U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-282/94015; 50-306/94015(DRP)

Docket Nos. 50-282; 50-306 License Nos. 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: September 13 through October 24, 1994

Inspectors: M. L. Dapas
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Approved By: Wayne J. Kropp, Chief
Reactor Projects Section 2A

Date 11/9/94

Inspection Summary: Inspection on September 13 through October 24, 1994 (Report No. 50-282/94015; 50-306/94015(DRP))

Areas Inspected: Routine, unannounced safety inspection by resident inspectors of licensee followup on previously identified items, operational safety verification, engineered safety feature systems, current material condition and plant housekeeping, radiological controls, security, licensee event report followup, maintenance activities, surveillance activities, and engineering and technical support.

Results: Within the 10 areas inspected, one cited violation and two non-cited violations were identified. One non-cited violation involved the failure to verify proper load shedding from safeguards busses during integrated safety injection testing. The other non-cited violation involved the inoperability of a continuous air monitor which prevented continuous particulate, iodine, and tritium sampling of the spent fuel pool area. The cited violation related to two examples of an unauthorized entry into a limiting condition for operation (LCO) upon removing a safeguards ventilation system from service. These examples indicate that licensee corrective actions for two previous violations regarding the operation of essential support equipment and the impact of that equipment on parent system operability were not broad and comprehensive enough to prevent recurrence of a similar violation. One unresolved item was identified that pertained to equipment control (paragraph 5.b). One Inspection Followup Item was identified that pertained to foreign material exclusion inspections (paragraph 3.c).

The following is a summary of the licensee's performance during this inspection period:

Operations

Overall performance in this area was good. However, poor communications between operations and maintenance personnel was the primary cause for an event involving the removal from service of the D6 safeguards ventilation system. This event resulted in a violation for the unauthorized entry into an LCO upon removal of the ventilation system from service (paragraph 5b).

Maintenance and Surveillance

Overall performance in this area was good. A non-cited violation was identified relating to the failure to verify proper load shedding from safeguards buses during integrated safety injection testing (paragraph 6). Positive attributes were noted in the licensee's foreign material exclusion (FME) program, however, a weakness was identified regarding implementation of management expectations for the conduct of FME cleanliness inspections (paragraph 3.c). An adverse trend in Unit 2 emergency diesel generator performance and availability was noted during this inspection period (paragraph 6.a). Effective self-assessment was evident in the identification and evaluation of problems associated with implementation of the inservice inspection program (paragraph 6.b).

Engineering and Technical Support

Overall performance in this area was good. However, inadequate review of electrical drawings during the preparation of a work request isolation, and misleading nomenclature on electrical drawings, resulted in a violation for an unauthorized entry into an LCO upon removal of a safeguards ventilation system from service (paragraph 5).

Plant Support

Overall performance in this area was good. One non-cited violation was identified regarding the inoperability of a continuous air monitor which prevented continuous particulate, iodine, and tritium sampling of the spent fuel pool area (paragraph 4.c).

DETAILS

1. Persons Contacted

Northern States Power Company

#M. Wadley, Site General Manager
#L. Albrecht, General Superintendent, Engineering
#G. Lenertz, General Superintendent, Maintenance
#D. Schuelke, General Superintendent, Radiation Protection and Chemistry
#J. Sorensen, General Superintendent, Plant Operations
#J. Goldsmith, General Superintendent, Nuclear Generation Services Engineering
#J. Hill, Manager, Quality Services
#M. Schmidt, Outage Manager
#R. Fraser, Superintendent, Technical Programs Engineering
#J. Maki, Superintendent, Electrical Systems Engineering
#C. Mundt, Superintendent, Instrumentation and Controls Systems Engineering
B. Stephens, Superintendent, Mechanical Systems Engineering
#A. Hunstad, Staff Engineer
W. Stolpa, Superintendent, Security
#D. Hutchson, Security
#J. Leveille, Licensing Engineer

#Denotes those present at the management interview on October 27, 1994.

The inspectors also had discussions with other licensee employees, including members of the technical and engineering staffs; reactor and auxiliary operators; electrical, mechanical, and instrument maintenance personnel; and contract security personnel.

