Report was anticipated, due to computer programming needs, to be completed by March 1982.

Findings

The review of this finding indicated that as of May 1982, the Respiratory Status Report remained to be completed.

This matter remains open (50-277/82-06-02).

Based on a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, Region I, procedures addressing status and control of respiratory protective equipment will be established by June 15, 1982, and appropriate training completed by June 30, 1982.

- 3.3.3 The licensee's Action Plan Progress Report, dated June 2, 1981, stated that a radiological engineer would be hired July 1, 1981, and that procedure development would be initiated at that time.

The licensee's Action Plan Progress Report, dated July 8, 1981, stated that specific procedures with guidance as to what constitutes an ALARA review and the records pertaining to it will be developed by September 30, 1981. Procedure APN-12 was established which referred procedures to ALARA review.

The licensee's November 19, 1981, Action Plan Progress Report stated that the procedures scheduled for completion in September 1981 would be completed December 1981.

Findings

The licensee established and implemented Procedure APN-12 on April 29, 1981. The procedure contains guidance for ALARA review of procedures.

Regarding the remaining ALARA procedures, as of May 1982, two draft procedures were in place: one for pre-planning, and one for post-job evaluation. No procedures for on-going job ALARA review were established.

Licensee representatives stated that approved ALARA procedures for pre-planning, ongoing job review, and post-job evaluation would be in place to provide ALARA guidance for the Recirculation Safe-End work. This is discussed in Section 4.3.5 of this report.

The establishment and implementation of procedures to provide guidance for ALARA pre-planning, ongoing job review, and post-job evaluation for other station activities remains an open item. (50-277/82-06-03).

Based on a telephone discussion on June 3, 1982, between the licensee's General Superintendent, Nuclear Generation, and the Chief, Facilities Radiation Protection Section, Region I, a formal Station ALARA Program is to be in place by the end of 1982.

During the portion of the inspection conducted June 22 - 24, 1982, it was determined that the permanently-assigned radiological engineer had terminated employment. The licensee's actions taken to fill the position during the current outage is discussed in Section 4.3.5 of this report.

4. Safe-End Replacement, Mitigation of Worker Radiation Doses

4.1 References

- NRC82a Letter from Darrell G. Eisenbut, Director, Division of Licensing (NRC), to Donald P. Dise, Vice President, Engineering (Niagara Mohawk Power Corporation), dated April 21, 1982.
- NMP82a Letter from Thomas E. Lempges, Vice President, Nuclear Generation (Niagara Mohawk Power Corporation), to Darrell G. Eisenbut, Director, Division of Licensing (NRC), dated May 24, 1982.
- NMP82b Letter from Thomas E. Lempges, Vice President, Nuclear Generation (Niagara Mohawk Power Corporation), to Darrell G. Eisenbut, Director, Division of Licensing (NRC), dated June 1, 1982.
- NNI82 Newport News Industrial Corporation, "ALARA Program Description for Replacement of Recirculation Safe-Ends at Nine Mile Point 1 Nuclear Generating Plants", May 5, 1982.

4.2 Scope

On March 23, 1982, a hydrostatic test on the primary system revealed visible leakage from two recirculation loop safe-end welds. Later, ultrasonic tests confirmed the observation. As a result, the licensee elected to replace all ten safe-ends.

Accordingly, in a letter (NRC82a), the Commission requested the licensee to provide to the NRC, among other information, Niagara Mohawk Power Corporation's (NMPC) plans for mitigation of worker radiation doses relative to the removal and replacement of safe-ends.

The purpose of the inspection, conducted June 22 - 24, 1982, was to confirm the implementation of the licensee's plans and review and evaluate effectiveness.

4.3 Plan for Mitigation of Worker Exposure

The licensee's plans for mitigation of worker exposure were identified in NMPC's correspondence (NMP82a; NMP82b) to the NRC. From these documents, the following actions were examined:

- 4.3.1 The number of personnel in the radiation/protection staff will be increased. (NMP82a; NMP82b).

Finding

The stations' normal contingent of health physics personnel is about 30 persons. In order to support safe-end replacement, NMPC has assigned approximately 33 temporary personnel to assist in control point monitoring, surveillance, and recordkeeping. Additionally, about 13 contractor health physics technicians are employed in access control, job surveillance and implementation of radiological controls and ALARA measures.

Twenty-four hour coverage is currently being maintained with at least ten personnel assigned to each back shift.

