

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No: 50-263
License No: DPR-22

Report No: 50-263/98003(DRS)

Licensee: Northern States Power Company

Facility: Monticello Nuclear Generating Plant

Location: 2807 W. County Rd. 75
Monticello, MN 55362

Dates: February 9 - 13, 1998

Inspectors: W. Geoffrey West, Radiation Specialist
Steven Orth, Senior Radiation Specialist

Approved by: G. Shear, Chief, Plant Support Branch 2
Division of Reactor Safety

EXECUTIVE SUMMARY

Monticello Nuclear Generating Plant NRC Inspection Report 50-263/98003

This inspection included various aspects of the licensee's radiation protection (RP) program, specifically the following areas:

- Radioactive Waste Processing, Storage, Packaging, and Transportation
- Implementation of Recent Changes to NRC and Department of Transportation (DOT) Radioactive Material Packaging and Transportation Regulations
- Circumstances Surrounding an October 28, 1997, Resin Contamination Event
- Operability of the Discharge Canal Radiation Monitor Sample Pump
- General RP Practices

The following conclusions were reached in these areas:

- Plant housekeeping was effective in maintaining areas free of unnecessary equipment and debris. Radiological posting and labeling in the plant was appropriate, and station efforts to reduce instances of unsecured items crossing contaminated area boundaries were effective. One concern was noted, however, with the plant's survey maps at access control not being updated in a timely manner (Section R1.1).
- One violation of NRC requirements was identified for a failure to perform an adequate radiological evaluation of a job prior to the start of work. This violation resulted from an incident on October 28, 1997, in which an instruments and controls specialist became contaminated with radioactive resin during calibration of a pressure indicator on a radioactive waste (radwaste) system. The plant staff's immediate response to the event and the personnel dose assessment were executed properly. However, the licensee's subsequent corrective actions were not comprehensive (Section R1.2).
- The radioactive waste processing systems, storage areas, control room, and radioactive materials storage warehouses were well-organized, and waste containers were properly sealed and labeled (Section R1.3).
- The RP staff properly implemented the 10 CFR Part 61 waste characterization program. The staff sampled waste streams and evaluated the results of the analyses in accordance with procedures. The inspectors identified some minor problems concerning the lack of independence of the review of 1996 data (Section R1.4).
- The RP staff properly packaged radioactive materials and wastes for shipment. The inspectors noted that shipments were performed in accordance with the current requirements of 10 CFR 71 and 49 CFR Parts 172 and 173. The RP staff included all required information in the shipping documentation (Section R1.5).
- The station has had intermittent operability problems over the past several years with the discharge canal radiation monitor sample pump. Licensee staff had progressed

logically and expeditiously to determine the cause of the pump failures during this time period and had attempted numerous types of corrective actions without success. At the time of this inspection, plant engineering staff developed a reasonable course of corrective actions to eliminate the problem (Section R2.1).

- The licensee performed periodic inspections of filtration systems associated with the Radwaste Building exhaust and the Reactor Water Cleanup (RWCU) system room exhaust. As the licensee was not committed to Regulatory Guide 1.140, the testing methodology was not fully consistent with the guidance contained in the regulatory guide; however, the testing was adequate (Section R2.2).
- The licensee's radioactive waste program procedures were acceptable (Section R3.1).
- The licensee's training program for plant workers handling radioactive wastes or materials was effective and current. Staff had appropriate educational credentials, experience, and qualifications to perform their assigned tasks (Section R5.1).

Report Details

R1 Radiological Protection and Chemistry (RP&C) Controls

R1.1 Walkdowns within the Radiologically Controlled Area (RCA)

a. Inspection Scope (IP 83750)

The inspectors examined various areas of the RCA, including the Reactor Building, Turbine Building, and Radwaste Building. During these walkdowns, plant housekeeping, radiological posting and labeling, and general equipment condition were inspected. In addition, the inspectors interviewed radiation protection (RP) staff regarding radiological conditions and controls within the plant.

b. Observations and Findings

The inspectors found plant areas to be clean and free of unnecessary materials. The inspectors measured dose rates in various plant areas in order to verify the proper placement of radiological postings. No discrepancies were found in the areas of posting or labeling. Also, inspectors noted that the licensee had removed a high radiation area (HRA) posting from the upper torus room and had posted two smaller, discrete areas within this room as HRAs. Because most of this large room did not meet the criteria for an HRA (>100 millirem/hr at 30 cm), this posting change was appropriate and should more effectively inform workers of potential hazards. Inspectors did note, however, that these posting changes were not reflected on area maps near the entrance to the RCA, even though it had been approximately two months since the posting changes had been made. These maps were routinely used for reference by plant workers, though in this case no work had been or was being performed in the area. The radiation protection manager (RPM) acknowledged that the maps should have been updated in a more timely fashion and stated that he would have his staff make these changes.

