

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-263/83-13(DRMSP)

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: June 6-9, 1983

Inspector: *D. E. Miller/for*
W. B. Grant

6/30/83

Approved By: *D. E. Miller/for*
L. R. Greger, Chief
Facilities Radiation Protection
Section

6/30/83

Inspection Summary:

Inspection on June 6-9, 1983 (Report No. 50-263/83-13(DRMSP))

Areas Inspected: Routine unannounced inspection of radioactive waste systems and transportation of radioactive materials including: effluent releases; records and reports of effluents; effluent control instrumentation; procedures for controlling releases; containment air-cleaning systems; reactor coolant water quality; solid radioactive waste; maintenance of packages; and licensee actions on previous inspection findings. The inspection involved 29 inspector-hours onsite by one NRC inspector.

Results: Of the nine areas inspected, no items of noncompliance or deviations were identified in eight areas; one item of noncompliance was identified in the remaining area (unauthorized temporary shielding was added to a shipping cask - Section 7).

DETAILS

1. Persons Contacted

- L. Brehm, Engineer II
- *M. Clarity, Plant Superintendent Engineering and Radiation Protection
- *F. Fey, Superintendent, Radiation Protection
- O. Iverson, Production Engineer
- R. Jacobson, Lead Plant Chemist
- G. Mathiasen, Supervisor Radiation Services
- L. Nolan, Lead Chemical Engineer
- D. Orrock, Radiation Protection Specialist
- J. Peterson, Chemistry Coordinator
- *W. Shamla, Plant Manager
- G. Smith, Production Engineer
- J. Swailes, Senior Nuclear Engineer
- *J. Windschill, Associate (Lead) Health Physicist

- *C. Brown, Senior Resident Inspector, NRC

*Denotes those present at the exit meeting.

2. General

This inspection, which began with a plant tour and observation of facilities and equipment at 11:30 a.m. on June 6, 1983, was conducted to examine radwaste aspects of routine plant operations, transportation activities, and status of previous inspection findings. During the tours, the inspector used an NRC survey instrument (Xetex 305-B) to monitor selected areas throughout the plant. Measurements were in agreement with posted survey data; area postings and housekeeping were good.

3. Licensee Actions on Previous Inspection Findings

(Closed) Open Item (263/82-06-08) Concerning review and revision of RWP and WRA procedures. Radiation Protection Procedure RPP R.1.1, "RWP Preparation and Issuance," became effective March 31, 1983. Administrative Control Directive 4ACD 3.6 "Work Request Authorization" was issued May 20, 1983. Both of these revised procedures clarify the issuing of WRA's and RWP's.

4. Gaseous Radwaste

a. Augmented Off-Gas System

The licensee's augmented off-gas system, consisting of two recombiners and five pressurized holdup tanks added to the 30-minute holdup system, has operated without significant problems since the last radwaste inspection. According to licensee personnel and review of licensee records, condenser air inleakage and gas decay

tank gross radioactivity were determined weekly, and the maximum gross radioactivity permitted in one gas decay task was not exceeded. No problems were identified.

b. Noble Gas Releases

The licensee has installed four wide range noble gas monitors (WRGM). Two monitors sample the off-gas stack and two monitors sample the reactor building vent. Both sets of monitors perform alarm, isolation, and quantification functions. The monitors read out in the control room. Digital readouts of release rate or concentration are provided as well as strip chart recorders. According to the licensee's monitoring records, the maximum release rate experienced during 1982 and 1983 to date was less than 10% of the technical specification limit and the average quarterly release rate was less than 5% of the technical specification limit.

Noble gas releases are quantified from the average release rates recorded by the WRGM in the off-gas stack and in the reactor building vent. The conversion factors for these monitors are calculated routinely. The off-gas stack monitor conversion factor is calculated from the air ejector isotopic results decayed to the stack release point. No problems were noted.

c. Particulate and Iodine Releases

The WRGM system provides filter holders and valves to allow grab sample collection of particulates and iodines for isotopic laboratory analysis. According to the licensee's monitoring records, the maximum and average (quarterly and twelve consecutive months) release rates experienced during 1982 and 1983 to date were less than 10% of the technical specification limits.