2. Licensee Followup on Previously Identified Items (92901, 92902, 92903, 92904)

a. (Closed) Violation 50-282/94014-03(DRP): Failure to make a 10 CFR Part 50.72 notification to the NRC within the required 4-hour time frame for an engineered safety feature (ESF) actuation.

As discussed in NRC Inspection Report 50-282/94014; 50-306/94014(DRP), on September 6, 1994, No. 12 charging pump, the only operating charging pump for Unit 1, tripped on an apparent overload condition. Per design, the trip resulted in isolation of reactor coolant system letdown flow upon closure of the open letdown orifice isolation valve. The letdown orifice isolation valves are designated containment isolation valves, and the containment isolation system is an ESF. On-shift operators were not aware of the reportability requirements for this ESF actuation, and therefore did not make the required 4-hour report.

The reportability aspects of a similar event on July 15, 1993, in which letdown isolated upon an overload trip of the operating charging pump, was discussed in NRC Inspection Report 50-282/93010; 50-306/93010(DRP). In that report, the inspectors referred to the licensee's commitment to revise pertinent administrative procedures to more clearly define reportability criteria relative to containment isolation valve closures. During their review of the September 6, 1994, event, the inspectors questioned the licensee about the manner in which members of the licensee's staff are informed of issues and concerns identified in NRC inspection reports.

The licensee's corrective actions to preclude recurrence included revising administrative procedures to address the reportability requirements for containment isolation valve closures. The substance of these revisions was incorporated into the licensed operator requalification program. In addition, to help keep track of items requiring followup, the licensee has formalized the review of NRC inspection reports as part of the Operating Experience Assessment program.

The inspectors concluded that the licensee's corrective actions appeared adequate to prevent recurrence. This item is closed.

b. (Closed) Inspection Followup Item 50-282/94014-02(DRP): Root cause for the failure of No. 12 charging pump.

As discussed in NRC Inspection Report 50-282/94014; 50-306/94014(DRP), the licensee had not determined the root cause for the September 6, 1994, trip of No. 12 charging pump by the end of the associated inspection period. During this inspection period, the licensee determined that overheating of the molded case circuit breaker (MCCB) due to a loose "C" phase, loadside terminal connection in the variable trip unit, caused the thermal overload trip. A high resistance between the MCCB variable trip unit and the drawout unit internal wiring was created by a poor electrical connection due to a loose set screw. This high resistance condition, coupled with normal current draw from the running charging pump, resulted in localized heating of the MCCB and subsequent actuation of the thermal trip mechanism. The inspectors discussed with the licensee electrical preventive maintenance (PM) practices and procedural requirements for tightening terminal connections. Based on a historical review of breaker maintenance, the licensee concluded that this was an isolated incident.

The licensee's corrective actions to preclude recurrence included reviewing electrical PM procedures to ensure that the procedures required tightening of electrical connections. The licensee also reviewed the applicable vendor technical manual to ensure guidance on the tightening of connections was properly transcribed to the PM procedures. Plant electricians were cautioned on the need for

proper tightening of connections after maintenance activities. The licensee also emphasized the need to check for loose terminal connections during breaker inspections as part of the 480 Volt breaker PM program.

The inspectors concluded that the licensee's corrective actions appeared adequate to prevent recurrence. This item is closed.

c. (Closed) Inspection Followup Item 50-282/94010-01; 50-306/94010-01(DRP): Test acceptance criteria for surveillance testing of fire protection pumps.

As discussed in NRC Inspection Report 50-282/94010-01; 50-306/94010-01(DRP), the inspectors identified a concern that none of the licensee's surveillance procedures for testing the fire protection pumps required periodic demonstration, recording, or review of the minimum flow requirement specified in the Technical Specifications for these pumps.

The inspectors discussed this issue with the responsible system engineer. The inspectors verified that the licensee had revised the subject fire protection pump surveillance procedures to specifically designate pump flow and discharge pressure acceptance criteria. The acceptance criteria was based on the Technical Specification minimum flow requirement and accounted for instrument inaccuracies. This item is closed.

d. (Closed) Inspection Followup Item 50-282/94010-03; 50-306/94010-03(DRP): 10 CFR Part 21 reportability for auxiliary contact binding failures.

