U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-282/82-12(DETP); 50-306/82-12(DETP)

Docket Nos. 50-282; 50-306 Licenses No. DPR-42; DPR-60

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

Facility Name: Prairie Island Nuclear Generating Plant, Units 1 and 2

Inspection At: Prairie Island Site, Red Wing, MN

Inspection Conducted: July 20-23, 1982

Inspectors: L. J. Hueter 8/26/82

L. R. Greger

Approved By: L. R. Greger, Chief 8/26/82
Facilities Radiation
Protection Section

Inspection Summary

Inspection on July 20-23, 1982 (Reports No. 50-282/82-12(DETP); 50-306/82-12(DETP))
Areas Inspected: Routine, unannounced inspection of the operational radiation protection and radioactive waste processing programs, and transportation activities including: organization, qualifications and training, effluent control instrumentation, reactor coolant water quality, licensee audits, radiation protection procedures, exposure control, in-plant radiation protection program, advance planning and preparations, instruments and equipment, and transportation activities. The inspection involved 57 inspector-hours onsite by two NRC inspectors.
Results: No items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

J. Callahan, Training Instructor
J. Early, Radiation Protection Specialist
A. Johnson, Radiation Protection Supervisor
*G. Kolle, Training Specialist
*D. Larimer, Radiochemistry Supervisor
G. Malinowski, Radiation Protection Coordinator
*D. Mendele, Plant Superintendent, Engineering and Radiation Protection
*J. Oelkers, Quality Control Specialist
*D. Stember, Radwaste Engineer
*R. Stenroos, Senior Production Engineer
E. Watzl, Plant Manager

*B. Burgess, NRC Resident Inspector
C. Feierabend, NRC Senior Resident Inspector

*Denotes those attending the exit meeting.

2. General

This inspection, which began about 8:00 a.m. on July 20, 1982, was conducted to examine routine aspects of the operational radiation protection and radwaste processing programs and transportation activities. During the inspection, tours were made of the new training center, the reactor control room, various levels of the auxiliary building, radwaste building, and the barrel yard (waste storage building). During one of the tours, the inspector used an NRC survey instrument (Xetec 305-B) to survey selected areas. Measurements made were in agreement with posted survey data. Housekeeping, in general, was good. Due to the recent completion of a refueling outage, a few areas were in need of attention regarding placement of equipment and tools in storage locations and final cleanup. No problems were identified with area postings.

3. Organization

Some significant changes have taken place in the radiation protection/chemistry organization at the supervisory/management level since the last operational radiation protection inspection, conducted in March 1981. At that time, it was noted that the Senior Plant Chemist position would soon be vacant. This position was filled from within the chemistry organization by an individual, Dennis Larimer, meeting the criteria specified in ANSI N18.1-1971.

As before, the Superintendent of Radiation Protection reports to the Plant Superintendent, Engineering and Radiation Protection who in turn reports to the Plant Manager. In June, the Plant Manager was promoted

to a corporate position. The Plant Superintendent, Engineering and Radiation Protection, was promoted to the Plant Manager position. David Mendele, who has about 10 years plant experience, was promoted from the position of Superintendent of Operations, Engineering, to the position vacated by Mr. Watzl.

The current radiation protection organization consists of a superintendent; 2 supervisors (radiation protection and radiochemistry); 5 degreed engineers; and 18 technicians, including 2 coordinators, all of whom have completed training to qualify for backshift coverage. During the recently completed refueling outage, 20 contract radiation protection technicians (including 16 senior technicians) were brought onsite to assist in radiation protection coverage.

No items of noncompliance or deviations were identified.

4. Training

General Employee Training (GET), which includes radiation protection instructions to workers per 10 CFR 19.12, was reviewed and found acceptable. An inspector attended a GET training session. The instruction material, instructor presentation, and environmental factors all contributed positively to the effectiveness of the training. Tests were administered following individual training segments. Selective review of licensee records revealed no discrepancies concerning initial or refresher training of plant workers. It was noted, however, that the formal plant policy regarding retraining interval did not include a three-month extension which is routinely applied. This matter was discussed at the exit meeting.