The inspectors noted an improvement in contaminated area boundary control at the station; no instances of unsecured items crossing contaminated area boundaries were found during plant walkdowns. Contaminated area boundary integrity had been characterized as a continuing problem at the plant during the last NRC RP inspection (Inspection Report No. 50-263/97017(DRS)). Recent station efforts to improve this aspect of contamination control were effective.

c. Conclusions

Plant walkdowns revealed that plant housekeeping was effective in maintaining areas free of unnecessary equipment and debris. Radiological posting and labeling in the plant was appropriate, and station efforts to reduce instances of unsecured items crossing contaminated area boundaries were effective. One concern was noted, however, with the plant's survey maps at access control not being updated in a timely manner.

R1.2 Personnel Contamination Event during an Instrument Calibration

a. Inspection Scope (IP 92904)

The inspectors reviewed the circumstances surrounding an October 28, 1997, contamination of an instruments and controls (I&C) specialist with radioactive resin during the calibration of a pressure indicator on the radioactive waste (radwaste) system. This review consisted of interviews with the I&C specialist, the I&C supervisor, the former and current system engineers for the system, various cognizant RP personnel, and a shift supervisor. In addition, the inspectors observed the location of the event and reviewed associated plant documentation.

b. Observations and Findings

Event Description

On October 28, 1997, at approximately 1:30 pm, an I&C specialist became contaminated with radioactive resin during a pressure indicator (PI-7986) calibration. Since the associated line and the gauge were thought to be free of radioactive contamination, the I&C specialist performed the work under a general radiation work permit and was not required to wear any protective clothing. At the start of work, the pressure gauge indicated 140 pounds per square inch gauge (psig). The technician manipulated valve CST-169 (the condensate storage tank [CST] supply isolation valve (a 1-inch gate valve)) in order to isolate the CST system from the pressure indicator. He then breached the gauge/line union and observed the gauge pressure indication drop to about 0 psig. A small amount of water came out of the line when the union was breached, which was normal during a line "bleed-down." At this point, the technician removed the gauge from the line. After several seconds, resin began oozing out of the line and then suddenly sprayed out before the technician could reattach the gauge. After the resin "plug" (of approximately 4-5 inches in length) was forced out of the line, condensate water sprayed out at high pressure. The resin sprayed onto the technician, the ceiling, walls, floor, and a nearby dress out area. The technician replaced the gauge as quickly as possible and observed that the gauge indicated 140 psig when reattached. At that time, two other individuals in the area donned shoe covers and reported to access control to notify RP of the event. A radiation protection supervisor (RPS) directed the technician to don paper coveralls and shoe covers and then escorted the technician to access control. RP then began decontamination of the individual and the area.

Decontamination and Dose Assessment Operations

RP staff determined the extent of contamination, roped off the contaminated area, and proceeded to create a clean walkway to the radwaste shipping building to allow access to that facility. Surveys indicated contamination levels of 420,000 disintegrations per minute (dpm)/100 cm² maximum and 250,000 dpm/100 cm² average. The decontamination operation took 5 days with 1 RPS and 1 to 2 plant helpers. Five personnel contaminations resulted from the incident; seven bags of contaminated

laundry were removed from the nearby dress out area to be processed as contaminated laundry; and three bags of items in the area were sent to tool decontamination.

With respect to the I&C specialist, initial skin contamination levels were approximately 150,000 dpm/100 cm² on the face and 30,000 dpm/100 cm² on the hands. The individual's clothing was also contaminated at levels from 15,000 dpm/100 cm² (shoes) to 26,000 dpm/100 cm² (shirt cuff). The individual's clothing was promptly discarded, and the individual then showered. As the individual attempted to clear through the "friskall" personnel contamination monitoring devices at access control, the individual alarmed the monitors. After two more showers, the individual continued to alarm the monitors, even though manual whole-body surveys failed to detect any contamination. At this point, a whole-body count was performed on the individual and, assuming internal contamination, the RP staff estimated an internal committed effective dose equivalent (CEDE) of 22 mrem. The technician was restricted from the RCA for 3 days. After 3 days, the individual could clear the friskalls without any alarms and showed almost no residual activity on a whole-body count. Because the two whole-body count readings did not coincide with predicted internal clearance behavior for the detected isotopes, the licensee dosimetry staff concluded that it was unlikely that an intake occurred.