As documented in NRC Inspection Report 50-282/94010; 50-306/94010(DRP), which discusses the subject auxiliary contact binding issue in detail, the inspectors had a concern with the licensee's 10 CFR Part 21 responsibilities regarding the generic applicability of this issue. The inspectors discussed this issue with an NRC inspector within the Office of Nuclear Reactor Regulation Vendor Inspection Branch. Based on this discussion, the inspectors determined that no further action regarding 10 CFR Part 21 responsibilities was required by the licensee, since the generic aspects of this issue were being pursued with General Electric by the NRC Vendor Inspection Branch. The inspectors discussed Part 21 reportability requirements with the licensee, including the shared responsibility between a vendor and licensee for evaluating the generic aspects of a particular issue. This item is closed.

e. (Closed) Unresolved Item 50-282/94010-02; 50-306/94010-02(DRP): Safeguards Electrical Load Rejection Testing.

As discussed in NRC Inspection Report 50-282/94010; 50-306/94010(DRP), the licensee identified that safeguards

electrical load rejection testing had not been properly demonstrated by surveillance testing at 18-month intervals, as required by Technical Specification (TS) 4.6.A.3.b.1. The licensee reviewed the equipment qualification testing program for the station blackout/electrical safeguards upgrade project and determined that load rejection capability for both units had been demonstrated as of December 1992. The licensee revised the Unit 1 integrated safety injection (SI) test procedure to include explicit verification of Unit 1 load rejection capability, and conducted the test during the summer 1994 refueling outage. The inspectors reviewed the test procedure and witnessed the satisfactory completion of the test.

With respect to Unit 2, the licensee was required to demonstrate safeguards load rejection capability by October 1994 (18 months plus an allowed 25 percent "grace" period from December 1992) to comply with the Technical Specification surveillance requirement. The next Unit 2 integrated SI test is not scheduled to occur until the spring 1995 refueling outage. The licensee evaluated different options for testing Unit 2 load rejection capability, and developed a plan to perform individual component testing via work orders. The testing plan was well organized, and tests were designed to minimize equipment operability concerns while Unit 2 was operating. The inspectors reviewed a sample of the test procedures and observed the performance of selected tests. The inspectors review included verification that Technical Specification limiting conditions for operation were entered as required, and that appropriate equipment operability verification tests were completed. The licensee satisfactorily completed Unit 2 load rejection testing by September 22, 1994. The licensee informed the inspectors that the Unit 2 integrated SI test procedure would be revised to explicitly document verification of load rejection functionality, and that the integrated SI test would be performed during the spring 1995 refueling outage.

Prior to December 1992, load shedding was not explicitly demonstrated for all safeguards loads during integrated SI surveillance testing. This is a violation of TS 4.6.A.3.b.1. However, the violation is not being cited because the criteria specified in Section VII.B.2 of the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy, 10 CFR Part 2, Appendix C), were satisfied. This item is closed.

One non-cited violation was identified. No deviations, unresolved items, or inspection followup items were identified.

3. Plant Operations

Both Unit 1 and Unit 2 operated at full power throughout this inspection period, with the exception of a Unit 2 power reduction on September 17 for turbine control valve testing.

a. Operational Safety Verification (71707, 93702, 92901)

The inspectors verified that the facility was being operated in conformance with the license and regulatory requirements, and that the licensee's management control system was effective in ensuring safe operation of the plant. The inspectors observed control room operations, reviewed applicable logs, monitored control room indications for abnormalities, conducted discussions with control room operators, and observed shift turnovers. The inspectors verified operability of selected emergency systems, reviewed equipment control records, verified the proper return to service of affected components, conducted tours of the Auxiliary Building, Turbine Building, and external areas of the plant to observe plant equipment conditions, including potential fire hazards, and to verify that maintenance work requests had been initiated for equipment in need of repairs.

The inspectors observed a number of control room shift turnovers. The turnovers were conducted in a professional manner and included log reviews, panel walkdowns, discussions of maintenance and surveillance activities in progress or planned, and associated Limiting Conditions for Operation time restraints, as applicable.

b. Engineered Safety Feature (ESF) Systems (71707)

During this inspection period, the inspectors performed a detailed walkdown of a representative sample of the accessible portions of selected ESF systems to verify system operability. This included verification that the system lineup procedure was consistent with plant system drawings and the as-built configuration; valve and power supply breaker positions were correct to ensure that plant equipment and instrumentation were aligned for proper system operation; major system components were properly labeled, lubricated, cooled, and no leakage existed; instrumentation was properly calibrated, and local and remote indication of significant process parameters were consistent with normal expected values; and support systems essential to system actuation or performance were operational.