In response to a previous inspection[1], the licensee initiated an abbreviated training program for escorted visitors. A handout, given to escorted visitors before they enter the plant, warns that radiological hazards exist within the plant and that escorted visitors must follow their escorts' instructions regarding radiological hazards.

A formalized radiation protection specialist refresher training program, implemented in 1982, consists of approximately 21 days refresher training per year. The training is organized into seven sessions each covering a six-week period to accomodate shift work schedules. At the time of this inspection, three of the seven sessions had been completed with the fourth session about one half complete. The refresher training program which includes plant systems training and formal lesson plans, corrects two training shortcomings identified in a previous inspection.[2]

[1] IE Inspection Report No. 50-282/80-08, 50-306/80-09.
[2] Ibid.

In addition to the formal refresher training, monthly safety and weekly section meetings continue to be held.

Contract radiation protection technicians continue to be used to supplement the radiation protection staff during major outages. A special one-day training program was instituted for contract radiation protection technicians during the second 1980 refueling outage and has been continued for subsequent outages. The formal lesson plan for this training was reviewed. It appeared acceptable; however, the inspector recommended that contract technicians be supplied with a handout referencing plant specific information useful in the performance of their work activities. This matter was discussed at the exit meeting.

5. Effluent Control Instrumentation

Records of gaseous and liquid effluent monitor calibrations and selected monthly functional tests for the last half of 1981 and 1982 to date were reviewed. Settings for trips and alarms were also reviewed for compliance with technical specification requirements. No problems were identified.

6. Reactor Coolant Water Quality

The inspector reviewed selected licensee records of reactor coolant water tests for chemical and radioactivity control. Records for late 1981 and 1982 to date were reviewed to determine compliance with technical specifications regarding frequency of tests and testing results. Particular tests reviewed were iodine-131 dose equivalent, $\bar{E}$ determination, beta-gamma, tritium, chlorine, fluorine, oxygen, and boron concentrations. It appears the tests were conducted timely and that specific test results remained well within allowed limits. The Unit 1 reactor coolant iodine-131 dose equivalent peaked at 0.75 uCi/ml (limit 1.0 uCi/ml) in November 1981 but quickly retreated and is currently about 5E-3 uCi/ml iodine-131 dose equivalent.

No items of noncompliance or deviations were identified.

7. Licensee Audits

The inspector reviewed two licensee audits of the radiation protection program; one audit was conducted by the plant QC group in October-November 1981 and the other by the corporate office in November-December 1981. Both audits identified a problem with procedures not clearly differentiating between recommendations and requirements because of discrepant usage of the terms shall, will, should, may, etc. Administrative Control Directives (ACDs), the Section Work Instructions (SWIs), and the Radiation Protection Manual are involved. In response, the licensee is currently working on a procedures review and rewrite to correct the identified problem. The licensee plans to have this accomplished by September 1, 1982.

Another problem identified by the plant QC group audit involved the inconsistent use of a record form. The problem appears to be partially attributable to the form format and the procedure governing its use. In response, the record form and its governing procedure are being revised.

The licensee appears responsive to identified problems.

8. Radiation Protection Procedures

The inspector reviewed changes to selected radiation protection procedures issued in 1981 and 1982 to date, and portions of the Radiation Protection Manual issued in May 1981. The changes reviewed appear to be consistent with regulatory requirements and good radiation protection practices. The Radiation Protection Manual contains numerous typographical errors. For this reason, and others noted in Section 7 (Licensee Audits), the licensee is reviewing and revising all radiation protection procedures with planned completion by September 1, 1982.

9. External Exposure Control

There have been no significant changes in the licensee's personal monitoring program. The inspector selectively reviewed exposure records for 1981 and 1982 to date. Good exposure control is evidenced by a total exposure in 1981 of 314 person-rems with both units undergoing a refueling outage. Only one person exceeded three-rem exposure (3.13 rem) for the year. In 1982, the licensee's exposure to date is about 150 person-rems of which 90 person-rems was attributable to the Unit 2 refueling outage. Eddy current testing of 100 percent of the steam generator tubes was accomplished with a total exposure of 14.9 person-rems.