Licensee Investigation/Root Cause Analysis

The RP staff initiated a condition report (97002774) to track the event and immediately initiated an investigation. The RP staff's investigation determined that the condensate supply isolation valve had not been closed completely and that the resin plug in the instrument line (a closed leg off of the condensate-to-radwaste system line) had allowed the pressure at the instrument to drop momentarily to 0 psig when the union was breached, until the plug was expelled from the line. The licensee determined that this particular instrument setup was unusual because there was no local isolation valve and calibration tee at the gauge. Rather, the only way to isolate the instrument from CST pressure was to manipulate the aforementioned CST system valve. Though the on-shift radwaste operator consented to allow the technician to manipulate this valve, operations and plant management told the inspectors that system valves were to be operated by operations personnel or as part of a *specific* work instruction only. The technician had a work order to calibrate the pressure indicator, but this order did not specifically address the operation of any system valves. The inspectors determined that the technician's action was not a plant procedural violation; however, plant management indicated that it was outside of their expectations and exhibited a lack of a questioning attitude on the part of the technician.

The licensee also investigated the origin of the resin plug. The staff determined that the line was connected to a resin feed line used during transfers of resin to the RDS-1000 rapid dewatering system skid. Though the resin transfer line and the condensate supply line were both flushed with clean condensate after these transfers, the instrument line (which had been a dead leg) was not flushed. Thus, resins that accumulated in this line over time would not have been removed. The licensee also acknowledged the possibility that the line could become clogged again in the future.

The licensee also noted that the component master list (CML), which provided relevant information regarding instrument maintenance to technicians, did not contain information to alert I&C personnel to the particular risk of resin contamination or the unusual configuration of the gauge and instrument line. The licensee found that the I&C technician had identified the line as a "clean line" to RP personnel, who consequently assigned the technician to radiation work permit (RWP) No. 1 (clean work RWP) for the job. This RWP provided for no radiological protection or RP oversight of the worker. The worker had voluntarily worn a single rubber glove during the evolution.

Finally, the licensee completed a review to determine whether there were any other gauges associated with the resin transfer system which might experience similar problems or require isolation valve modifications or additions. The licensee did not find any other potentially problematic gauges.

Licensee Corrective Actions

With respect to the lack of a local isolation valve and calibration tee for the instrument, the licensee installed these items on December 4, 1997. This eliminated the need for I&C personnel to modulate a system valve in order to isolate the pressure gauge and would also allow future calibrations to be done without removal of the pressure gauge.

With respect to the lack of a questioning attitude on the part of the technician and the improper manipulation of the system valve, the I&C supervisor briefed the I&C specialists via a shop meeting on the circumstances of the event. In that briefing, the supervisor pointed out that system valves such as CST-169 were not to be isolated by the I&C specialists. If isolations were required, the technicians were instructed to contact system engineering.

With respect to the lack of notation in the CML, the licensee added a note to this document to reflect the event and the potential for future line plugging and/or gauge contamination.

Inspector Assessment

The inspectors found that the licensee's immediate decontamination and event analysis actions were prompt and appropriate. The licensee's investigation revealed that the actual safety consequence to the worker was minimal. In addition, the inspectors concluded that the inadvertent ingestion of a significant quantity of the highly contaminated resin was unlikely. Inspector and licensee calculations indicated that the resin plug was most likely composed of a mixture of cleanup and condensate resins and had a total probable activity of approximately 1 millicurie (mCi).

The licensee's root cause analysis was prompt and identified several of the causes of the event. However, the inspectors determined that the licensee's investigation only partially addressed the staff's failure to spot the unusual system configuration, to identify the potential for significant resin contamination, or to initiate a system modification during previous calibrations or maintenance activities. For instance, the inspectors

found a 1995 maintenance record which indicated that, at that time, the pressure indicator in question had been found to be "highly contaminated" and had been replaced. Although the licensee recently added a note to the CMC to identify the contamination potential, the licensee's review did not identify this previous event. In addition, the inspectors found that the review of the system diagrams by I&C staff and system engineers should have concluded that the instrument line in question was potentially contaminated. The inspectors recognized that the nonstandard equipment lineup was a contributing factor to this event. However, even with a local isolation valve and calibration tee, it would have been possible to have an incomplete valve closure, and thus a similar event.

