U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/82-11(DETP)

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 27-30, October 12-13, and October 22, 1982

Inspectors: P. C. Lovendale 11/22/82
W. B. Grant 11/22/82

Approved By: L. R. Greger, Chief 11/22/82
Facilities Radiation
Protection Section

Inspection Summary

Inspection on September 27-30, October 12-13, and October 22, 1982 (Report No. 50-263/82-11(DETP))
Areas Inspected: Routine, unannounced inspection of refueling radiation protection activities including: procedures, training, exposure control, posting and control, surveys, and material control. It also included inspection of License No. 22-08799-09, review of several TMI action plan items and review of an incident involving unplanned radiation exposure. The inspection involved 99 inspector-hours onsite by two NRC inspectors.
Results: Of the nine areas inspected no items of noncompliance were identified in six areas; three items of noncompliance were identified in the remaining areas (failure to follow procedures - Sections 6, 9 and 10, failure to perform surveys - Sections 9 and 10, and failure to provide necessary personal monitoring devices - Section 10).

DETAILS

1. Persons Contacted

*W. Shamla, Plant Manager
*C. Larson, Director, Nuclear Generation
*L. Eliason, General Manager, Nuclear Generation
*M. Clarity, Plant Superintendent, Engineering and Radiation Protection
*F. Fey, Superintendent, Radiation Protection
*J. Windschill, Lead Health Physicist
M. Miller, Health Physicist
*P. Walker, Quality Engineer
L. Nolan, Chemical Engineer
G. Smith, Engineer
R. Jacobsen, Senior Chemist
B. Schmidt, Assistant Training Supervisor
P. Yurczyk, Radiation Protection Coordinator

*C. H. Brown, Senior Resident Inspector, NRC
*L. R. Greger, Chief, Facilities Radiation Protection Section, RIII, NRC
*C. E. Norelius, Director, Division of Engineering and Technical Programs, RIII, NRC

The inspectors also interviewed other licensee employees and contractors including radiation protection specialists.

*Denotes those present at the exit meeting.

2. General

This inspection, which began with a plant tour and visual observation of facilities and equipment, posting, labeling, and access controls at 11:30 a.m. on September 27, 1982, was conducted to examine routine aspects of the radiation protection program during refueling and major maintenance operations, review progress of certain TMI Action Plan items, and inspect activities conducted under Byproduct Material License No. 22-08799-09. In addition, the inspectors reviewed the circumstances surrounding an incident involving unplanned exposures to two workers. During tours, the inspectors used an NRC survey instrument (Xetex 305-B) to monitor selected areas throughout the plant. Measurements made were in agreement with posted survey data. Area posting and housekeeping were good.

3. Advance Planning and Preparation

The licensee's planning and preparation for this outage has provided an adequate supply of equipment and personnel to ensure that the radiation protection program is fully implemented.

The plant's Radiation Protection staff has been augmented with 33 contract technicians. The contract technicians either meet or exceed the

qualifications required by Technical Specification 6.1.D which references ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel," or they are used for jobs which do not entrail that level of responsibility.

No items of noncompliance were identified.

4. Byproduct Material License No. 22-8799-09

This license authorizes Northern States Power Company (NSP) to transfer contaminated items to offsite facilities for machining or maintenance while under the control and direct supervision of NPS radiation protection personnel. Monticello Nuclear Generating Plant has used this licensee on three occasions.

On June 18 and on October 27, 1978, condensate pump discharge assemblies were repaired at Remmele Engineering Company, Big Lake, Minnesota. On April 27, 1980, a Limitorque motor operator was repaired at General Electric Company, Minneapolis, Minnesota. Records indicate that proper surveys were performed and all license conditions were followed. According to the licensee, NSP radiation protection personnel maintained direct supervision and control of the equipment during the period it was away from the plant site.

No items of noncompliance were identified.

