U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-282/94011(DRSS); 50-306/94011(DRSS)

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

Inspection At: Prairie Island Site, Red Wing, MN

Inspection Conducted: June 21 through 24, 1994

Inspector: J. W. McCormick-Barger for 6/28/94
Patrick L. Louden Date
Radiation Specialist

Approved By: J. W. McCormick-Barger 6/28/94
J. W. McCormick-Barger, Chief Date
Radiological Programs Section

Inspection Summary

Inspection on June 21 through 24, 1994 (Report No. 50-282/94011(DRSS); 50-306/94011(DRSS))

Areas Inspected: Routine announced inspection of the licensee's radiation protection (RP) program performance during the spring 1994 Unit 1 refueling outage (Inspection Procedure (IP) 83750). Additionally, a review of the station's preparations for onsite storage of radioactive waste was performed (IP 86750).

Results: No violations of NRC requirements were identified. One inspection-followup-item (IFI) was initiated to monitor resolution of several questions raised by the inspector regarding the licensee's 10 CFR 50.59 safety evaluation for their interim radioactive waste storage facility. The licensee's radiological performance during the spring Unit 1 refueling outage was excellent with 95 person-rem (0.95 person-Sieverts (Svs)) of exposure recorded. In addition, no significant radiological occurrences were recorded during the outage and respirator reduction in accordance with the revised 10 CFR Part 20 regulations did not result in any recorded personnel intakes.

DETAILS

1. Persons Contacted

Northern States Power Company

*T. Beard, Corporate Health Physicist
*S. Derleth, Senior Radiation Protection Specialist
*A. Johnson, Supervisor, Operational Health Physics
*G. Malinowski, Supervisor, Operational Health Physics
*D. Schuelke, General Superintendent, Radiation Protection and Chemistry
*D. Stember, Health Physics Consulting Engineer
*M. Wadley, Plant Manager

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*R. Bywater, Resident Inspector

The inspector also interviewed other licensee personnel during the course of the inspection.

*Indicates those present at the exit meeting on June 24, 1994.

2. Audits and Appraisals (IP 83750)

The inspector reviewed several audits and surveillances performed by the licensee's Quality Assurance staff over the past several months. The inspector found the audits to be adequate to meet regulatory requirements.

The licensee had recently enhanced and promoted a problem identification documentation system at the station. The system uses "blue cards", which are available throughout the plant and may be submitted by any worker, to document observed problems at the station. The inspector discussed the system with radiation protection supervision who acknowledged that the system was in its infancy and that substantial input from the work force had yet been received. Station management indicated that the usual reluctancy to submit problem reports was experienced wherein, some workers believed the system was to report personnel deficiencies rather than report problems which could then be monitored, trended, and resolved. The inspector indicated that the progress of this identification system both in the marketing of the system and the effectiveness of the program with respect to RP issues would be reviewed during future inspections.

No violations of NRC requirements were identified.

3. Staffing During Refueling Outages (IP 83750)

The inspector noted the effective mechanism by which the licensee provides oversight to contract radiation protection technicians (CRPTs)

hired for outage. The station's normal compliment of six RPTs were assigned as "crew leaders" to provide oversight to CRPTs hired for the outage. This appeared to be an effective means in ensuring expected quality and performance levels were maintained by contractor staff. Interviews with station RPTs indicated that this arrangement also enhanced relationships between station and contractor RPTs.

No violations of NRC requirements were identified.

4. Occupational Exposures During Refueling Outages (IP 83750)

The inspector reviewed the station's radiological performance during the spring 1994 Unit 1 refueling outage. At the time of the inspection the licensee had recorded 94 person-rem (0.94 person-Svs) of exposure for the Unit 1 refueling outage. This was higher than the estimated goal of 81 person-rem (0.81 person-Svs); however, based on discussions with cognizant licensee staff, the estimated goal was an aggressive stretch to challenge the station to lower overall exposures during work activities. It appeared that the primary contributors to the higher than estimated exposures were in the areas of steam generator tube sleeving and plugging, and in-service-inspections (ISI). A breakdown of major job exposure totals are as follows:

ISI (inspection and insulation removal)	18 p-rem (0.18 p-Svs)
Steam Generator tube repairs (eddy current, sleeving, and plugging)	14 p-rem (0.14 p-Svs)
Incore thermocouple repair	5 p-rem (0.05 p-Svs)

Overall, the station's excellent performance with regard to personnel exposures during outages is a continuation of past performance. The licensee has consistently performed refueling outages for less than 100 person-rem (1 person-Sv) for the past several years.

