

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 85-05

Docket No. 50-271

License No. DPR-28

Priority --

Category C

Licensee: Vermont Yankee Nuclear Power Corporation  
RD5, Box 169 Ferry Road  
Brattleboro, Vermont 05301

Facility Name: Vermont Yankee Nuclear Power Station

Inspection At: Vernon, Vermont

Inspection Conducted: January 28-February 1, 1985

Inspectors: H. J. Bicehouse  
H. J. Bicehouse, Radiation Specialist

2/28/85  
date

Approved by: W. Pasciak  
W. Pasciak, Chief, BWR Radiation  
Safety Section

2/28/85  
date

Inspection Summary:

Inspection on January 28-February 1, 1985 (Report Number 50-271/85-05)

Areas Inspected: Routine unannounced inspection of the licensee's radiation protection program including: previously identified items, audits and appraisals, radiation work permits, personnel dosimetry, surveys and monitoring and other external exposure controls. The inspection involved 32 hours onsite by a regionally-based inspector.

Results: Of the areas inspected, no violations were noted. The licensee was implementing a generally effective radiation protection program in the areas reviewed.

8503110366 850307  
PDR ADOCK 05000271  
Q PDR

## DETAILS

### 1. Persons Contacted

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

#### 1.1 Licensee Personnel

- \*Mr. J. Desilets, Operations Supervisor
- Mr. J. Dunnell, Shift Chemistry and Health Physics Technician
- Mr. D. Dyer, Quality Assurance Engineer
- Mr. F. Hurst, Chemistry and Health Physics Assistant
- \*Mr. S. Jefferson, Assistant to the Plant Manager
- \*Mr. B. Leach, Chemistry and Health Physics Supervisor
- \*Mr. B. Milligan, Administrative Supervisor
- \*Mr. D. Mohler, Plant Health Physicist
- \*Mr. R. Pagodin, Engineering Support Supervisor
- \*Mr. D. Pike, Manager-Operations Quality (YAE Co.)
- \*Mr. D. Reid, Operations Superintendent
- \*Mr. R. Wanczyk, Technical Services Superintendent

Other licensee employees were also contacted or interviewed during this inspection.

#### 1.2 NRC Personnel

- \*Mr. W. Oliveira, Reactor Engineer
- \*Mr. J. Prell, Reactor Engineer
- \*Mr. W. Raymond, Senior Resident Inspector

\*Attended the exit interview on February 1, 1985.

### 2. Purpose

The purpose of this routine inspection was to review the licensee's radiation protection program during plant operations with respect to the following elements:

- Previously Identified Items;
- Audits and Appraisals;
- Radiation Work Permits;
- Personnel Dosimetry,
- Surveys And Monitoring; and
- External Exposure Controls

In addition, planning and preparation for the 1985 Outage to replace recirculation piping were discussed with the licensee.

### 3. Previously Identified Items

- 3.1 (Closed) Inspector Follow-up Item (50-271/83-20-01) Review transuranic analysis data for smear and resin samples. During Inspection Number 50-271/83-33, this item was reviewed and updated to include a verification of the licensee's development of criteria and implementation of a program for routine surveillance of alpha activity in selected, identified plant areas. Departmental Procedure (DP) 4531, ("Radioactive Contamination Surveys," Revision 8, September 6, 1984), identified plant areas and provides criteria for an alpha activity surveillance program. The licensee has implemented DP 4531.
- 3.2 (Open) Inspector Follow-up Item (50-271/83-33-02) Review formalization of the ALARA Program. The licensee had not developed, documented and implemented a formal ALARA Program conforming to the guidance in Section C of Regulatory Guide 8.8.
- 3.3 (Closed) Violation (50-271/84-06-01) Failure to take breathing zone air samples required by two radiation work permits. During the Management Meeting on September 4, 1984 and in a subsequent letter dated September 24, 1984, the licensee demonstrated that no violation of Technical Specification occurred. However, the licensee stated that the Radiation Work Permit (RWP) Procedure would be upgraded by November 21, 1984 to require more extensive documentation of exceptions to RWP requirements. Administrative Procedure (AP) 0502, ("Radiation Work Permits, Revision 13, dated March 30, 1984) and its changes were reviewed. As of February 1, 1985, the licensee had failed to make the changes to AP 0502 to require more extensive documentation of exceptions to RWP requirements. Consequently, the violation is closed administratively, but a related item to review changes to APO502 to require more extensive documentation of exceptions to RWP requirements will remain open until those changes are in place.  
50-271/85-05-01
- 3.4 (Closed) Unresolved Item (50-271/84-06-02) Adequacy of air purifying respirators for a standby rescue person under 10 CFR 20, Appendix A, note i. The licensee's actions in the specific instance were reviewed and termed adequate for the airborne hazard involved.
- 3.5 (Closed) Inspector Follow-up Item (50-271/84-06-04) Review adequacy and frequency of radiation surveys of the plant stack base for personnel protection. Operating Procedure (OP) 4530, ("Dose Rate Radiation Surveys", Revision 11, November 28, 1983), was revised to include a quarterly survey of areas of the plant stack visited by licensee personnel. The changes to the survey frequency were fully implemented by the licensee.