The inspectors also determined that the licensee's corrective actions were prompt, but not comprehensive. Specifically, provisions to prevent resin from continuing to accumulate in the instrument line (e.g., periodic flushing) were not considered. These provisions would have:

- a. Eliminated the possibility of a similar contamination event in the future,
- b. substantially decreased the radiological source term in the line and the instrument, making future work evolutions on the line of lower dose consequence, and
- c. eliminated the possibility of a resin plug affecting the validity of the pressure indication (which was used during resin transfer operations).

These three concerns were not recognized by either RP or system engineering staff. Also, despite these concerns, the system engineer responsible for the system was satisfied with the current corrective actions and indicated that future problems could be addressed as they arose. At the inspection exit meeting, the RPM stated that more extensive corrective actions, including flushing of the instrument line, were being planned as a result of the inspectors' findings.

10 CFR 20.1501(a) requires surveys be made to establish radiological conditions in order to comply with the dose limits in 10 CFR 20 and to evaluate the extent of radiation levels, concentrations or quantities of radioactive material, and the potential radiological hazards that could be present. Failure to perform an adequate radiological evaluation prior to performance of the instrument calibration on PI-7986 is a violation of 10 CFR 20.1501(a) (VIO 50-263/98003-01).

c. Conclusions

On October 28, 1997, an I&C specialist became contaminated with radioactive resin during the calibration of a pressure indicator on a radwaste system. The staff's immediate response to the event and the personnel dose assessment were executed properly. However, the licensee's subsequent corrective actions were not comprehensive. Review of this event identified one violation of NRC requirements for a failure to perform an adequate radiological evaluation of the job prior to the start of work.

R1.3 Radwaste Processing and Storage (IP 86750)

The inspectors reviewed the processing and storage of solid radwaste. The inspection consisted of interviews with cognizant personnel, as well as walkdowns of the radwaste storage areas, radwaste control room, radwaste processing equipment, and radioactive materials storage areas outside of the RCA.

The inspectors noted that the radwaste processing and storage areas were clean and well-organized. The High-Level Storage Area of the Radwaste Building was notably cleaner and more organized than was observed during the last inspection of these areas (Inspection Report No. 50-263/97017). Barrels and containers were properly labeled and secured. The licensee also stored solid radioactive materials in two storage warehouses that were located outside of the protected area. These warehouses were locked to prevent intrusion and were also well-organized and free of debris. The inspectors checked dose rates in these warehouses against survey map indications and package labels and found these documents to be accurate. The inspectors did note some damage to plastic containments on several contaminated components which appeared to be caused by a small animal. RP staff indicated that they would repair the damage and attempt to identify and correct the cause.

The radwaste processing systems, storage areas, control room, and radioactive materials storage warehouses were well-organized and waste containers were properly sealed and labeled.

R1.4 Activity Determinations of Radwaste

a. Inspection Scope (IP 86750)

The inspectors reviewed the licensee's method for determining the activity of radwaste and material shipments. The inspectors reviewed the 1996 and 1997 waste stream analyses and the verifications which the RP staff performed to ensure the validity of radionuclide scaling factors used to determine the activity of hard to detect radionuclides.

b. Observations and Findings

The licensee used scaling factors as an indirect method to determine radionuclide activity in radwaste shipments. This is done by inferring the concentration of hard-to-detect radionuclides through the application of scaling factors to a known concentration of an easier-to-detect radionuclide. This method is technically sound provided that there is a reasonable assurance that the indirect method can be correlated with actual measurements. Procedure R.11.08 (Revision 2), "Selection and Entry of 10 CFR Part 61 Correlation Factors," contained the frequencies for sampling each of the licensee's three waste streams (dry active waste (DAW), secondary resins, and primary resins). Consistent with NRC guidance, procedure R.11.08 required that the scaling factors be updated annually for each waste type shipped for disposal. The procedure also contained requirements to compare vendor and licensee laboratory results and to

compare current and historical scaling factor data to ensure that the results were correct.