No discrepancies from the technical specification surveillance requirements for radioiodine or particulate sampling were noted.

d. Tritium Releases

According to the licensee's surveillance records for 1982 and 1983 to date, the off-gas stack and reactor building vent were sampled for tritium monthly and each containment purge was sampled. Silica gel sampling was utilized to collect the vaporous tritium.

No items of noncompliance or deviations were identified.

5. Liquid Radwaste

No planned liquid radwaste releases were made during calendar years 1980, 1981, 1982, or to date in 1983. Waste liquids continue to be recycled for reuse in the reactor coolant system or used in processing solid wastes. The licensee's surveillance records for liquid radwaste storage activity and records of discharge canal monitor and effluent

monitor calibration and functional tests were selectively reviewed. No problems were identified.

The licensee has had two unplanned liquid radwaste releases since the last radwaste inspection, one in 1981 and one in 1982. In each case, the release was less than 1% of the technical specification limit. Licensee Event Reports (LER) were submitted by the licensee and investigated and closed by the resident inspector.

No items of noncompliance were identified.

6. Solid Radwaste

The licensee's radwaste solidification system remains out of operation indefinitely. No decisions have been made regarding future use of this system. In the interim, mobile solidification services continue to be contracted from Chem Nuclear Systems, Inc. In addition to solidified radwaste, shipments of compacted dry-waste and solid core components were made during CY 1979, 1980, 1981, 1982, and to date in 1983. Review of the licensee's waste disposal records revealed no discrepancies from the waste disposal data reported in the Effluent and Waste Disposal Semi-annual Reports.

The inspector reviewed an inadvertent contamination and release of makeup demineralizer resins from the plant controlled area. On January 17, 1983, normally uncontaminated resins from the make-up demineralizer were placed in five drums for shipment to the NSP (Prairie Island) landfill. Prior to release, the drums were surveyed for contamination and one drum was found apparently contaminated (greater than 100 cpm above background). When decontamination efforts proved unsuccessful, the resin was transferred to a clean drum which was subsequently surveyed for contamination and released. The drums were shipped to Prairie Island where the contents were sampled and buried. Sample analysis, completed subsequent to the burial, showed radioactive contamination (Cs-137, Cs-134 and Co-60) in a concentration of 15 pCi/g in one drum sample. The total radioactive contamination was estimated at 75 nanocuries. The resin was recovered from the landfill and returned to Monticello for disposal. Investigation by the licensee determined that the drum which was thought to have been externally contaminated was actually internally contaminated. A small amount of this contamination remained with the resin when the resin was transferred to the new drum. The origin of the contaminated drum was not determined.

The licensee's corrective actions have been: (1) to institute an interim requirement whereby the Lead Health Physicist must approve any material to be released from the controlled area which is not suitable for frisking or smearing, (2) to prepare a new procedure which will specifically govern the release of material such as sludge, oils, and resins from the controlled area, (This procedure will also have more detailed requirements regarding direct survey of all surfaces which have reasonable potential for being contaminated.) (3) to discuss the event with radiation protection staff with emphasis on being alert for the unusual. The licensee's

corrective action appears adequate. This matter was discussed at the exit meeting; the new procedure will be reviewed during a future inspection.

7. Unauthorized Shielding Added to Shipping Cask

The inspector reviewed an alleged unauthorized use of temporary shielding with a Model FSV-1 shipping cask. The licensee is using the FSV-1 cask to ship reactor control rods for offsite burial. Due to the large amounts of induced radioactivity in the control rods, the FSV-1 cask, when fully loaded with four control rods, had accessible external areas at which the radiation dose rates were above regulatory limits. On one occasion in February 1983, the licensee added shielding to the exterior of the cask by bolting lead and plywood to the cover in order to limit access to that area and reduce the accessible radiation levels below regulatory limits. Also, for a shipment made in March 1983, the licensee added a circular lead plate inside the cask to reduce radiation levels. The unauthorized addition of shielding represents noncompliance with 10 CFR 71.12(b)(1)(ii) which requires compliance with the terms and condition of the certificate. (263/83-13-01)

The inspector's findings in this matter substantiated the allegation. An IE Information Notice concerning the addition of temporary shielding to shipping casks was issued on March 11, 1983.