The inspector reviewed selected ALARA Reviews for work activities performed during the outage. The ALARA Reviews were found to be thorough in content and specified precautions, work descriptions, and references for the work evaluated. Good use of lessons learned and industry events or NRC notices, was noted by the inspector.

No violations of NRC requirements were identified.

5. Internal Exposure Controls (IP 83750)

The inspector reviewed whole body count data for workers counted during the refueling outage to note and discuss any positive whole body counts and their relationship to respiratory protection reduction.

The licensee estimated that about a 70% reduction in respirator use was accomplished during the spring 1994 refueling outage. Licensee staff

indicated that worker response to the relaxation of respiratory protection requirements was by in large well received. Only a few instances of workers questioning RP's determination of proper controls occurred and were handled with no further problems.

Whole body count records revealed that for those individuals who received minor intakes of radioactivity due to not wearing a respirator, the highest committed effective dose equivalent would have been on the order of 3 to 5 milli-rem (30 to 50 micro-Svs). Doses at this level are well below the internal monitoring limits; therefore, no internal exposures were recorded for workers during this refueling outage. The inspector concluded that the licensee had effectively implemented the Revised Part 20 regulation with respect to respirator reduction to maintain total effective dose equivalents ALARA.

No violations of NRC requirements were identified.

6. Interim Radioactive Waste Storage Facility (IRSF) (IP 86750)

The inspector toured the licensee's IRSF and held discussions with plant staff and management regarding the use of the facility in light of the recent closure of the Barnwell, S.C. burial site.

The facility is a concrete building which was built in the middle 1980's and has been used as a holding area for radioactive waste awaiting transport. The licensee performed a safety evaluation for the building in 1982, which included a description of the building, various design code specifications, details of drainage and fire suppression systems, and an offsite dose evaluation based on the projected amounts of radioactive waste to be stored. The original evaluation referenced the use of 55 gallon drums as the principal container for high activity radioactive waste (i.e. primary resins and metal oxides on filter media). The facility is expected to provide ten years of storage capacity.

The licensee produced an internal memorandum in 1993 which discussed an updated plan for the use of the facility in anticipation of the closure of available burial sites. This memorandum was not applied as an amendment to the original safety evaluation. The revised plan included the use of high integrity containers (HICs) for storage of high activity waste. The use of these containers was not discussed in the original safety evaluation. In addition, the licensee has changed some processing procedures which address how these HICs will be filled in the IRSF. These procedures were also not directly tied to the original safety evaluation.

The inspector noted that the licensee had addressed in various documents many questions which would be evaluated in a complete safety evaluation. However, no consolidated individual document contained evaluations of all safety questions. The inspector raised a number of questions regarding the IRSF which appeared in need of further analysis. The following is an example of those questions raised:

Is there a detailed assessment of the use of HICs with higher contained curie contents?

What is the sampling frequency for the containers to ensure their integrity?

Is there a detailed procedure on how the HICs will be filled in the IRSF?

Is there an evaluation of accident scenarios based on the proposed use and operating procedures?

Has licensee staff reviewed offsite dose assessments using the updated storage capacity and curie contents?

The inspector discussed these questions and the overall format of their original safety evaluation and how it applied to the current facility. Licensee management acknowledged that some modifications were needed to address all safety questions in a single document which describes operational processes, ALARA considerations, and offsite dose evaluations. The inspector noted that these evaluation should be completed prior to using the building for interim radioactive waste storage. The completion of the revised safety evaluation for the IRSF will be tracked as an inspection-followup-item (IFI) for review prior to operation of the facility. (IFI 50-282/94011-01; 50-306/94011-01)

No violations of NRC requirements were identified. One inspection-followup-item was initiated.

7. Plant Tours

The inspector toured the auxiliary building and radioactive waste processing areas during the course of the inspection. All radiological control mechanisms (i.e. postings, step off pads, locked high radiation area doors) were found in compliance with NRC requirements. Housekeeping was acceptable; in some areas of the Unit 1 auxiliary building there was cluttered but mainly attributable to the impending end of the refueling outage.

No violations of NRC requirements were identified.

8. Exit Interview

The inspector met with licensee representatives (denoted in Section 1) at the conclusion of the inspection on June 24, 1994, to discuss the scope and findings of the inspection. Licensee representatives did not identify any documents or processes reviewed as proprietary. The following matters were specifically discussed:

- The initiation of an inspection-followup-item to monitor the completion of a revised safety evaluation on the onsite interim radioactive waste storage facility prior to operation.

- The apparent effective implementation of the revised 10 CFR Part 20 regulation with respect to maintaining total effective dose equivalent ALARA.