

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-245/85-28

Docket No. 50-245

License No. DPR-21

Priority --

Category C

Licensee: Northeast Nuclear Energy Company

P. O. Box 270

Hartford, Connecticut 06101

Facility Name: Millstone Point Nuclear Power Station, Unit 1

Inspection At: Waterford, Connecticut

Inspection Conducted: November 5-8, 1985

Inspector: *M. Shanbaky*
A. Weadock, Radiation Specialist

12/3/1985
date

Approved by: *M. Shanbaky*
M. Shanbaky, Chief, PWR Radiological
Protection Section, EPRPB, DRSS

12/3/1985
date

Inspection Summary:

Inspection conducted on November 5-8, 1985 (Inspection Report No. 50-245/85-28).

Areas Inspected: Routine, unannounced inspection of radiological controls during the current outage, including: selection, qualification and training, internal and external exposure control, surveys, posting and area control, and ALARA activities. The inspection involved 38 inspector-hours onsite by one region-based inspector.

Results: One violation, concerning a failure to follow radiation protection procedures, was identified (see Section 6.0).

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DETAILS

1.0 Persons Contacted

B. Adamoski, General Foreman, CN Flagg
D. Bertrand, Maintenance
*M. Brennan, Unit 1 Radiation Protection Supervisor
R. Doherty, Unit 1 ALARA Coordinator
B. Granados, Health Physics Supervisor
*J. Kangley, Radiological Services Supervisor
*J. Laine, Unit 2 Radiation Protection Supervisor
E. Martinez, NES Project Engineer
F. Matovic, Assistant Radiation Protection Supervisor
*W. Romberg, Station Superintendent
P. Simmons, Dosimetry Supervisor
G. Smith, Nightshift Radiation Protection Supervisor
*J. Sullivan, Health Physicist
J. Tyler, Maintenance
R. Villeaux, Radiation Control Manager, CN Flagg

*Denotes those individuals attending the exit interview on November 8, 1985.

Other licensee employees were also contacted during the course of this inspection.

2.0 Purpose

The purpose of this routine safety inspection was to review the implementation of the licensee's Radiological Controls Program during the current outage. The following areas were reviewed:

- personnel selection, qualification and training,
- posting and area control,
- surveys,
- external exposure control,
- internal exposure control,
- ALARA activities.

3.0 Personnel Selection, Qualifications and Training

3.1 Radiation Protection Personnel

The selection, qualification and training of contractor radiation protection technicians and support personnel was reviewed with respect to the following criteria:

- ANSI-NI8.1, 1971, "Selection and Training of Nuclear Power Plant Personnel,"
- Procedure SHP 4920, "Contracted Health Physics Personnel Training Program,"
- Procedure HP #911/2911/3911A, "Health Physics Department Services Training Program."

The licensee's performance in this area was evaluated by:

- discussion with supervisory personnel,
- discussion with contracted HP technicians and service personnel,
- review of selected technician training records and resumes.

Within the scope of the above review, no violations were identified. The inspector noted the licensee's review of HP technician resumes was generally thorough and evaluated the quality as well as the duration of technician's previous work experience.

3.2 Radiation Workers

The training of radiation workers was reviewed with respect to the following criteria:

- 10 CFR 19.12, "Instructions to Workers,"
- ACP 8.26, "Radiological Worker Training and Retraining for Company and Contractor Personnel."

The inspector reviewed training and dosimetry records for contract workers performing control rod drive (CRD) maintenance and verified the following:

- worker exposure histories were complete,
- workers had received both general employee and specific CRD removal training.

4.0 Posting and Area Control

The licensee's posting and control of airborne radioactivity areas, contaminated areas, and radiation and high radiation areas was reviewed with respect to the following criteria:

- Technical Specification 6.12, "High Radiation Area"
- 10 CFR 20, "Standards for Protection Against Radiation."

The licensee's performance in this area was reviewed by the following methods:

- inspector tours of the various radiological work and storage areas,
- performance of independent surveys by the inspector.

Within the scope of the above review, no violations were identified. The various radiological work areas were clearly posted; housekeeping conditions inside the areas was generally adequate.