- 4.3.2 A consulting service will be utilized for:
- A. Reviewing source terms for shield design, designating in-vessel confirming measurements required to validate the design, and documenting the impact of the radiation measured on shield design or safe-end replacement.
 - B. Reviewing ALARA procedures for safe-end replacement and related activities.
 - C. Reviewing dose rate measurements and calculations, advising site personnel on adequacy of procedures, and recommending changes when required.
 - D. Performing any other activities related to health physics and chemistry. (NMP82a).

Finding

The consulting firm, Radiological and Chemical Technology Corporation (RCT), has two senior level personnel on-

site to provide ALARA implementation and engineering support for the safe-end replacement. These personnel have been performing all of the listed activities and are responsible for the ALARA analysis, person-rem estimates, and design of the automated ALARA dose tracking system (ADTTS).

- 4.3.3 Newport News Industrial Corporation (NNI) will provide a radiation protection staff to support their work on the safe-end replacement project. (NMP82a).

Finding

The contractor health physics technicians previously mentioned are subcontracted by NNI for the safe-end project. The radiological controls measures provided by this staff were verified to include the assignment of a radiation protection coordinator, who the inspector confirmed performed the duties specified in the ALARA program description (NNI82). Additionally, it was confirmed that a drywell coordinator was assigned to each shift to assure that correct protective clothing was worn, to brief workers on radiological status, monitor and record time and exposure expended, and upgrade controls and protective measures as necessary.

- 4.3.4 Personnel exposure reports will be issued twice per day. (NMP82a; NMP82b).

Finding

Personnel dosimetry exposure reports were confirmed to be generated and distributed to appropriate management and control point personnel twice per day. The inspector verified that the report was subject to critical review by trained and experienced management personnel to assure that abnormal results were examined for cause and impact. Additionally, the licensee's dosimetry system generated other automated utility reports that were directed specifically to the identification of dosimetry problems and anomalous dosimetry data.

To augment the performance of the personnel dosimetry program, the inspector verified that sufficient staff was maintained in this area to provide continuous operation of the thermoluminescent dosimetry (TLD) system, i.e., 24 hour coverage.

- 4.3.5 An ALARA Committee will determine the costs, both

in exposure and money, and the benefits of all dose rate reduction options (i.e., shielding, decontamination, or task elimination). Additionally, the Committee will provide guidance and recommendations on alternatives to effect exposure reductions. (NMP82a).

Finding

The inspector verified that an ALARA committee had been formed to support activities related to the safe-end project. The committee consisted of the following personnel:

- Superintendent of Chemistry and Radiation Management
- Dosimetry Coordinator
- Operation Superintendent
- Task Contractor Representative (NNI)
- Health Physics Consultant Representative (RCI)

The letter (NMP82a) indicates that the Radiological Engineer and Corporate Health Physicist are also members of this committee. However, the inspector noted that at the time of this inspection the position of Radiological Engineer was filled by a person on temporary assignment because the individual permanently assigned in this capacity had recently terminated. The licensee indicated that a qualified contracted consultant from TERA Corporation would act in the capacity of Radiological Engineer until the position was filled.

The inspector also noted that the position of Corporate Health Physicist does not actually exist in NMPC's organization, and the reference to such an individual was in respect to a health physics trained individual from the corporate office who has limited involvement in the safe-end project.

The procedure, "Nine Mile Point Nuclear Station, Recirculation Safe-End Replacement ALARA Program Management", dated June 14, 1982, describes the functions and responsibilities of the ALARA Committee. The procedure is consistent with the licensee's correspondence to the NRC (NMP82a, NMP82b).

The procedure also identifies the purpose and function of the "ALARA Problem Report", an administrative device to enable the documentation and follow-up of conditions that effect personnel exposure and exposure reduction.

- 4.3.6 Mock-up training will be used to reduce personnel time for task performance and to qualify the performance of procedures, tools, and equipment. Remote audio/visual equipment will be used to provide supervisory surveillance, and automated equipment (e.g., pipe cutting machines and welding equipment) will be utilized (NMP82a).

Finding

The inspector confirmed that the equipment and techniques specified in the letter (NMP82a) were actually utilized in the performance of the project. Apparent exposure reduction was being accomplished by the special equipment and mock-up training.

- 4.3.7 Other exposure reduction techniques, such as the following, will be used to enhance the effectiveness of ALARA:

- Portable ventilation for control of airborne radioactivity;
- Shielding installations for exposure reduction in the drywell;
- Decontamination of the recirculation piping; and,
- Maintaining water level in the annulus (NMP82a).

