

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-263/77-17

Docket No. 50-263

License No. DPR-22

Licensee: Northern States Power Company
414 Nicollet Mall
Minneapolis, MN 55401

Facility Name: Monticello Nuclear Generating Plant

Inspection at: Monticello Site, Monticello, MN

Inspection conducted: September 27-29, 1977

Inspectors: D. E. Miller *D. E. Miller* 10-7-77

W. L. Fisher *W. L. Fisher* 10-11-77

Approved by: W. L. Fisher, Chief *W. L. Fisher* 10-11-77
Fuel Facility Projects and
Radiation Support Section

Inspection Summary

Inspection on September 27-29, 1977 (Report No. 50-263/77-17)

Areas Inspected: Routine, unannounced inspection of operational radiation protection program during refueling and major maintenance, including: qualifications; training; planning and preparation; exposure control; posting, labeling, and control; surveys; previous items of noncompliance; and previous commitments. The inspection involved 38 inspector-hours on site by two NRC inspectors.

Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

- *L. Eliason, Plant Manager
- *M. Clarity, Plant Engineering and Radiation Protection Superintendent
- *F. Fey, Radiation Protection Engineer
- L. Nolan, Engineer
- R. Jacobson, Chemist
- J. Windschill, Health Physicist
- P. Yurczyk, Radiation Protection Coordinator
- J. Peterson, Chemistry Coordinator
- G. Mathiasen, Radiation Protection Specialist

The inspectors also contacted three other radiation protection specialists during the course of the inspection.

*denotes those present at the exit interview.

2. General

This inspection, which began with visual observation of work in progress on the refueling floor at 12:30 p.m. on September 27, 1977, was conducted to examine the radiation protection aspects of the current refueling and major maintenance outage, previous items of noncompliance, and previous commitments made by the licensee.

No significant abnormalities were noted during the visual observations.

3. Organization

John Windschill, a recent masters degree graduate in radiological health, has been hired as a "Health Physicist." The remainder of the radiation protection complement is as previously reported (50-263/77-10).

The licensee has contracted about twenty additional radiation protection technicians for the duration of the refueling and maintenance outage.

4. Licensee Action on Previous Inspection Findings

(Closed) Infraction (50-263/77-10): Calibration of portable dose rate survey instruments at a frequency other than specified

by procedure. The inspector reviewed the licensee's response dated July 29, 1977. The corrective actions appear to be adequate.

(Closed) Infraction (50-263/77-05): Reactor Building noble gas effluent monitor not being adequately calibrated quarterly. The inspector reviewed the licensee's response dated May 24, 1977. The licensee has replaced the G-M tube noble gas effluent monitor with a beta scintillation monitor which has a better detection sensitivity and can readily be calibrated using plant gases or gas standards. The inspector reviewed the calibration and functional test procedures which were revised by the licensee. The corrective actions appear to be adequate. This matter is considered resolved.

5. Training

In compliance with a previous commitment, (50-263/76-07) the licensee has developed a new videotaped orientation training presentation. The inspectors reviewed this presentation, which is shown in about forty minutes. The presentation appears to contain information required by 10 CFR 19.12.

6. Surveys

Records of direct radiation, surface contamination, and airborne contamination surveys conducted during the refueling outage were reviewed. The inspectors discussed with the licensee his methods of identification and control of airborne contamination areas. No significant problems were identified.

7. Bioassays and In Vivo Counting

The licensee intends to have an onsite whole body counting system in operation before the refueling and maintenance outage is completed. The bioassay program remains as previously reported (50-263/77-10).

8. ALARA

The licensee appears to be effectively controlling both external and internal exposure. The effectiveness of this ALARA effort is reflected in a 1971-76 average dose rate of 0.073 millirems per megawatt-hour (net electrical) produced, less than half the 1976 average for all BWR's. Efforts in this regard include:

- a. Hydro-lasing the reactor vessel walls and installing a shielded work platform to reduce exposures during the current feedwater sparger repair.

- b. Hydro-lasing and scrubbing the torus before starting installation of relief valve spargers.
- c. Review by the Radiation Protection Supervisor of Radiation Work Permits for work in airborne and high radiation areas to ensure that all practical precautions are taken.
- d. Use of three portable, 4000 cfm HEPA and charcoal filtered air movers to provide local ventilation for work having high contamination potential.
- e. Use of a computer to maintain daily updated personal exposure records, thus providing timely information on which to judge the effectiveness of radiation controls. Each day this computer lists, by employer and TLD number, all monitored persons, showing their dose for the week, quarter, and year, and showing their remaining authorized quarterly dose. In addition, the computer prints a list of persons whose dose is within 100 mrem of their authorized dose. These lists are used extensively in work planning. Also, the licensee has contracted with the TLD supplier to have a contract employee, and necessary equipment, onsite to process the TLD badges as required to determine unusual or unexpected exposures and to process badges at certain dose estimate benchmarks.

9. Respiratory Protection

The licensee has not implemented 10 CFR 20.103(c) but expects to do so by December 29, 1977. Meanwhile, the licensee's respiratory protection program is following the requirements of Technical Specification 6.5.B and applicable portions of 10 CFR 20.103.

10. RWP's

A review of 40 recent Radiation Work Permits indicated adequate planning and authorization of radiation work. For work resulting in significant radiation exposure, the dose received by each worker is recorded on the file copy of the RWP, thus allowing after-the-fact evaluation of the effectiveness of exposure controls used during the work.

11. Airborne Tritium

Periodic analyses of reactor coolant, condensate, and other water samples have shown that the tritium concentration in these

liquids is relatively steady at about $4E-2 \mu\text{Ci/ml}$. Reactor building vent samples during 1977 have shown airborne tritium concentrations typically on the order of $1E-8 \mu\text{Ci/ml}$ and occasionally several times that value, well below the MPC of $5E-6 \mu\text{Ci/ml}$. Thus, it appears that the concentration of tritium in these liquids, resulting from reclamation of liquid wastes, has not caused and will not cause significant in-plant exposure to tritium.

12. Radiation Protection Procedures

Radiation protection procedures, Operations Manual, Volume E, "Radiation Safety," generally are appropriately written, maintained, and followed. Individual procedures have been revised periodically, the most recent revision having occurred in September 1977. Minor revisions are needed in Chapter E.1.2, "Radiation Safety Standards," and Chapter E.1.9, "Off-site Shipments of Radioactive Materials," in order to ensure compatibility with applicable regulations. In addition, the section of Chapter E.1.5, "Personnel Control and Monitoring," concerning respiratory protection will need revision by December 29, 1977 in order to ensure compliance with the revision of 10 CFR 20.103, which becomes completely effective on that date.

13. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on September 29, 1977.

The following matters were discussed:

- a. The purpose and scope of the inspection and the findings.
- b. Previous items of noncompliance. (Paragraph 4)
- c. The apparent need for revision of certain radiation protection procedures. The licensee stated that the matter would be reviewed. (Paragraph 12)