The inspectors walked down accessible portions of the Unit 2 emergency diesel generators and associated support systems, and the Unit 1 and 2 auxiliary feedwater systems. No discrepancies were identified during these system walkdowns. However, some equipment problems/issues with these ESF systems were identified during other licensee activities and are discussed in paragraphs 5 and 6 of this report.

c. Current Material Condition and Plant Housekeeping (71707, 2515/125)

The inspectors performed general plant, as well as selected system and component walkdowns, to assess the general and specific

material condition of the plant, and to evaluate housekeeping. Walkdowns included an assessment of plant buildings, systems, and components, as applicable, for proper identification and tagging, accessibility, fire and security door integrity, proper use of scaffolding, appropriate radiological controls, and any unusual conditions. Unusual conditions included, but were not limited to, water, oil, or other liquids on floors or equipment; indications of leakage through ceilings, walls, or floors; loose insulation; corrosion; excessive noise; unusual temperatures; and abnormal ventilation or lighting. The inspectors also monitored the status of housekeeping and plant cleanliness for fire protection and protection of safety-related equipment from intrusion of foreign material.

Overall material condition and plant housekeeping were good. The inspectors noted that the licensee continued to maintain a low backlog of corrective maintenance work requests.

During this inspection period, the inspectors conducted a detailed review of the licensee's foreign material exclusion (FME) controls per the guidance in NRC Inspection Manual Temporary Instruction 2515/125. This review was accomplished through a combination of procedure and event reviews, discussions with licensee personnel, and observations of activities.

The inspectors reviewed the following procedures, that address FME controls:

- 5AWI 3.2.2, "Work Package Preparation and Review"
- 5AWI 3.2.4, "Conduct of Work"
- 5AWI 8.5.0, "Housekeeping"
- D21, "Security/Material Control of the Refueling Area"
- D27.14, "Security of the Steam Generator Primary/Secondary Side/Pressurizer Handhole/Manway"
- SP 1750, "Post Outage Containment Closeout Inspection"
- MSIP 1006, "Foreign Material Exclusion"
- MSIP 3002, "Foreign Material Exclusion from Electrical Distribution System Components"
- H14.5, "Maintenance Procedure Guidelines"

The inspectors noted that the above listed procedures contain provisions, as applicable, for material, parts, and tool accountability to ensure that loose items are not inadvertently left inside structures, systems, or components after the work activity is complete. The subject procedures collectively address FME controls across the various work locations and types of work activities in the plant.

The inspectors also reviewed a sample of nonconformance reports and Nuclear Quality Department surveillance and audit reports to

determine if the licensee's internal reporting systems were identifying foreign material intrusion problems.

After reviewing the above procedures and reports, the inspectors identified a discrepancy between management's expectations regarding foreign material cleanliness inspections and procedural requirements. A July 1993 surveillance report identified that a high percentage of maintenance procedures were not documenting the performance of FME inspections. The licensee's Operational Quality Assurance Plan incorporates the requirements of ANSI N18.7-1976, "Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants." With respect to FME, ANSI N18.7 required that immediately prior to safety-related system closure, an inspection shall be conducted to assure cleanliness, and the result of such inspection shall be documented. Administrative work instruction (AWI) 5AWI 3.2.2 required that FME inspections be documented in work packages. A nonconforming item report was issued to the plant manager in July 1993 to evaluate root cause and document corrective action for the failure to document FME inspections.