Finding

The inspector confirmed that all of the listed techniques were being utilized in an effective manner to cause exposure reduction. It was further noted that the ALARA Committee appeared to be using reasoned judgement in implementing such techniques. For example, a planned ALARA option, the installation of shielding between the biological shield and nozzle, was rejected by the ALARA Committee, but resulted in an expected exposure reduction due to a negative net cost difference between exposure expenditure to install the shield and the expected exposure savings from the shield installation.

4.4 ALARA Program

The licensee's correspondence (NMP82b) identified that Niagara Mohawk's occupational health program was in compliance with the intent of the following Regulatory Guides:

- 8.4 "Direct-Reading and Indirect-Reading Pocket Dosimeters"
- 8.13 "Instruction Concerning Prenatal Radiation Exposure"
- 8.26 "Applications of Bioassay for Fission and Activation Products"
- 8.27 "Radiation-Protection Training for Personnel at Light-Water-Cooled Nuclear-Power Plants"
- 8.29 "Instruction Concerning Risks from Occupational Exposure"

Included in the correspondence were some deviations from certain specific recommendations of the Regulatory Guides.

The inspector noted that with respect to the safe-end project, the deviations specified in the licensee's letter (NMP82b) did not adversely effect worker health and safety, since a high degree of job coverage was being maintained.

From a review of lesson plans and personnel performance evaluations, the inspector determined that essential information was covered in the licensee's general employee training. Further, the licensee's training representative indicated that the training program format and certain elements in the lesson plans were being revised to enhance the effectiveness of the program.

The inspector verified that other specifications of the Regulatory Guides were being implemented.

4.5 Procedures

The licensee's correspondence (NMP82b) indicated that the following procedures would be developed, reviewed, and approved by the Site Operation's Review Committee (SORC) by June 14, 1982.

- An interface procedure which will define the authority and responsibilities of all organizations associated with the ALARA aspects of the safe-end project; and
- An overall radiation protection/ALARA program procedure, including the responsibility and authority of the ALARA Committee.

The inspector verified that the following procedures had been developed, reviewed, and approved by SORC in accordance with this commitment.

- "Safe-End Replacement Interface Procedure", June 14, 1982.

- "Recirculation Safe-End Replacement ALARA Program Management", June 14, 1982.

The inspector confirmed that the procedures adequately identified responsibilities and authorities and provide sufficient bases and administrative controls for the maintenance of the Safe-End ALARA Program.

4.6 ALARA Exposure Control

The licensee's correspondence (NMP82b) provided an exposure estimate for the safe-end project as follows:

Inlet Nozzle Replacement	595 person-rem
Outlet Nozzle Replacement	<u>2,312 person-rem</u>
Total	2,907 person-rem

Correspondence (NMP82b) further states that throughout the duration of the project, these estimates will be continually updated to factor in actual exposure data. Further, Niagara Mohawk Technical Specification, Amendment No. 49, requires the licensee to update the collective occupational dose estimate weekly and inform the NRC within 15 days of determining that actual exposure differs from the projected estimate by more than 10%.

In order to perform the activity in accordance with these requirements, the licensee has developed a computer-based dose monitoring program which is defined by Procedure S-RTP-81, "Accumulated Dose Tracking by Task System (ADTTS)". This system provides the means to monitor dose expenditures on the safe-end project relative to the projected estimate for each individual task.

The system appeared to have the capability to evaluate exposure expenditures in such a manner to permit timely and accurate analysis and determination of job performance in respect to established goals. Provided that inputs are accurate, the inspector confirmed that ADTTS is capable of indicating deviations from the estimate at any point in the project.

It was noted, however, that the system is totally dependent on the input from self-reading dosimeters (SRD's) and is not corrected when actual exposure (i.e., film badge results) are made available, as are personnel exposure records. Instead, SRD values are expected to be accumulated and inputted over the duration of the project without regard to the types of error that are inherent in the device, such as electrostatic leakage, shock, etc.

To verify the suitability of this system, the inspector examined the quality assurance program for SRD's and found that the program was performed in accordance with Procedure S-RTP-50, "Self-

Reading Dosimeter Test Procedure" and met the performance criteria of Regulatory Guide 8.4., "Direct-Reading and Indirect-Reading Pocket Dosimeters." However, it was also noted that licensee's, "J432 Report" (an intercomparison of the results from film badges, TLD's and SRD's) showed some infrequent instances of discrepancies between film badges and SRD's as high as 200%.