- 3.6 (Closed) Inspector Follow-up Item (50-271/84-06-05) Review functional tests for TSC Radiation Monitors. Departmental Procedure (DP)4535, ("Technical Support Center Radiation Monitor Functional Calibration", Revision 1, October 17, 1984) requires a monthly test. The licensee has implemented the procedure.
- 3.7 (Closed) Inspector Follow-up Item (50-271/84-17-01) Review licensee's commitment to include Health Physics representation on the 1985 Recirculation Piping Replacement Task Force. The licensee has added a Yankee Atomic Electric Company Health Physics Engineer to the task force.
- 3.8 (Open) Inspector Follow-up Item (50-271/84-17-02) Review the Radiation Protection Plan for Recirculation Piping Replacement. The Radiation Protection Plan will be a portion of the licensee's overall management plan for piping replacement. That plan was in draft form during this inspection and unavailable for review.
- 3.9 (Closed) Inspector Follow-up Item (50-271/84-24-01) Review RWPs used in Radwaste routine operations for specific protective requirements. Routine radiation work permits used for Radwaste operations were reviewed and found to contain specific protective requirements for personnel protection. In addition, management controls were in place to ensure adequate review of each routine radiation work permit for specific protective requirements.
- 3.10 (Open) Inspector Follow-up Item (50-271/84-24-02) Review licensee's actions regarding High Range Noble Gas Monitor. Although efforts were made to correct the erratic performance of the licensee's High Range Noble Gas Monitor, the unit was still erratic below 10 mr/hr. The licensee's corrective actions will be reviewed in a subsequent inspection.
- 3.11 (Closed) Inspector Follow-up Item (50-271/84-24-03) Review actions to control removal of potentially contaminated items from the RCA. The status of the licensee's actions was reviewed. Actions as described in Inspection Reports Numbered 50-271/84-04, 50-271/84-21 and 50-271/84-24 have been implemented.

#### 4. Audits And Appraisals

The licensee's quality assurance audit program for radiation protection was reviewed against criteria provided in:

- Technical Specification 6.2, "Review and Audit";
- 10 CFR 50, Appendix E, Criterion II, "Quality Assurance Program";
- 10 CFR 50, Appendix B, Criterion X, "Inspection";
- 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action";

- 10 CFR 50, Appendix B, Criterion XVIII, "Audits";
- Yankee Atomic Electric Company Operational Quality Assurance Manual, YOQAP-1-A, (Aug. 15, 1977); and
- Procedure OQA XVIII-2.

The licensee's performance relative to these criteria was determined by discussions with onsite quality assurance personnel and examination of Audit Report No. VY-84-3A, "Radiation Protection," (September 13, 1984). The inspector noted that the audit was conducted by a technically-qualified corporate specialist and two quality assurance auditors. The audit resulted in one deficiency and six observations. The deficiency involved a minor posting requirement. The observations related to calibration of radiation monitors, frisking of trash and several Institute of Nuclear Power Operations (INPO) industry-wide findings. The inspector reviewed the plant's responses to these findings and noted that a satisfactory method for tracking and resolving the findings was in place within the QA organization. Responses to audit findings were technically adequate.