Maintenance standards implementing procedures (MSIP) 1006 and 3002 were updated to require FME inspections "by a qualified individual independent of the work," prior to system closure. The plant manager had written an August 1993 memorandum to engineering and maintenance personnel requesting that all procedures be upgraded to reflect ANSI N18.7 requirements. This memo requested that independent foreign material inspections be added to work packages. Also as an interim measure, the memorandum included a request to imprint work packages with a stamp, documenting that an independent cleanliness closeout inspection had been performed per reference to MSIP 1006 or MSIP 3002. The inspectors noted that although AWI 3.2.2 and AWI 3.2.4 required FME inspections prior to system closure, these procedures did not include a requirement that the person conducting the inspection be independent of the work. As preventive maintenance (PM) procedures were revised, FME inspections were added as a procedural step, but did not include the requirement for independence. For example, PM 3503-4-22, "22 Seal Water Return Filter Replacement," which was performed on October 24-25, 1994, included an FME inspection step as required by AWI 3.2.2, but according to the supporting documentation, the inspection was conducted by the same individual who performed the work. Pending further review by the NRC, the performance of FME inspections is considered an Inspection Followup Item (50-306/94015-01(DRP)). The inspectors considered this issue an example of a weakness in the licensee's development of appropriate corrective actions and translation of management expectations into procedural requirements.

During the past year, the licensee has identified a few FME related events. One event involved the failure of a station battery charger due to an electrical short, apparently caused by

metal filings that had entered the battery charger cabinet during another work activity in the vicinity of the charger. Another event involved the inoperability of a relay in a safeguards logic relay cabinet, identified during a monthly surveillance test, which was caused by a piece of wire tag material that had fallen into the relay contacts. The licensee initiated corrective actions in response to both of these FME related events, including an expansion of the scope of the licensee's FME program to address foreign material intrusion into systems via indirect means.

While conducting field observations during the previous several months, the inspectors routinely noted that workers were implementing appropriate FME practices. A couple of examples were identified where this was not the case. These included an access door that was removed from the D5 emergency diesel generator (EDG), engine room ventilation fan intake plenum (while D5 was operable), with tools and bolts in the vicinity of the fan intake, which could have resulted in fan damage during an EDG actuation; and, during installation of a Unit 1 containment spray recirculation piping modification, a foreign material barrier was not placed on a pipe end. Both conditions were promptly corrected upon identification.

d. Radiological Controls (92904)

The inspectors verified that personnel were following health physics procedures for dosimetry, protective clothing, frisking, posting, etc., and randomly examined radiation protection instrumentation for use, operability, and calibration. An operability concern with the spent fuel pool continuous air monitor was identified during this inspection period, and is discussed in paragraph 4.c of this report.

e. Security (92904)

During routine activities and tours, the inspectors monitored the licensee's security program to ensure that observed actions were being implemented in accordance with the approved security plan. The inspectors observed that persons within the protected area displayed proper photo-identification badges, and that individuals requiring escorts were properly escorted. The inspectors also verified that selected vital areas were locked and alarmed. The inspectors observed that personnel and packages entering the protected area were searched by equipment or hand, as appropriate.

No violations, deviations, or unresolved items were identified. One inspection followup item was identified

4. Licensee Event Report (LER) Followup (92700)

Through direct observations, discussions with licensee personnel, and review of records, the following LERs were reviewed to determine that

reportability requirements were fulfilled, that immediate corrective action had been accomplished, and that corrective action to prevent recurrence had either been completed or planned.

a. (Closed) 50-282/93007-02: Discovery that Certain Valves Should be Subject to ASME Section XI Testing.

As discussed in NRC Inspection Report 50-282/93008; 50-306/93008(DRP), the licensee identified various valves that had not been included in the Section XI inservice testing (IST) program. The subject valves, which should have been classified as ASME Code Class 2, were originally classified as ASME Code Class metal containment, and were, therefore, not included in the licensee's original IST program implemented in 1976. The licensee submitted LER 50-282/93007 to report this condition as a violation of Technical Specification (TS) 4.2.A.2, which states that IST of ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by 10 CFR Part 50, Section 50.55(g), except where specific written relief has been granted by the NRC. A non-cited violation for the failure to follow TS 4.2.A.2 was identified in NRC Inspection Report 50-282/94007; 50-306/94007(DRP).

Subsequent to the submittal of LER 93007, while developing the IST program for the third ten-year interval, the licensee identified an additional six valves that had not been included in the original IST program. The licensee submitted a supplemental LER (50-282/93007-01) to document this omission. The failure to include a number of valves that perform safety functions in the IST program was considered an unresolved item pending an evaluation of the safety significance and adequacy of the corrective action addressed in LER 93007.