It was observed that the discrepancies predominantly showed the SRD value to be higher than the film badge, a condition that would cause the ADTTS to report conservatively, i.e., actual exposure would probably be less than reported by the system. The inspector noted that though such a condition did not impact on personnel health and safety, it may lead the licensee to report results considerably more than actual task exposure. This is particularly true if the inherent errors in SRD's caused by environmental conditions, shock, and chamber leakage are permitted to accumulate over the duration of the Safe-End Project. In regard to this finding, the licensee representatives indicated that the condition would be evaluated and discussed in the licensee's next task analysis report for the Safe-End Project.

This item will be reviewed in a subsequent inspection. (50-220/82-06-04).

In further review, it was noted that the following tasks identified in the licensee's computer-generated "ALARA Analysis Report" were not considered for inclusion in the "Task Person-Rem Summary Report", dated June 22, 1982.

<u>Task Number</u>	<u>Description</u>	<u>Exposure</u> (Person-Rem)	<u>Hours</u>
1002	Timber	0	8.6
1003	Calibration	0	2.25
1006	London Nuclear Hook-Up	4.672	91.94
1007	Operate London Nuclear	5.496	657.87
1008	Support Decon	10.021	359.98
1010	Piping Inspection	11.605	227.77
1011	Photography	.606	27.51
1012	Fire Inspection	1.085	62.17
1013	Remove Drywell Insulation	.050	12.13
1014	Security	.035	.58
1016	General Clean-Up	.715	17.92
1017	Set Up/Install Vent Hood	.110	1.33
1050	Drain Valve	.36	3.9
1104	HP Inspection	.48	26.88
1196	Flap Eye Pads	.2	5.4
1300	Ultrasonic Inspection	3.385	79.95
	Total	38.796	1,583.69

The licensee's representatives indicated that the tasks identified in the "ALARA Analysis Report" would be evaluated to determine if the jobs pertained to the Safe-End Project and that those tasks so identified would be immediately included in the "Task Person-Rem Summary Report". This item will be reviewed in a subsequent inspection. (50-220/82-06-05).

4.7 Conclusion

The inspector confirmed that the licensee was implementing the commitments specified in the correspondence to NRC (NMP82a; NMP 82b) and was operating in conformance with Technical Specification Amendment No. 49.

No violations relative to the Safe-End Project were identified.

5. Plant Tour

5.1 Procedure Adherence

The inspectors toured the controlled areas of the facility during the inspection to review general plant conditions and personnel adherence to radiation protection procedures.

Technical Specification 6.11 requires that procedures for personnel radiation protection be prepared consistent with the requirements of 10 CFR 20 and be approved, maintained, and adhered to for all operations involving personnel radiation exposure.

Radiation Protective Procedure RP-2, Revision 1, "Radiation Work Permit Procedure", states, in part, in Section 5.0, Procedure for using an RWP, ". . . Section 5.4. The leadman is responsible for familiarizing personnel with all the instructions on the permit and ensuring that these instructions are strictly followed. . ."

During a tour of Reactor Building 281' elevation on May 18, 1982, the inspectors observed two individuals sweeping in the West Instrument Room. The individuals were wearing cotton glove liners and shoecovers. Because the workers did not appear to be wearing appropriate protective clothing for cleaning in a contaminated area, the inspector requested the RWP the individuals were working under to review the RWP clothing requirements. The workers stated that a third individual had the RWP. The licensee's Radiation Protection Technician, with the inspectors, requested the workers to exit the area pending review of their RWP. Subsequent inspector review indicated that one of the individuals signed in on the Radiation Work Permit (RWP), was a leadman, and that the RWP (No. 8415, dated May 18, 1982) required that in addition to the protective clothing worn by the individuals, a cap, rubber gloves, and one pair of coveralls were to be worn.

The inspectors discussed the above with licensee representatives and stated that failure of the leadman to ensure that all RWP instructions were strictly followed in accordance with Procedure RP-2 was a violation of Technical Specification 6.11 (50-220/82-06-06).

5.2 Dosimetry Control

During tours of the facility, the inspectors noted that personnel monitoring devices, i.e., TLD badges, were being stored on wall racks at various locations throughout the facility. The inspectors noted that the manner of storage would not prevent an individual from tampering with another individual's badge.

Licensee representatives acknowledged the above and stated that contractor personnel monitoring devices would be picked up and returned to the protected area access as the personnel enter and exit. In addition, High Radiation Area Access Control Point Personnel would be required to verify use of proper TLD badges by personnel entering the area.

The control of personnel monitoring devices will be reviewed during a subsequent inspection (50-220/82-06-07).

6. Exit Interviews

The inspectors met with licensee representatives (denoted in Section 1 of this report) on May 21 and June 24, 1982. The inspectors summarized the scope and findings of the inspection.