5. Training

a. Initial Radiological Training

The inspector attended portions of this training, which included slides and view graphs. A written exam is given to all participants; a passing grade is mandatory. This training appears to meet the requirements of 10 CFR 19.12, "Instructions to Workers," for general entries into the plant's controlled areas.

b. Qualification/Training of Contract Radiation Protection Technicians

The inspectors reviewed the resumes and the training records of the contract radiation protection technicians. Selection of the contract radiation protection technicians includes a resume review, procedures and plant specific training, and testing. The training program and exam results were reviewed; no problems were noted.

6. Postings and Access Control

The inspectors examined the posting of contaminated areas, radiation areas, and high radiation areas throughout the turbine building, reactor building, and radwaste building. Postings at the entrances to the recombiner building, the condenser room, and the portable dry cleaning unit in the turbine building were confusing regarding the RWP requirements for entry. This matter was discussed at the exit meeting and will be reviewed further during a future inspection. (263/82-11-01)

During the plant tours, the inspectors observed workers entering and exiting controlled area access points for the torus, drywell, turbine building, and reactor building. On three separate occasions, workers were observed exiting the controlled, contaminated areas of the torus and the drywell without performing personal contamination (frisking) surveys either locally or at the main access control (MAC). It appeared that the radiation protection specialists assigned to the drywell and torus areas were not actively enforcing the frisking requirements. When this problem was first observed, the inspectors brought it to the attention of radiation protection management. The following morning some improvement was noted; however, by the following afternoon the inspectors again noted that workers exiting the torus were not frisking. The licensee's procedures concerning frisking, contained in Volume E of the Operations Manual, are confusing. The following procedural requirements were noted.

> Procedure E.1.1.I.A.1 requires that workers frisk when exiting a controlled area.
>
> Procedure E.1.3.III.B.2 requires frisking at the exit of a contaminated area or at MAC if worker entered a contaminated area and did not frisk at the exit.
>
> Procedure E.1.5.IV.C appears to require frisking at MAC and at the exit of any area within a controlled area where an instrument is available.

Although the procedures are confusing concerning whether workers should frisk immediately upon exiting controlled/contaminated areas or at the main access control area, they clearly require frisking after working in controlled/contaminated areas. The failures of workers to frisk noted above represent noncompliance with these procedural requirements. Additionally, the need for improved clarity concerning frisking requirements was discussed during the exit meeting and will be reviewed during a future inspection. (263/82-11-02, 263/82-11-03)

The inspectors reviewed the use of the controlled area entry control card system. Several minor discrepancies were noted including entry cards left in the active rack (signifying worker is in controlled area) for several hours to several days following the worker's exit from the controlled area. This can result in an inaccurate dosimeter total and an inaccurate exposure authorization for a worker who leaves his badge in the active rack. This matter was discussed during the exit meeting and will be reviewed during a future inspection. (263/82-11-04)

7. External Exposure Control

Exposure records for the period June 1982 to date were selectively reviewed. No problems were noted.

The licensee has arranged to have a personal dosimetry vendor representative onsite during this outage to read worker TLDs daily. This arrangement allows the licensee to maintain more current and accurate job and worker dose totals. No problems were noted.

No items of noncompliance were identified.

8. Material Control

The controls over radioactive material appeared generally adequate, although improvement appeared desirable in the labeling of radioactive trash. The inspectors noted that all trash, radioactive and clean, is collected in clear plastic bags. It is the responsibility of the plant helpers, who collect it, to take it to the proper storage area. Neither the clean nor the radioactive trash bags have any markings. There are signs in the plant which designate green containers for clean trash. The containers, however, are not marked "clean trash only." This matter was discussed at the exit meeting and will be reviewed during a future inspection. (263/82-11-05)

9. Box Compactor Operation

During a tour of the radwaste building, the inspectors observed an operator compacting radwaste using a recently installed box compactor. The operator was observed filling the container 12 to 18 inches above the top. This poses an airborne radiological hazard since the compactor ventilation system is not designed to maintain a negative pressure with the compression ram above the compactor box. Although the operator's face was observed positioned one to two feet from the compactor during this operation, he was not wearing any protective clothing or respiratory equipment. Some material was observed to fall to the floor during the compaction operation; it was picked up and returned to the compactor by the operator without use of protective gloves. Temporary Memo No. 579 to Volume F of the Operations Manual specifies operating procedures for the compactor. The memo does not specify protective clothing or respiratory equipment but does prohibit filling the compactor box above the container top. The operator observed was in noncompliance with this procedure. (263/82-11-02)