5.0 Surveys

The licensee's performance and documentation of radiation and contamination surveys was reviewed with respect to the following criteria:

- 10 CFR 20, "Survey,"
- Procedure SHP 4905, "Radiological Surveys."

The inspector reviewed selected surveys used to generate Radiological Work Permits (RWPs) or to track radiological conditions during ongoing evolutions.

Within the scope of the above review, no violations were identified. The inspector noted that current survey information was maintained on the status boards at the various radiological work areas. Surveys were generally found to contain sufficient information to allow the assessment of radiological hazards prior to establishing radiological controls.

6.0 External Exposure Control

The licensee's program for controlling work activities and worker exposure during the outage was evaluated by:

- interviews of the radiation protection supervisor and other selected members of the radiation protection department,
- tour of various work areas and review of control point logbooks,
- review of the following Radiation Work Permits (RWPs) and procedures:

RWP 4274, Condensor Bay Valve Modifications

RWP 4319, Condensor Bay Hangar Modifications

RWP 4181, Remove-install CRDs

RWP 4140, UT Recirc. Risers Pipe Weld

RWP 4148, Inspect, photograph electrical penetrations

RWP 3950, P.M. Valves 1-MS-14A and 1-MS-6

RWP 3344, Reactor Disassembly-Containment Head Removal-Set-up for Rx Head Detensioning

Procedure SHP #4912, "Radiation Work Permit Completion and Flow Control."

Within the scope of the above review, one violation, concerning a failure to follow radiation protection procedures, was identified and is discussed in Section 6.1 of this inspection report.

6.1 Failure to Follow Radiation Protection Procedures

Technical Specification 6.11 requires that procedures for radiation protection be established, implemented, and adhered to. Procedure SHP 4912, section 4 requires in part that workers be responsible for "... reading, understanding, initialing and following RWP instructions." The inspector reviewed worker compliance with RWPs and identified the following instance where a work party entered a radiological area in violation of the written requirements on the applicable RWP.

On October 27, 1985, two workers entered and performed work in the reactor cavity area while signed in on RWP 3344. RWP 3344 required particulate-filter respirators be worn; surveys indicated smearable contamination levels of up to 2 mr/hr \bar{x} on the walkway. The workers were allowed to enter the area without respirators by the area HP supervisory technician. This decision was based on the following:

- A) reactor cavity work areas were periodically wetted to prevent the generation of airborne activity;
- B) previous and ongoing air samples indicated no airborne activity;
- C) the scope of the work (installing gaskets in manway hatches) was not anticipated to generate airborne activity.

The decision to drop the respiratory protection requirements was not noted on the actual RWP or documented in the control point log. No management review or approval of this decision took place.

At the completion of the job one worker was found to be contaminated on the face, and was subsequently decontaminated by HP. Follow-up whole body counting indicated no detectable intake of radioactive material. The second worker in the party, although not externally contaminated, was determined after follow-up whole body counting to have sustained an intake equivalent to 8 MPC hours of radioactive material. The inspector stated that failure to adhere to the requirements of RWP 3344 constitutes an apparent violation of T.S. Section 6.11 (245/85-28-01).

The licensee indicated that standard station policy when making a revision to an RWP is to make a pen and ink correction to the RWP at the control point. The inspector noted that controlling procedure SHP 4912 does not address making on-the-spot revisions to an RWP, and consequently a mechanism for making a formal change to an RWP and assuring appropriate review does not exist.

The inspector noted that the controlling RWP in the first instance cited above (RWP 3344 - Reactor Disassembly - Containment Head Removal - Set-up for Reactor Head Detensioning) was written to cover a major evolution consisting of multiple sub-tasks. The need to make on-the-spot RWP revisions as mentioned above may stem from the consequent too-wide scope of the RWP, with a resultant failure to address the specific radiological control requirements of the sub-tasks. This area will be reviewed in a subsequent inspection to determine if a generic problem exists with the scope of the licensee's RWPs (245/85-28-02).