The results of the 1983 INPO Appraisal were also reviewed. The 1984 INPO Appraisal results were not available during the inspection. The 1983 Appraisal identified 4 findings related to radiation protection. Review of those findings showed an active program for tracking and resolving the findings.

Within the scope of these reviews, no violations were identified. The licensee appeared to be implementing an adequate and effective audit program for radiation protection activities.

#### 5. Radiation Work Permits

The issuance, adherence to and adequacy of the licensee's radiation work permits (RWP) were reviewed against criteria and recommendations provided in:

- Technical Specification 6.5, "Operating Procedures";
- Licensee's Administrative Procedure (AP) 0502, "Radiation work Permits," Revision 13 (March 30, 1984);
- Department Instruction 84-11 changes to AP0502, (April 26, 1984);
- Yankee Atomic Electric Company Operational Quality Assurance Manual YOQAP-1-A, Section I, "Quality Assurance Program," Revision 15 (February 15, 1984);
- ANSI N 18.7-1970, "Administrative Controls And Quality Assurance for the Operational Phase of Nuclear Power Plants";

- Regulatory Guide 8.7, "Occupational Radiation Exposure Records Systems";
- ANSI N 13.6-1966 (R1972), "American National Standard Practice For Occupational Radiation Exposure Records Systems";
- 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
- NUREG-0761, "Radiation Protection Plans for Nuclear Power Reactor Licensees."

Performance relative to these criteria and recommendations was determined by a review of a sample of routine and standard RWPs issued between August 1984 and January 1985 and their supporting surveys, discussions with chemistry and Health Physics Technicians and Assistants and direct observation of work in progress.

Within the scope of this review, no violations were noted. The licensee was implementing a generally effective RWP program. However, the following apparent weaknesses were noted:

- AP 0502 defines standard RWPs as those permits issued to cover the performance of one specific, nonroutine job in the radiologically controlled area. Section 5.3 of ANSI N 13.6-1966 (R1972) recommends that a description of the work authorized by the procedure be provided. Section 5.3.1 of ANSI N 18.7-1976 requires each procedure be sufficiently detailed for a qualified individual to perform the required function without direct supervision. The journal, Radiation Protection Management (July, 1984), in reporting the results of a survey of radiation work permit systems at 31 utilities (including the licensee) recommended that each radiation work permit contain a job description complete enough so that workers will know what is outside the scope of the permit. Job descriptions on several standard RWPs failed to provide an exact description defining the scope of the work being authorized. A series of standard RWPs were issued by the licensee during August and September 1984 with job descriptions stating "Decon CRD repair room." Discussions with cognizant technicians indicated that the actual tasks ranged from general examination of the work area to removal of control rod drive system filters reading several rems per hour at contact. Although the radiological control measures taken by the licensee were adequate to prevent serious exposures in these instances, the job descriptions were not sufficiently detailed to define the scope of the work authorized by the RWPs. The provision of exact job descriptions on standard RWPs was discussed with the licensee and will be examined in subsequent inspections. 50-271/85-05-02
- Section 5.3 of ANSI N 13.6-1966 (R1972) also recommends that a radiation work procedure describe conditions which would terminate or

suspend work in progress. AP 0502 mentions termination of a RWP for a significant change in working conditions.

Several members of the health physics staff were interviewed to determine when special instructions would be included on standard RWPs to terminate or suspend work in progress for a significant change in working conditions. The health physics staff members were unable to identify any guidance in the radiological administrative controls which suggested that this type of special instruction was needed. The inspector noted that special instructions frequently included hold points for health physics surveys but did not include instructions to terminate or suspend work in progress for a significant change in working conditions. The provision of special instructions to terminate or suspend work in progress for a significant change in working conditions was discussed with the licensee and will be examined in subsequent inspections. 50-271/85-05-03

#### 6. Personnel Dosimetry

The following aspects of the licensee's external dosimetry program were reviewed:

- issuance and use of proper personnel monitoring devices;
- management review of exposure data trends;
- generation and maintenance of external exposure records and/or exposure reports; and
- adherence to and adequacy of external dosimetry procedures.