During an IST inspection in April and May of 1994, an NRC Region III IST specialist reviewed the issue involving the omission of various valves from the IST program, and closed the associated unresolved item (refer to NRC Inspection Report 50-282/94005; 50-306/94005(DRS)). As discussed in NRC Inspection Report 94005, the licensee determined that two of the 44 ASME Code Class 2 valves addressed in LERs 93007 and 93007-01 did not perform a safety function, and, therefore, deleted these valves from the IST program. The licensee also determined that certain other valves would not have required inclusion in the IST program per the 1980 Edition of the ASME Code, since these valves were considered "passive." The licensee submitted this supplemental LER (93007-02) to clarify the original commitments in LERs 93007 and 93007-01. This LER is closed.

b. (Closed) LER 50-282/94006: Unplanned Closure of a Letdown Isolation Valve (a Containment Isolation Valve) Due to Trip of the Operating Charging Pump.

This event is discussed in paragraphs 2.a and b., and this LER is closed based on the discussion in those paragraphs.

c. (Open) LER 50-282/94008: Inoperability of Continuous Air Monitor When Power Supply was Tripped Without Control Room Knowledge.

At approximately 7:24 a.m. (CST) on September 27, 1994, an Auxiliary Building Operator noticed that the continuous air monitor (CAM) for the spent fuel pool (SFP) normal ventilation system (CAM-5) was not running, and notified the control room. Control room operators then secured the SFP normal ventilation system. At approximately 7:45 a.m., the duty chemist restored CAM-5 to operation by plugging it into an alternate power source. Control room operators then restored the SFP normal ventilation system to service. CAM-5 provides continuous particulate and iodine sampling for the SFP area, and the silica gel tritium sampler is connected to it. The duty chemist also obtained an airborne sample to verify that iodine and particulate levels were acceptable.

The licensee determined that at approximately 1:15 p.m. on September 26, a Nuclear Plant Service Attendant (NPSA) caused an overload trip of the electrical circuit (2RPA4-9) that powers CAM-5, when he used this circuit to provide power to a buffing machine while cleaning the floor in the vicinity of CAM-5. When power to the buffing machine was interrupted, the NPSA plugged it into another available outlet and continued to clean the floor. The NPSA did not know that he should inform the control room of the tripped circuit. After discovering on September 27 that circuit 2RPA4-9 was tripped, the duty chemist reset it and connected CAM-5 to its normal power source.

The licensee's corrective action to prevent recurrence included identifying and labeling all electrical outlets associated with circuit 2RPA4-9. The labels state that shift supervisor permission to use the outlet is required. All NPSAs were informed of the need to contact the control room when an electrical circuit is tripped. The licensee committed to provide a dedicated power source for CAM-5 by April 30, 1995. The licensee is also considering increasing the surveillance of CAM-5 by operators, and providing a control room alarm to alert operators if CAM-5 becomes inoperable.

Technical Specification (TS) 3.9.F., in referencing TS Table 3.9-2, identifies which radioactive gaseous effluent monitoring instrumentation shall be operable, and provides specific actions if less than the minimum number of required instrumentation channels are operable. In accordance with TS Table 3.9-2, at least one channel of the iodine sampler cartridge and the particulate sampler filter must be operable during SFP releases (SFP ventilation system in service) unless samples are continuously collected with auxiliary sampling equipment. In

addition, TS 4.17-4 requires continuous sampling for tritium during releases from the SFP. The inspectors discussed this event with both the licensee and an NRC Region III radiation protection specialist. Based on these discussions, the inspectors concluded that the inoperability of CAM-5 with the SFP normal ventilation system in service, which prevented continuous particulate, iodine, and tritium sampling of the SFP area, constituted a violation of TS 3.9.F and TS 4.17-4. However, the violation is not being cited because the criteria specified in Section VII.B.2 of the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy, 10 CFR Part 2, Appendix C), were satisfied.

Similar events involving inoperable radioactive gaseous effluent monitoring instrumentation have occurred in the past. A recent example (R-35 Radwaste Building noble gas monitor) is discussed in NRC Inspection Report 50-282/94003; 50-306/94003(DRP). This LER will remain open pending a review of radioactive gaseous effluent monitoring instrumentation performance by a Region III radiation protection (RP) specialist during the next routine RP inspection.

d. (Closed) LER 50-282/94007: Determination that Electrical Load Shedding Functions were not Fully Tested During Routine Surveillance.