During a tour of the various plant radiological work areas, the inspector noted additional instances in which workers failed to follow the requirements listed on the RWP. Specifically, during a tour of the condenser bay area on November 6, 1985, the inspector determined that a verbal exemption to RWP requirements had been made for workers by the area HP technician. Specifically, workers entering on RWP 4319, which required respiratory protection, were allowed to perform work without respirators. Additionally, workers entering the area on RWP 4274, which did not require respiratory protection, were instructed to wear respirators by the HP technician. These exemptions were communicated verbally to the workers by the HP technician; no management review or approval of the exemptions took place. The inspector verified by discussion with the area HP that the change in requirements was based on current survey information and also noted that no revision to the RWP or documentation of the change had been made.

6.2 Licensee Follow-Up to Personnel Contamination

The inspector determined through discussion with licensee management that two maintenance workers were externally contaminated and had intakes of radioactive material equivalent to 5 and 8 MPC-hours, respectively, on November 4, 1985. The workers were contaminated while performing preventive maintenance on a Main Steam (MS) valve. The extent of the intake was calculated based on follow-up whole body counting. The two workers signed in on RWP 3950, which required respiratory protection (filtered respirator) and an air sample to be taken when pulling the old valve packing. The workers made three separate entries into the steam tunnel work area: the first to scope the work area, the second to grease the valves and remove the packing retainer nuts, and the third entry to pull the old valve packing. Respiratory protection was worn during the third entry and an air sample taken during the packing pull showed airborne concentrations <0.25 MPC.

Health Physics (HP) investigation into the event indicated that the contamination and intake occurred during the second worker entry. The valves were located close to the floor and consequently the workers were required to lie directly under the valves on the floor to remove the packing retainer nuts. Surveys taken prior to and after this work indicated the floor was contaminated with levels ranging from 1000-40,000 DPM/100 cm².

Early identification of the event was circumvented by the failure of the workers to follow station Health Physics practices. Specifically, the two workers:

1. Performed only a hand and foot frisk, and not a whole body frisk, at their second exit from the work area;
2. Failed to notify HP after identifying they were contaminated at their third exit from the work area;
3. Decontaminated themselves by showering in the HP decon room without notifying HP,
4. Left the site without informing HP. Consequently, no assessment or immediate evaluation of the worker's intake was made at this time.

The station HP staff first identified a problem on November 5, 1985, when the two maintenance workers requested whole body counts.

The inspector determined by discussion with the licensee that the Health Physics Staff members were not aware, while generating the RWP, that the maintenance work would be performed while lying on the floor, directly under the contaminated valves. Consequently, the airborne activity generating potential of loosening the packing retainer nuts was not anticipated, and appropriate protective measures were not taken.

The licensee indicated that specifics dealing with work area conditions, etc., are addressed in the pre-job briefing between the workers and the area HP technicians. The inspector interviewed the involved maintenance workers and determined a minimal pre-job briefing was performed, with no discussion as to the specific valve location or position required to perform the valve maintenance.

Licensee corrective action in the above incident include the following:

- 1) briefing of HP technicians and staff as to the likelihood of similar problems arising at "high traffic times," such as shift turnover;
- 2) briefing of HP technicians as to the importance of the pre-job briefing in communicating as to how the work will be performed;
- 3) review of frisking techniques and station HP procedures with the involved maintenance workers.

The inspector noted that failure of the HP staff to adequately assess the radiological conditions of the work area, along with the subsequent failure by the workers to follow station HP procedure, constitutes an apparent violation of NRC requirements. Since the licensee recognized the above inadequacies and initiated corrective measures, the above incident will be considered a "licensee identified problem" in accordance with 10 CFR 2, App. C. To encourage self-identification and correction of problems, the NRC Enforcement Policy provides for not issuing a Notice of Violation for licensee identified problems of Severity Level IV or V. NRC inspection activities in a subsequent inspection will focus on evaluating the adequacy of the licensee's corrective actions in preventing a recurrence of the above events (245/85-28-03).

6.3 Dosimetry

The licensee's external exposure control program was reviewed against criteria contained in 10 CFR 20.202, "Personnel Monitoring." The licensee's program during the outage was evaluated by:

- interview of selected dosimetry personnel,
- review of selected exposure records, radiation exposure increase authorizations, RWP sign-in sheets, and extremity monitoring records,
- review of selected worker exposure histories,
- review of procedure SHP 4902, "External Radiation Exposure Control and Dosimetry Issue."

Exposure history documentation was complete and the licensee was found to be complying with procedural requirements. Job specific extremity dosimetry was assigned as required by selected RWPs.