The review was with respect to criteria contained in the following:

- 10 CFR 20, "Standards For Protection Against Radiation";
- Technical Specification 6.5, "Operating Procedures";
- Applicable licensee external dosimetry procedures;
- I&E Information Notice No. 81-26, Part 3: "Placement of Personnel Monitoring Devices For External Radiation Exposure" and its supplement; and
- Regulatory Guide 8.4, "Direct-Reading And Indirect-Reading Pocket Dosimeters."

Performance relative to these criteria was determined by review of external dosimetry records for 1984, discussion of external dosimetry procedures with station and contractor personnel, examination of procedures and direct observation.

Within the scope of this review, no violations were noted.

The licensee was implementing a generally effective external dosimetry program. The licensee's contractor for external dosimetry is an accredited participant in the National Voluntary Laboratory Accreditation Program for personnel radiation dosimetry processing services. However, the following apparent weaknesses in the licensee's external dosimetry program were noted:

- Administrative Procedure (AP) 0506, "Personnel Monitoring," Revision 8 (December 4, 1984) failed to provide guidance in the selection and use of extremity and supplemental external dosimetry devices for work in nonuniform radiation fields. Discussions with technicians and assistants indicated that extremity dosimeters were used if the extremity doses could approach 25% of the limits in 10 CFR 20.101. However, criteria for the placement of supplemental dosimetry for nonuniform radiation fields was inconsistent among the staff members interviewed. Although no instances of improper external dosimetry placement were noted, the need for guidance in the selection and use of extremity and supplemental external dosimetry was discussed with the licensee and will be reviewed in subsequent inspections. 50-271/85-05-04
- AP 0506 also failed to provide guidance for special processing of thermoluminescent dosimeters (TLD) to evaluate external radiation exposure when direct-reading pocket dosimeters were offscale following a work activity or when pocket dosimeter exposure measurements approached plant administrative or NRC regulatory limits. Off-scale dosimeter reports from August 1984 through January 1985 were reviewed to determine instances when TLDs should have been read but were not. No such instances were identified. The need for guidance for special processing of TLDs was discussed with the licensee and will be reviewed in subsequent inspections. 50-271/85-05-05

## 7. Surveys And Monitoring

The following aspects of the licensee's routine surveillance and monitoring program were reviewed:

- adequacy of the supply, maintenance, calibration and performance checks of survey and monitoring instruments;
- proper use of personal and equipment contamination monitors;
- adequacy of surveys to assess personnel exposure due to possible skin contamination;
- control and monitoring of high radiation area entrances; and
- routine surveillance of plant work areas.



Each of the above were reviewed relative to criteria provided in 10 CFR 20, Technical Specification 6.5 and applicable licensee surveillance and monitoring procedures.

Performance relative to these criteria was determined by review of routine and special surveillance methods and records, discussions with cognizant technicians and assistants and direct observation.

Within the scope of this review, no violations were noted. The licensee appeared to be implementing a generally effective routine surveillance and monitoring program in the areas examined.

#### 8. External Exposure Controls

The following additional aspects of the licensee's external exposure control program were reviewed:

- control of access to high exposure areas;
- posting and labeling of plant areas; and
- work planning and preparation to minimize exposures.

Criteria for the review were provided in:

- 10 CFR 20, "Standards For Protection Against Radiation";
- Technical Specification 6.5, "Operating Procedures"; and
- Applicable station procedures.

Performance relative to these criteria was determined by review of 5 entries to containment since the 1984 Refueling Outage, examination of exposure analyses and other reports for 1984, discussions with cognizant members of the radiation protection staff and observations and measurements during plant tours.

Within the scope of this review, no violations were noted. The licensee appeared to be providing a generally effective program in these areas.

#### 9. Exit Interview

The inspector met with the licensee's representatives (denoted in Paragraph 1) at the conclusion of the inspection on February 1, 1985. The inspector summarized the purpose and scope of the inspection and findings as described in this report.

At no time during this inspection was written material provided to the licensee by the inspector. No information exempt from disclosure under 10 CFR 2.790 is discussed in this report.