8. Radioactive Effluent Reports

The licensee's semiannual effluent reports covering the period January 1, 1979 through December 31, 1982 were reviewed. These reports appear to meet the intent of Regulatory Guide 1.21, Revision 1 as required by the technical specifications. The inspector selectively reviewed licensee sample records and surveillance records from which the effluent releases are quantified. No problems were identified.

9. Process Monitors

a. Off-Gas Stack Monitor

Continuous off-gas stack monitoring (WRGM) is provided by two monitors located on isokinetic sample lines. The monitor outputs are averaged and printed out continuously in the control room. According to licensee personnel, a conversion factor for the monitors is determined weekly. The conversion factor is based on an isotopic analysis of six nuclides at the air ejector discharge and a computer prediction of fifteen nuclides.

The inspector reviewed surveillance tests No. 163 "Stack Gas Monitor Quarterly Calibration", which describes the use of solid sources, Cl-36 and Cs-137, to establish the linearity of response of the off-gas stack monitor. This combination of the use of the solid source linearity check and the isotopic analysis performed in conjunction with the conversion factor determination comprises an acceptable calibration of the monitor. The off-gas stack monitor isolation

trip setpoints are determined in conjunction with the monitor calibration. The trip setpoints were found to be consistent with the technical specification limit for the maximum noble gas release rate. According to the licensee's records, functional test and calibration frequencies during 1982 and 1983 to date complied with the technical specification requirements.

b. Air Ejector Monitor

Continuous air ejector off-gas monitoring is provided by two off-line ionization chamber monitors. The licensee's records indicate that the air ejector monitor conversion factor (mR/hr to $\mu\text{Ci}/\text{sec}$) is determined weekly. The conversion factor is based on an isotopic analysis of six nuclides at the air ejector discharge and a computer prediction of fifteen nuclides.

An electronic calibration of the air ejector monitor is performed quarterly. Solid source linearity checks are performed during refueling outages. The combination of the solid sources linearity check and an isotopic analysis of an ejector discharge comprises an acceptable calibration of the monitor. The air ejector monitor isolation trip setpoints are determined in conjunction with the monitor calibration. The trip setpoints were found to be consistent with the technical specification limit for the maximum off-gas stack noble gas release rate. According to licensee records, functional test and calibration frequencies during 1982 and 1983 to date complied with the technical specification requirements.

c. Reactor Building Vent Monitors

Continuous noble gas monitoring (WRGM) of the reactor building ventilation exhaust is provided by two monitors located on isokinetic sample lines. The monitor output is averaged and printed out continuously in the control room. According to the licensee surveillance records, functional tests and calibration frequencies during 1982 and 1983 to date complied with the technical specification requirements. The inspector reviewed surveillance test No. 248 "Reactor Building Plenum Noble Gas Monitor Calibration Test" which describes the use of solid sources which have been cross calibrated to gaseous sources in the same manner described in paragraph 8a. and is therefore an acceptable method of calibration of the monitor. The WRGM also provides isolation functions. The monitor trip setpoints were consistent with technical specification requirements. Surveillance records indicate isolation tests were performed as required by technical specification.

d. Liquid Effluent Monitor and Discharge Canal Monitor

Liquid radwaste effluent and discharge canal monitoring is provided by separate, in-line, scintillation detector monitors. Calibrations and functional test frequencies complied with technical specification requirements. No problems were identified.

10. Procedures

During the course of the inspection, the following new or revised procedures were reviewed. No problems were identified.

Radwaste Procedure 8075, Rev. 4, "Shipping Radwaste Using a Model B-2 cask".

Radwaste Procedure 8076, Rev. 16, "Shipping Radwaste Using the CNSI 14-195 H Cask".

Radwaste Procedure 8077, Rev. 3, "Radioactive Materials Shipment LSA, Not Exceeding Type A Quantity in Exclusive Use Vehicle".

Radwaste Procedure 8084, Rev. 1, "Shipping Limited Quantities of Radioactive Materials".

Radwaste Procedure 8089, Rev. 2, "Radioactive Shipment Type A Quantity".