The inspectors reviewed the licensee's scaling factor evaluations for 1996 and 1997. In accordance with procedure R.11.08, the licensee had samples of DAW, primary resin, and secondary resin analyzed by a contract laboratory. The inspectors observed that the RP staff had evaluated the sample results in accordance with the requirements contained in procedure R.11.08. The RP staff had performed comparisons between the vendor's gamma isotopic results and the licensee chemistry staff's results, which were generally within the licensee's acceptance criteria. In accordance with the procedure, the RP staff had evaluated those comparisons which were not within the acceptance criteria.

The RP staff compared the 1996 and 1997 scaling factor results to previous annual results to ensure that changes in the waste streams were properly identified and that any anomalies in the sample results were properly identified and corrected. If a particular waste stream remained constant, the staff calculated a geometric mean of the applicable annual scaling factors to provide a more statistically viable result, which would be used for the current year. Routinely, the RP staff weighted the mean so that the most recent result had a higher contribution to the average. For example, the RP staff averaged the DAW scaling factors for 1994, 1995, 1996, and 1997 and entered the averaged scaling factors into the database. The inspectors verified that the licensee compared the averaged results to the most recent scaling factors and did not identify any problems.

However, the inspectors did identify a problem concerning the review of the annual evaluations. Procedure R.11.08 required that two individuals (i.e., either the radioactive material shipping coordinator (RMSC), radiological services engineer or the health physics supervisor) concur that the evaluations were correct and properly documented. For the 1996 evaluation, the radiological services engineer performed the evaluation under the supervision of the qualified RMSC (trainer/evaluator) as part of the radiological services engineer's on-the-job RMSC training and evaluation. In accordance with the procedure, both individuals signed as the two required reviewers. Although the procedural requirement was met, the inspectors were concerned that the reviews were not independent (i.e., one of the reviewers was being instructed by the other reviewer). The RPM and the health physics supervisor acknowledged the inspectors' observation and indicated that the reviews were intended to be independent and that the identified practice did not meet their expectations.

c. Conclusions

The RP staff properly implemented the 10 CFR Part 61 waste characterization program. The staff sampled waste streams and evaluated the results of their analyses in accordance with plant procedures and NRC regulations. The inspectors identified some minor problems concerning the lack of independence of the review of 1996 data.

R1.5 Conduct of Radioactive Material and Waste Shipments

a. Inspection Scope (IP 86750 and TI 2515/133)

The inspectors reviewed the shipping documents for the following radioactive shipments, including the package classifications, labeling, and shipping papers:

97-07 Control Rod Drive Equipment to Vermont Yankee (February 10, 1997);
97-11 Safety Relief Valve (April 8, 1997); and
97-32 Ion Exchange Resin (December 4, 1997).

The inspectors reviewed the shipping documents to determine their compliance with 10 CFR Part 71, 49 CFR Parts 172 and 173, and plant procedures.

b. Observations and Findings

The inspectors found that the RP staff prepared shipments in accordance with the applicable procedures. As allowed by these procedures, the RP staff used a vendor-supplied computer program to classify shipments and to prepare required shipping documents. The inspectors reviewed the calculations performed by the computer program and verified that the calculations were consistent with the current requirements of 10 CFR Part 71 and 49 CFR Parts 172 and 173. In addition, the inspectors verified that the waste classification calculations were performed in accordance with 10 CFR Part 61.

The inspectors reviewed the classification of materials/wastes shipped as Low Specific Activity-II (LSA-II) and Surface Contaminated Object-I (SCO-I) packages and noted that the shipments were properly prepared and packaged. The RP staff shipped the packages under the provisions of exclusive use shipments and in accordance with the requirements of 49 CFR 173.427.

The inspectors observed that the shipping documents and waste manifests contained the information required by 49 CFR Part 172 and Appendix F of 10 CFR Part 20, respectively. As of April 1, 1997, the RP staff recorded the activity of shipments using the International System of Units (SI). The shipping documentation also included required emergency response information.

c. Conclusions

The RP staff properly packaged radioactive materials and wastes for shipment. The inspectors noted that shipments were performed in accordance with the current requirements of 10 CFR 71 and 49 CFR Parts 172 and 173. The RP staff included all required information in the shipping documentation.