It was further noted that the radiation work permit being used for operation of the compactor was inappropriate in that it was a general RWP for inspection activities within the radwaste building. It did not specify use of protective clothing or respiratory equipment. Operation of the compactor without an appropriate RWP represents noncompliance with licensee procedure for issuance of RWPs which requires a specific RWP for this type of work. (263/82-11-02)

The box compactor was installed in August 1982 and was preoperational tested before being put into operation. Review of the preoperational test showed that no testing of air flow or filtration occurred to ensure proper airflow, and therefore control of airborne radioactivity during compactor operation. Further, no airborne surveys had been conducted since installation to confirm the absence of an airborne radioactivity hazard. Failure to perform these evaluations and surveys represent noncompliance with 10 CFR 20.201(b) which requires evaluation of airborne radiological hazards, among others. (263/82-11-06)

10. Unplanned Exposures During Ultrasonic Testing

The inspectors reviewed an incident involving unplanned exposures to three workers during ultrasonic testing of the recirculation system discharge nozzles. The two contractor workers and a licensee employee were ultrasonic testing the safe-end-to-nozzle and pipe-to-safe-end welds on discharge nozzle "H." After completing nozzle "H" (about 45 minutes) and while setting up equipment for the next nozzle, the licensee employee read his pocket dosimeter and noted a higher than expected reading. He then read the two contractors' dosimeters and found one offscale (greater than 1000 mR) and the other at 940 mR. After exiting the drywell, the workers' TLDs were read and indicated doses of 1090 mrems for one worker and 930 mrems for the other worker.

The expected dose for the work performed was about 200 mrems. A total of 800 mrems was projected for each worker to complete the job (three more nozzles were intended to be completed for that entry). This expected dose was based primarily on the results of a ten-day old survey of nozzle "J" which was conducted while shielding surrounding the nozzle was still in place. Surveys conducted after this incident showed that general area dose rates were up to a factor of ten higher than the previous survey. The radiation protection specialist (RPS) assigned to the drywell had apparently incorrectly assumed the survey of nozzle "J" had been conducted with the shielding removed and that the radiation levels in the vicinity of the other nozzles would be similar to nozzle "J". The RPS did not perform a survey in the vicinity of nozzle "H" before the three workers began work. According to licensee personnel and records, none of the recirculation system discharge nozzles had been surveyed following removal of shielding. The failure to perform the necessary surveys was contrary to the requirements of the RWP and is in noncompliance with 10 CFR 20.201(b) which requires surveys to evaluate radiological hazards. (263/82-06 and 263/82-02)

The two workers involved in this incident were not supplied with extremity monitoring devices. The inspectors reviewed the licensee's evaluation of the workers' extremity doses. No problems with the evaluation were noted. The evaluation resulted in the assignment of 7.4 rems (40 percent of the standards) to one of the worker's exposure record. Failure to provide extremity monitoring devices to the workers is considered an item of noncompliance with 10 CFR 20.202(a)(1). (263/82-11-10)

Other problems noted relating to this incident include weaknesses in the radiation work permit (RWP) and work request authorization (WRA) programs. The RWP used for the nozzle shielding removal and ultrasonic testing of the nozzles was written to cover general inservice inspection activities in the drywell. The radiation conditions listed on the RWP were general area readings and did not reflect the dose rates found in the vicinity of the recirculation system nozzles. Also, the RWP was not specific as to what radiation surveys were necessary and at what interval surveys should be performed. The WRA gave no indication that shielding was to be moved in order to perform the ultrasonic testing.