Within the scope of the above review, no violations were identified.

7.0 Internal Exposure Control

The licensee's respiratory protection program, including air sampling and MPC hour tracking, was reviewed with respect to the criteria contained in 10 CFR 20.103, "Exposure of individuals to concentrations of radioactive materials in air in restricted areas."

The implementation of the licensee's respiratory protection program during the outage was evaluated by:

- examination of respirator issuance logs and respirator qualification records for selected workers;

- review of RWP sign-in sheets, air-sampling records, and MPC tracking forms;
- interviews of the personnel responsible for various aspects of the program and review of their training;
- review of the following procedures:
 - SHP 4905 "Radiological Surveys,"
 - SHP 4931 "Selection and Use of Respiratory Protection Equipment,"
 - HP 4932 "Maintenance and QA Program for Respiratory Protection Equipment."

Work party sign-in times and air sampling records indicated that air sampling was generally being performed as required by various RWPs. MPC hours were being calculated as required and included in worker exposure history.

Within the scope of the above review, no violations were identified.

8.0 ALARA Activities

The licensee's ALARA Program was examined relative to criteria contained in:

- 10 CFR 20.1(c);
- Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations will be As Low As Is Reasonably Achievable," and
- Regulatory Guide 8.10, "Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable."

The licensee's performance relative to these criteria was determined by discussions with the Radiation Protection Supervisor, the ALARA Coordinator and staff and review of the following documents:

- Procedure ACP 6.02, "Maintenance of Occupational Radiation Exposures-ALARA,"
- Procedure ACP 6.02A, "ALARA Suggestions/Recommendations,"
- MNPS Unit 1 Refueling and Maintenance Outage ALARA Report - 1984,
- ALARA Projects Status Report Printout dated November 5, 1985.

The 1985 Unit 1 Outage ALARA organization includes an ALARA Coordinator, a senior technician and a clerk on dayshift and a senior technician on nightshift. ALARA reviews of specific planned work evolutions are flagged by two methods:

- a) internal recognition by ALARA of upcoming, high exposure jobs, or
- b) an RWP request with an anticipated exposure estimate of 1 manrem or greater.

Recent and pending activities of the ALARA group have included the performance of a recirc piping chemical decontamination in 1984 and the planned acquisition of an automatic reactor vessel head stud tensioner/detensioner for the 1987 outage. Performance of the 1984 recirc piping decon benefited several outage tasks and led to an estimated savings of 1300 manrem.

Major ALARA effort for the current outage included the use of an automated ultrasonics tester for performing in service inspections on drywell piping. Unfortunately, mechanical difficulties with this equipment resulted in increased personnel time in the drywell and offset anticipated manrem savings.

The inspector reviewed an ALARA computer report detailing actual versus estimated exposure for ongoing major projects and noted two projects had exceeded their manrem estimates. Exposure overrun on the piping in-service inspection (ISI) project was due to previously mentioned equipment difficulties. Exposure overrun on the safety relief valve (SRV) overhaul project was investigated by the ALARA staff and was found to be due to a conservative calculation of estimated exposure. A 1984, post chemical decon dose rate value for the work area was used in the estimate; this did not take into account recontamination of the piping and consequent increase in dose rates.

The inspector was concerned with the timeliness of the ALARA group's review of ongoing projects. Outage activities started on October 26, 1985; however, the above computer report, which provided the ALARA group's first look at the accruing exposure of various projects, was not generated until November 5, 1985. The licensee stated that difficulties with the HELPORE computer system, which stores and tracks all dosimetry/exposure information, prevented any earlier accessing of exposure information. The inspector stated that timely ongoing job-status review is crucial to ALARA for the early identification and possible elimination of unknown exposure contributors, and that a contingency method for providing this review should be developed. The licensee committed to developing a back-up job-status review process for situations when the HELPORE computer is not available. Licensee effort in this area will be reviewed during a subsequent inspection (245/85-28-04).

9.0. Exit Interview

The inspector met with licensee representatives (denoted in section 1 of this report) at the conclusion of the inspection on November 8, 1985. The inspector summarized the purpose, scope and findings of the inspection. At no time during this inspection was written material provided to the licensee by the inspector.