R2 Status of RP&C Facilities and Equipment

R2.1 Operability of the Discharge Canal Radiation Monitor Sample Pump

a. Inspection Scope (IP 84750)

The inspectors reviewed the circumstances surrounding recent problems with the operability of the discharge canal radiation monitor sample pump. The inspectors interviewed the cognizant system engineer, the chemistry supervisor, and a shift manager regarding the repetitive failures of the sample pump for this monitor during the past several months, which were described in NRC Inspection Report No. 50-263/97018(DRP).

b. Observations and Findings

The discharge canal radiation monitor is a Technical Specifications (TS)-required radiation monitor which requires entrance into a 30-day limiting condition of operation (LCO) with compensatory sampling at 8-hour intervals during periods of inoperability. Approximately 3 years ago, the staff replaced the sample pump because of excessive impeller wear. The replacement pump was designed to experience less wear. However, this pump had problems losing "prime" (adequate suction head) since installation, especially in cold weather. The licensee had been investigating the problem for over a year and had eliminated air in-leakage as the cause. The engineering staff believed that the problem resulted from air coming out of suspension (solution) in the water (i.e., the water experienced 8-12 inches of vacuum resulting from the vertical rise through the sample line standpipes). Plant engineering staff believed that the failure frequency was directly related to the amount of entrained air in the water (and thus the water's temperature). They noted that the failure rate decreased whenever the river was frozen over or the water was warmer.

The inspectors reviewed the effects of the pump failures on plant staff and operations. During the 1996-1997 fall/winter months, there were pump failures on 11 days. During the 1997-1998 fall/winter months (up until early February), there had been approximately 30 days with pump failures, averaging about 1.5 failures for each of these days. Most pump failures required about 15 minutes of operator efforts to restart. Upon pump failure, control room operators received an audible and visual annunciator of "Pump Low Flow," entered the TS LCO, notified the chemistry department, and sent an auxiliary operator to attempt restart of the pump. In one instance during the 1997-1998 fall/winter season, to date, the sample pump had been out of service for more than 8 hours. Chemistry staff had performed the required compensatory sampling at that time. One shift manager indicated that the pump failures had no real impact on plant operations but were a minor nuisance to control room personnel.

During the inspection, the engineering staff met to decide upon corrective actions to take before the 1998-1999 fall/winter season. The staff (and management) planned to purchase and install a "self-priming" pump to remediate the problem after the April 1998 refueling outage.

The inspectors determined that the licensee's investigations into the cause of the pump problems had progressed logically and expeditiously over the 2-3 years during which there were operability problems. The licensee had tried numerous corrective actions during this time and, at the time of this inspection, developed a reasonable course of corrective actions for the future.

c. Conclusions

The station has had intermittent operability problems over the past several years with the discharge canal radiation monitor sample pump. The licensee had progressed logically and expeditiously to determine the cause of the pump failures during this time period and had attempted numerous types of corrective actions without success. At the time of this inspection, plant engineering staff developed a reasonable course of corrective actions to eliminate the problem.

P2.2 Non-Accident Related Air Filtration System Testing

a. Inspection Scope (IP 84750)

The inspectors reviewed the testing of air filtration units for the Radwaste Building and the reactor water cleanup (RWCU) room. The inspectors verified that the filtration units were tested and maintained in accordance with the requirements contained in the TS and the description contained in the Updated Safety Analysis Report.

b. Observations and Findings

The inspectors reviewed the licensee's testing and maintenance of the filtration units for the Radwaste Building (VFU 1 and 2) and for the RWCU room (VFU-5). Both filtration units consisted of high efficiency particulate air (HEPA) filters and discharged to the Reactor Building ventilation plenum. The RWCU filtration system also had banks of charcoal filters for iodine removal. The purpose of both systems was to reduce the airborne radioactivity released during normal, routine operations and maintain effluents as-low-as-is-reasonably-achievable (ALARA). In the case of an accident, the exhaust fans for both filtration systems were designed to isolate, and the exhaust from the RWCU room would be processed via the standby gas treatment system.