This LER is closed based on the discussion in paragraph 2.e.

One non-cited violation was identified. No deviations, unresolved items, or inspection followup items were identified.

5. Maintenance Observation (62703, 92902)

Routine preventive and corrective maintenance activities were observed to ascertain that they were conducted in accordance with approved procedures, regulatory guides, industry codes or standards, and in conformance with Technical Specifications. The following items were considered during this review: adherence to Limiting Conditions for Operation while components or systems were removed from service, approvals were obtained prior to initiating the work, activities were accomplished using approved procedures and were inspected as applicable, functional testing and/or calibrations were performed prior to returning components or systems to service, and activities were accomplished by qualified personnel.

Portions of the following maintenance activities were observed or reviewed during the inspection period:

- WO 9405584, Test load rejection of bus 25, 4 kV pumps
- WO 9405586, Test load rejection of bus 26, 4 kV pumps
- WO 9405135, Test load rejection of D5 radiator fans

- WO 9405136, Test load rejection of D6 radiator fans
- PM 3001-2-D6, "D6 Diesel Generator 18 Month Inspection,"

a) Trip Throttle Valve (TTV) for Auxiliary Feedwater (AFW)

The licensee conducted an inspection of the TTVs for No. 11 and No. 22 AFW pumps in response to a 10 CFR Part 21 report regarding the absence of a detent in the TTV stem, which could allow the stem to rotate and unthread from the stem coupling, and thus prevent the TTV from opening fully. The detent ensures that the coupling is properly locked to the stem. The inspectors observed the licensee disassemble and inspect No. 11 AFW pump TTV. Although the required detent was present in the stem, it was not adequately sized in accordance with the dimensions prescribed by the valve manufacturer. The licensee enlarged the detent to the correct dimensions. The stem detent was also undersized in the TTV for No. 22 AFW pump.

Upon receipt of the Part 21 notification, the licensee performed an operability evaluation for the AFW pumps and determined that the pumps were operable. The licensee decided to conduct the TTV inspections in approximately two weeks when the monthly surveillance test for each pump was scheduled. In the meantime, the licensee visually inspected the stem coupling area on each TTV, and verified that the valve stem had not unthreaded from the stem coupling. The licensee also inspected an available spare TTV and verified that it had a stem detent. The inspectors attended the onsite safety review committee meeting during which the AFW pump operability evaluation was discussed. The inspectors concluded that the licensee's operability determination was adequately justified.

b) Preventive maintenance (PM) of No. D6 Emergency Diesel Generator (EDG D6)

The licensee conducted an 18-month PM and inspection outage of EDG D6 during the week of October 2, 1994. The inspectors observed portions of the electrical and mechanical maintenance being performed on the EDG and post-maintenance testing.

During the PM outage, two licensee-identified events occurred where an essential support system, required for operability of other equipment, was removed from service without entering the appropriate Technical Specification (TS) limiting condition for operation (LCO). The licensee's operating procedure C18.1, "Engineered Safeguards Equipment Support Systems," requires that if the D6 safeguards ventilation system is out-of-service, then the following safeguards components are considered inoperable: 4kV safeguards bus No. 26 and 480 V safeguards buses No. 221 and 222. On two separate occasions during the PM on EDG D6 none of

the safeguards electrical equipment was declared inoperable and the appropriate LCO entered when the D6 safeguards ventilation system (referred to as the "D6 building HVAC system" or "D6 safeguards ventilation system") was removed from service.