This type of information is essential so that the Radiation Protection Group can effectively evaluate the work request to ensure that proper radiological precautions are considered when writing the RWP. These matters were discussed during the exit meeting and will be reviewed further during a future inspection. (263/82-11-08)

11. TMI Action Plan Items

Licensee actions in response to NUREG-0737, Items, II.B.2, II.B.3, and II.F.1 were reviewed. The licensee's response to NUREG-0737 are contained in letters dated April 16, June 1, and June 28, 1982.

a. Design Review of Plant Shielding (II.B.2.2 Modification)

During a previous inspection[1], the licensee identified installation of a postaccident sampling station on the turbine floor as the only modification required to satisfy this requirement. Due to delays in obtaining and installing equipment, the licensee has informed NRR that completion of this item will be delayed until November 15, 1982. This item is discussed further in Section 11.b.

b. Post-Accident Sampling (II.B.3.2 Plant Modifications)

The licensee has installed the majority of this system on the turbine floor of the turbine building. By letter dated June 28, 1982, the licensee informed NRR that due to delays in obtaining and installing equipment, the completion of this item will be delayed until November 15, 1982. This item will be reviewed during a future inspection.

c. Iodine/Particulate Sampling (II.F.1.2)

The inspectors reviewed the installation of the two reactor building vent monitors. The systems appear to have an excessive number of bends, including small radius right angle bends, and add-on fittings which could cause loss of particulates and iodine resulting in samples which are not representative of the sample stream. Although the offgas stack monitoring systems were not specifically observed, the licensee stated that the installation is similar to the reactor building vent monitors. This matter was discussed at the exit meeting and will be reviewed during a future inspection.

d. Containment High Range Monitors (II.F.1.3)

The inspectors reviewed the installation and calibration of the containment high range monitors. No problems were noted, except that the licensee has taken exception to some of the NUREG-0737 requirements concerning this item. Until NRR and the licensee have resolved these exceptions, this item will remain open.

[1] Inspection Report No. 50-263/81-22

12. Recirculation Loop Piping Cracks

The inspectors reviewed the licensee's ALARA evaluations conducted to ensure that recirculation system piping cracks are repaired with minimum dose. The licensee has utilized portable shielding to reduce the general area dose rates by a factor of 3 to 4 and has utilized mockups for training of welders. It was estimated that each nozzle weld repaired would require 10-20 person-rems depending on how much overlay of each weld is required. One of the nozzles was observed and independent dose rate measurements were made by the inspectors. No problems were identified.

13. Management Meeting

The inspectors and NRC Region III management met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on October 22, 1982, to discuss the inspection findings and NRC management concerns regarding the radiation protection program. The licensee was informed that the unplanned exposures of the two workers involved in ultrasonic testing of the recirculation system nozzles had been evaluated for classification as a Severity Level III violation due to the potential for exceeding the quarterly personal exposure limits and that only after careful consideration of mitigating circumstances did Region III conclude that they were more appropriately classified at Severity Level IV. The licensee was also informed that this matter, the failure to properly evaluate radiological hazards associated with operation of the box compactor and other inspection findings over the last year had raised concerns that the licensee's radiation protection program was decreasing in effectiveness.

The licensee representatives acknowledged that they were also concerned with the referenced events and stated that they would review their radiation protection performance to determine appropriate actions to prevent recurrence and to effect improvements in their radiation protection program. In response to certain items discussed, the licensee:

a. Stated the posting "RWP Need for Entry" in the three areas would be reviewed. (Section 6)

b. Stated that procedure E1.5.IV.c, "Personnel Contamination Surveys" would be reviewed for clarity. (Section 6)

c. Stated that the entry control card system would be reviewed and its use closely monitored during outages. (Section 6)

d. Stated that radioactive waste bags and the green cans for clean trash will be appropriately marked. (Section 8)

e. Stated that a study of the representativeness of samples taken by the iodine and particulate sampling system will be conducted. (Section 11.c)

f. Stated that operation of the box compactor will be evaluated including air samples during operation. Also, a separate RWP has been written for box compactor operation. (Section 9)

g. Stated that the RWP and WRA systems would be reviewed. (Section 10)

h. Acknowledged the inspectors' remarks concerning the items of non-compliance. (Sections 6, 9, and 10)