During a review of system maintenance, a system engineer had identified a discrepancy between the licensee's filter testing practices and the description of these practices in two NRC Inspection Reports (NRC Inspection Reports Nos. 50-263/82006 and 50-263/83004). Contrary to the description in the NRC inspection reports, the licensee was not testing the filtration units to all of the standards contained in Regulatory Guide 1.140 (Revision 1), "Design, Testing, and Maintenance Criteria for Normal Ventilation Exhaust System Air Filtration and Absorption Units of Light-Water-Cooled-Nuclear Power Plants." For example, the licensee did not perform dioctyl phthalate (DOP) penetration testing of the HEPA filters. Instead, the staff performed limited inspections of the components and monitored the differential pressure across the filters. On a periodic basis and/or based on the differential pressure, the staff replaced the filter elements. The system engineer

also indicated that the testing methodology had recently been revised to increase the scope of the inspections and tests. The inspectors reviewed the applicable sections of the TS and Updated Safety Analysis Report and verified that the licensee was not committed to the regulatory guide.

The licensee performed periodic testing of the filtration units on an 18-month frequency. The inspectors reviewed the most recent tests of the Radwaste Building and RWCU filtration units which were performed on June 30 and July 22, 1997, and on August 11, 1997, respectively. The inspectors found the testing to be adequate and did not identify any problems related to the test results.

c. Conclusions

The licensee performed periodic inspections of filtration systems associated with the Radwaste Building exhaust and the RWCU system room exhaust. As the licensee was not committed to Regulatory Guide 1.140, the testing methodology was not fully consistent with the guidance contained in the regulatory guide; however, the testing was adequate.

R3 RP&C Procedures and Documentation

R3.1 Radwaste Program Procedures (IP 86750 and TI 2515/133)

The inspectors reviewed the radwaste program procedures for radwaste processing, handling, labeling, packaging, storage, and shipment. The inspectors found that these procedures were clear, concise, and current. Recent changes to NRC and Department of Transportation (DOT) regulations regarding waste classification and shipment had been properly integrated into the procedures. These changes included:

- the adoption of SI units,
- changes to LSA material categories,
- the addition of the SCO classification, and
- miscellaneous packaging changes.

Thus, the licensee's radwaste program procedures were acceptable.

R5 Staff Training and Qualification in RP&C

R5.1 Radwaste Program Staff Training and Qualifications (IP 86750 and TI 2515/133)

The inspectors reviewed the training program procedures, course outlines, and exams for radwaste program staff training and qualification. Training procedures for radwaste processing, handling, labeling, packaging, storage, and shipment were reviewed. In addition, the inspectors evaluated the education, experience, and training of selected program personnel.

The inspectors found that the radwaste program staff were properly trained and held appropriate educational credentials and experience to properly execute the plant's radwaste programs. Comprehensive training and retraining of personnel were provided to the staff, and the course content was kept up-to-date. For example, the recent changes to NRC and DOT regulations concerning waste classification and shipment had been integrated into the training program procedures, exams, and qualification guides.

The licensee's training program for plant workers dealing with radwaste or materials was effective and current. Staff had appropriate educational credentials, experience, and qualifications to perform their assigned tasks.

R8 Miscellaneous RP&C Issues (IP 92904)

- R8.1 (Open) Inspection Follow-up Item 50-263/96010-03: Survey procedure does not require industry-accepted lower limits of detection (LLDs) for the unconditional release of bulk liquid material. This open item concerns the licensee's practice of counting bulk liquid releases to LLDs which are greater than those specified in NRC guidance (environmental LLDs). The licensee submitted a technical evaluation to the inspectors to justify their decision to not follow NRC guidance in this area. This document is currently being reviewed by NRC staff.

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on February 13, 1998. The licensee acknowledged the findings presented.

The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

K. Barry, Instruments and Controls Specialist
D. Bollig, Instruments and Controls Supervisor
K. Bothun, Radiation Protection Coordinator
J. Gitzen, System Engineer
M. Hammer, Plant Manager
B. James, Radwaste Technician
K. Jepson, Chemistry Supervisor
J. LaCasse, Technical Instructor
D. Modesitt, Shift Supervisor
D. Selken, Radiation Protection Specialist
J. Windschill, General Superintendent, Radiation Services

NRC

A. Stone, Senior Resident Inspector, Monticello

INSPECTION PROCEDURES USED

IP 83750: Occupational Radiation Exposure
IP 84750: Radioactive Waste Treatment, and Effluent and Environmental Monitoring
IP 86750: Solid Radioactive Waste Management and Transportation of Radioactive Materials
IP 92904: Followup - Plant Support
TI 2515/133: Implementation of Revised 49 CFR Parts 100-179 and 10 CFR Part 71

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-263/98003-01	VIO	Inadequate radiological evaluation performed for an instrument calibration job.
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Discussed