The licensee has about ten TLDs spiked twice yearly at the National Bureau of Standards and sends them to the vendor for processing. The spiked TLDs on average show good agreement, reading slightly high which is conservative.

No items of noncompliance or deviations were identified.

10. Internal Exposure Control

Whole body counting is used to ensure the effectiveness of the routine control measures employed to minimize internal exposures. The routine control measures utilized include engineering controls, airborne and surface contamination surveys, decontamination of surfaces, local filtered ventilation, protective clothing and equipment, and stay time calculations.

Whole body counting data from February 1, 1981, to date, as well as selected respiratory protection training records, MPC-hour determinations, and air activity surveys were reviewed. No exposures greater than the 40 MPC-hour control were indicated. Two individuals had

initial elevated counts, but subsequent whole body counts after showering confirmed that the activity was removable external contamination.

No items of noncompliance or deviations were identified.

11. In-plant Radiation Protection Program

a. Surveys

The inspector selectively reviewed radiation, contamination, and airborne activity surveys conducted by the licensee to meet surveillance requirements, and to determine radiation work permit requirements for jobs having the greatest potential for external and internal exposure during the recent Unit 2 refueling outage. No problems were noted.

b. Posting and Access Control

During a tour, the inspector reviewed radiation, high radiation, and contamination area postings within the controlled area. No discrepancies with posting requirements of 10 CFR 20.203 were noted.

c. Releases of Materials for Unrestricted Use

The licensee's procedures and controls for release of materials for unrestricted use were reviewed. The new high sensitivity scintillation type portal monitors installed both at access control and at the guardhouse, although intended primarily for personal contamination, should also provide a fairly sensitive backup for contaminated material control.

No items of noncompliance or deviations were identified.

12. Advanced Planning and Preparation

An ALARA review step is included in design change packages. Pre-planning of other major tasks includes an ALARA review. Special project HPs were assigned responsibility for coordinating high exposure/critical path jobs such as eddy current testing and cavity decontamination during the recent refueling outage. The licensee reported that this was successful and resulted in a savings of time, exposure, and volume of radwaste generated. These specialists are also writing outage reports that provide general plant radiation level information and problems associated with specific outage tasks to aid those preparing for the same job during future outages.

Before the last refueling outage, the licensee sent two HPs to Westinghouse to review the training given to channel head jumpers used in eddy current testing the steam generator tubes. By the next refueling outage, the licensee plans to have a mock-up of the steam generator for onsite training.

During the next Unit 1 refueling outage, the licensee plans to remove 40 Unit 1 fuel elements which have exhibited fuel cladding problems rather than leave them in for the normal cycle. The planned procurement of new fuel sipping equipment, which will sip the fuel more quickly and in a wet condition, should result in lower personal exposures.

No items of noncompliance or deviations were identified.

13. Instruments and Equipment

Two portal monitors with high sensitivity scintillation detectors were obtained in the fall of 1981 and set up at access control and at the guardhouse. Ten new RO-2A survey meters with range up to 50 R/hr have been obtained, calibrated, and are in use. A new automatic smear counter was on site. On August 13, a Company representative is to provide a half-day training session to licensee personnel on the operation of the equipment.

Other equipment on order includes: a calibrator with a 260 curie cesium-137 source for high range survey meter calibrations; four RO-2 survey meters with a range to 5 R/hr; and two RO-7 high range survey meters equipped with underwater probes.

No items of noncompliance or deviations were identified.

14. Status of NUREG-0737 Item II.B.3.2.B

During a previous inspection it was noted that replacement of sample valves on loop B of Unit 2 with environmentally qualified valves was to be accomplished by the end of the 1982 refueling outage scheduled to begin in June. During this inspection, the inspector confirmed the completion of the valve replacement. (Closed 306/82-07-01)

15. Radwaste Transportation

The licensee ships radioactive waste to the Barnwell, South Carolina and Richland, Washington burial sites. Radwaste shipped to the Barnwell site is normally limited to dewatered resins, with activities exceeding 1 uCi/cc, shipped in high integrity containers. Shipments to the Richland site include compacted and noncompacted trash in 55-gallon drums, evaporator concentrates solidified in concrete in 55-gallon drums, dewatered resins with activities below 1 uCi/cc, and miscellaneous trash in metal boxes. Contaminated spent fuel racks removed during installation of the high density spent fuel racks are being shipped to a licensee in Washington for decontamination and disposal.