Radwaste Procedure 8091, Rev. 6, "Shipping Radwaste to U.S. Ecology in Washington".

Radwaste Procedure 8092, Rev. 7, "Shipping Radwaste to Barnwell".

Radwaste Procedure 8110, Rev. 6, "Master Radwaste Shipping Procedures".

Radwaste Procedure 8111, Rev. 3, "Receiving the GE 1600 cask".

Radwaste Procedure 8122, Rev. 0, "Shipping Irradiated Fuel with NLI-1/2 cask".

Radwaste Procedure 8129, Rev. 0, "Notifications for Large Quantity Shipments".

Radwaste Procedure 8130, Rev. 1, "Shipping Irradiated Hardware with CNS-3-55".

Radwaste Procedure 8134, Rev. 0, "Procedure for Shipping LSA Using B-2 Cask".

Radwaste Procedure 8141, Rev. 0, "Moving Solid Fuel Radwaste from Radwaste Building to Turbine Building".

Radwaste Procedure 8142, Rev. 4, "Shipping Irradiated Hardware with FSV-1 Cask".

In addition, the inspector reviewed the records of 30 surveillance procedures for the years 1982 and 1983 to date. The surveillance records reviewed appeared to comply with technical specification requirements.

In response to an inspector concern noted in Inspection Report 50-263/82-11, the licensee committed to consolidate radiation protection

instructions and procedures in a Radiation Protection Procedures (RPP) manual prior to the next scheduled refueling outage. The inspector reviewed RPP's which have been written or revised to date. The RPP's cover the subject matter adequately and provide clear concise instruction; however, of the hundred or so RPP's required to be reviewed and possibly revised, only four have been completed. The need to accelerate the revision process was discussed at the exit meeting.

11. Standby Gas Treatment System (SBGT)

The charcoal beds in SBGT train A and B were replaced during the refueling outage ending January 1983. The licensee's surveillance records for calendar year 1982 and 1983 to date were reviewed. No discrepancies from technical specification requirements were noted. According to licensee records and discussions with licensee personnel, no significant SBGT system operability problems have occurred since the last radwaste inspection.

12. Reactor Coolant Chemistry

The licensee's reactor coolant radiochemistry results for 1982 and 1983 to date were reviewed. No discrepancies from the technical specification surveillance requirements for radioiodine sampling or monthly gamma isotopic analyses were noted. Radioiodine surveillance during 1982 and 1983 to date were not dependent upon air ejector monitor increase. According to the licensee's records, the reactor coolant radioiodine concentrations (I-131 dose equivalent) averaged about 0.5% of the technical specification limit.

No items of noncompliance were identified.

13. Containment Purge

According to licensee personnel and records, all drywell purges are conducted through the standby gas treatment system. The radioactive effluents are quantified by the off-gas stack monitor. Each purge during 1982 and 1983 to date has been sampled and analyzed in accordance with the technical specifications.

No items of noncompliance were identified.

14. Transportation Activities

The inspector reviewed the licensee's procedures (noted in Section 9) for transportation of radioactive material. The procedures were current with respect to burial site criteria and NRC/DOT regulations. No problems were noted.

The inspector reviewed the licensee's method for ensuring that certificate of compliance maintenance requirements have been met. The required maintenance is performed by the vendor (cask owner). Depending on the vendor, a letter is sent to the licensee confirming that the required

maintenance was performed or a sticker is attached to the packages which indicates that the required maintenance has been completed. The licensee's procedures require confirmation that package maintenance has been completed before shipment. No problems were noted.

The inspector selectively reviewed records of shipments made during 1983 to date. Except as noted in Section 7, no problems were noted.

No items of noncompliance or deviations were identified.

15. Exit Meeting

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on June 9, 1983 and further by telephone with Mr. J. Windschill on June 17, 1983. The inspector summarized the purpose and scope of the inspection.

In response to certain items discussed by the inspector, the licensee:

- a. Acknowledged the item of noncompliance concerning the shielding added to the shipping cask.
- b. Stated that corrective actions concerning the contaminated resin are in progress.
- c. Stated that additional people would be requested to review Radiation Protection Procedures for the Radiation Protection Manual.