50-263/96010-03	IFI	Survey procedure does not require industry accepted LLDs for the unconditional release of bulk liquid material.
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LIST OF ACRONYMS USED

ALARA	As Low As Reasonably Achievable
CEDE	Committed Effective Dose Equivalent
CFR	Code of Federal Regulations
CML	Component Master List
cpm	counts per minute
CST	Condensate Storage Tank
DAW	Dry Active Waste
DOP	Diethyl Phthalate
DOT	Department of Transportation
dpm	disintegrations per minute
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
HEPA	High Efficiency Particulate Air
HRA	High Radiation Area
I&C	Instruments and Controls
IP	Inspection Procedure
LCO	Limiting Condition of Operation
LLD	Lower Limit of Detection
LSA	Low Specific Activity
mCi	millicuries
MNGP	Monticello Nuclear Generating Plant
NRC	Nuclear Regulatory Commission
PDR	Public Document Room
psig	pounds per square inch gauge
RCA	Radiologically Controlled Area
RMSC	Radioactive Material Shipping Coordinator
RP	Radiation Protection
RP&C	Radiological Protection and Chemistry
RPM	Radiation Protection Manager
RPS	Radiation Protection Supervisor
RWCU	Reactor Water Cleanup
RWP	Radiation Work Permit
SCO	Surface Contaminated Object
SI	International System of Units
TI	Temporary Instruction
TS	Technical Specifications

PARTIAL LIST OF DOCUMENTS REVIEWED

1997 RPS Radioactive Material Shipping Exam (M9014L-004, Rev. 5, Exam M9000Q-9717)
"1996 10 CFR 61 Database Updates," dated May 24, 1996
"1997 10 CFR 61 Database Updates," dated July 28, 1997
Memorandum from J. Windschill, MNGP to W. West, NRC, dated 12/5/97, "Condition Report on the resin contamination event"
MNGP Circulating Water System P&ID No. NH-36489-2 (Revision J)
MNGP Discharge Canal Sample Station P&ID No. NH-46144 (Revision K)
MNGP Radwaste Solids Handling System P&ID No. NH-36047-2 (Revision J)
Personnel Contamination Record, dated 10/28/97 (Form 5552, Revision 21)
Radiation Protection Survey Records related to the October 28, 1997 resin contamination event
Radioactive Material Shipping Coordinator Qualification Manual (Revision 0)

Condition Reports:

98000082, "NRC Inspection report 83-004 states that filters are tested every 18 months. Filter systems are not tested."
98000011, "Discharge canal sample pump low flow"
97003221, "Discharge canal sample pump reprimed"
97003149, "Discharge canal sample pump reprimed"
97003105, "Discharge canal sample pump reprimed"
97002948, "Respirator Filter Cartridge Usage"
97002774, "Resins sprayed in uncontaminated area when PI 7986 was removed from system"
96002804, "Discharge canal monitor sample pumps loss of suction"

Procedures:

4460-02PM (Revision 2), "H&V Lubrication and Inspection Rx Bldg (Excluding 985)"
4460-03PM (Revision 0), "H&V Lubrication and Inspection Radwaste Building"
4 AWI-08.04.05 (Revision 2), "Radiological Work Control"
4 AWI-08.05.02 (Revision 3), "Radioactive Material Shipping"
8077 (Revision 20), "Radioactive LSA/SCO Shipment -- Not Exceeding Type A Quantity -- In Exclusive Use Vehicles"
3084 (Revision 9), "Procedures for Shipping Excepted Packages of Radioactive Material"
8089 (Revision 8), "Radioactive Material Shipment -- Type A Quantity, Fissile Excepted"
8110 (Revision 28), "Master Radioactive Material Shipping Procedure"
R.11.01 (Revision 5), "Radioactive Material Shipment Tracking and Filing"
R.11.02 (Revision 12), "Radioactive Material Shipping Documentation Preparation"
R.11.06 (Revision 4), "Shipping Dry Active Waste for Disposal and/or Processing"
R.11.07 (Revision 6), "Shipping Stabilized Radioactive Resins"
R.11.08 (Revision 2), "Selection and Entry of 10 CFR Part 61 Correlation Factors"

Radioactive Waste/Materials Shipping Documents:

97-07 CRD Equipment to Vermont Yankee (February 10, 1997)

97-11 Safety Relief Valve (April 8, 1997)

97-32 Ion Exchange Resin (December 4, 1997)