The installed cement solidification system apparently functions reasonably well. Personal exposures associated with the solidification system operation were reduced recently when the procedure for deconning and capping drums was changed to remove the drums from the drum aisles before performing these operations. The processed drums

are currently checked for solidification several weeks after processing, moved out of the drum aisles to a low radiation background area where they are capped and deconned, and then moved into a recently completed radwaste storage building adjacent to the radwaste processing area. The new radwaste storage building replaces an open storage yard and should eliminate previous weather problems which interferred with radwaste movement and shipment during the winter months. Two-foot thick concrete walls also provide better shielding than previously provided. The new radwaste storage building was designed to contain four-years radwaste volume. With minor exceptions, only radwaste packaged for shipment is expected to be stored in the new facility.

The inspector verified that the licensee possessed current license requirements of the commercial burial sites and current copies of the Department of Transportation and Nuclear Regulatory Commission regulations for the transfer, packaging, and transport of radioactive material. The following procedures related to the transfer, packaging, and transport of radioactive material were selectively reviewed.

D11	(Rev. 0)	Radioactive Material Shipment
D11.1	(Rev. 1)	Radioactive Materials Shipment - LSA - Not Exceeding Type A Quantities, In Exclusive Use Vehicle to Richland, WA
D11.2	(Rev. 1)	Radioactive Materials Shipment - LSA - Greater Than Type A Quantities, In Exclusive Use Vehicle to Barnwell, South Carolina
D11.3	(Rev. 0)	Radioactive Materials Shipment - LSA - Greater Than Type A Quantities, In Exclusive Use Vehicle to Richland, Washington

It was noted that a recent change in 10 CFR 71 which requires advance notification to states for certain radwaste shipments had not been incorporated in the licensee's procedures. This matter was discussed at the exit meeting. No other problems were identified with the procedures reviewed.

One licensee individual has direct managerial responsibility for radwaste handling (collection, solidification, compacting, etc.), packaging, and transport. This arrangement appears to have resulted in a better than average radioactive waste program with relatively low personal exposures and radioactive waste generation. The licensee averages approximately 7500 cubic feet of radioactive waste generation annually (spent fuel racks are not included in this total). This average has increased slightly with plant age. The radioactive waste generation for the first six months of 1982 was approximately 3000 cubic feet.

The inspector selectively reviewed records of radwaste shipments made to date during 1982. No significant problems were noted. The licensee did not perform the scheduled maintenance checks specified in the certificates of compliance for two Type B quantity shipments, but had apparently verified that the maintenance was performed by the cask vendor. However, no documentation was available onsite from the cask vendors verifying completion of the maintenance checks. This matter was discussed at the exit meeting. Also discussed at the exit meeting was the licensee's assignment of a 50 percent uncertainty to radioactive waste shipment quantities in the semiannual effluent reports. This uncertainty appears excessive for most types of radioactive waste.

16. Exit Meeting

Inspector L. J. Hueter met with licensee representatives (denoted in Section 1) on July 23, 1982. The inspector summarized the scope and findings of the inspection. In response to certain items discussed by the inspector, the licensee:

a. Stated procedures would be revised to reflect the existing retraining frequency policy and to incorporate the state notifications required by 10 CFR 71 for large quantity radioactive waste shipments. (Sections 4 and 15)

b. Stated that the use of a handout for contract radiation protection technician training would be reviewed. (Section 4)

c. Stated that documentation would be procured and maintained on site to demonstrate completion of the maintenance requirements of certificates of compliance for future radioactive waste shipments. (Section 15)

d. Stated that the reported uncertainty associated with radioactive waste shipments would be reviewed. (Section 15)