The licensee's error reduction task force (ERTF) conducted an internal operating experience assessment to review the chronology of the events, determine the cause(s), and propose corrective actions to management. The inspectors reviewed the ERTF final report and concluded that ERTF provided a description of the events. A summary of the events follows:

a) On October 3, 1994, while the D6 EDG was inoperable to perform PM 3001-2-D6, "D6 Diesel Generator 18 Month Inspection," maintenance electricians began work in the D6 excitation panel room, but the noise of the D6 safeguards ventilation system was interfered with communications. One of the electricians contacted the control room to request permission to stop the ventilation fans. After speaking to the Unit 1 shift supervisor (SS) (the Unit 2 SS was not in the control room at the time), the electrician believed that he had obtained permission to stop the ventilation fans, and therefore secured the fans from the local control panel. The Unit 1 SS was distracted by an alarm in the control room while on the telephone with the electrician and did not think that he had granted permission to stop the ventilation fans. When the fans were stopped, a computer alarm was generated in the control room, but the Unit 2 reactor operator assumed that the alarm was one of many computer alarms expected during the D6 EDG outage. The ventilation system condition was identified later by one of the EDG system engineers, who informed the Unit 2 SS. After further investigation, the Unit 2 SS ordered operators to restart the ventilation system and to log entry into the 8-hour LCO per Technical Specification 3.7.B.6 for inoperable safeguards buses. The licensee was in the LCO condition for 1 hour and 38 minutes.

   The inspectors were concerned with the repositioning of the switch for controlling of the ventilation system by a maintenance worker based on a verbal authorization and not a documented authorization in accordance with the station's tagout procedure. The verbal authorization to control equipment manipulations is considered an Unresolved item pending further NRC review (306/94015-02)

b) On October 3, 1994, while performing an equipment isolation per procedure PM 3001-4-D6, "D6 Diesel Generator 18 Month Inspection (Electrical)," an operator and electrician turned off a 125 V DC generator field flash circuit. The circuit also provided power to various D6 EDG support systems. When the associated breaker was opened, the D6 safeguards

ventilation system fans stopped. The operator and electrician immediately recognized the consequences of this action and turned the circuit back on. The fans were restarted after being off for approximately 20 seconds.

The Unit 2 SS was notified and an LCO entry was made for inoperability of 4 kV safeguards bus No. 26 and 480 V safeguards buses No. 221 and 222. Upon further investigation, the licensee determined that component nomenclature on electrical drawings used in planning the isolation, provided misleading information regarding what ventilation equipment was served by the circuit. The responsible engineer did not identify that removing power from the generator field flash circuit would also disable the D6 safeguards ventilation system, which was required for operability of the safeguards buses. Consequently, no requirement for an LCO entry was documented in the work request.

TS 6.5 requires that, "detailed written procedures ... covering areas listed below shall be prepared and followed." One of the areas listed in Section 6.5.A is "Integrated and system procedures for normal startup, operation and shutdown of the reactor and all systems and components involving nuclear safety of the facility." Administrative Control Directive 5ACD 3.15, "Plant Operation," a procedure required by TS, states that, "Voluntary entry into an LCO shall be authorized by plant management ... normally documented on the Weekly Planning Meeting results. Any other voluntary LCO entry shall be documented on the work order or work request." In addition, Operating Procedure C18.1, "Engineered Safeguards Equipment Support Systems," describes what LCOs are required to be entered when the D6 safeguards ventilation system is removed from service. Contrary to the above, in each of the two events discussed in the preceding paragraph, authorization was not granted per plant management or documented on the work request, to stop the D6 safeguards ventilation system and voluntarily enter an LCO. This is considered a violation of Technical Specification 6.5 (Violation 50-306/94015-03(DRP)).

The inspectors considered both of these events to have minor safety significance. In both cases, the D6 ventilation system was out-of-service for only a short time, and room heat-up studies performed by the licensee have shown that several hours of post-accident, safeguards equipment operation in a non-ventilated environment are required before equipment qualification becomes a problem.

The first event involved poor communications between maintenance and operations personnel, and reflected an inadequate understanding of the design function of the safeguards ventilation system. The second event involved inadequate review of electrical drawings during the preparation of a work request isolation, and

misleading nomenclature on electrical drawings. The inspectors were concerned that the licensee's corrective actions for two previous violations regarding the operation of essential support equipment and the impact of that equipment on parent system operability, were apparently not broad and comprehensive enough to prevent recurrence of a similar violation, as evidenced by the two October 3, 1994 events involving the D6 ventilation system.

One violation and one unresolved item were identified. No deviations, or inspection followup items were identified.

6. Surveillance (61726, 73753, 92902)

The inspectors reviewed Technical Specification-required surveillance testing as described below, and verified that testing was performed in accordance with adequate procedures, test instrumentation was calibrated, and Limiting Conditions for Operation were met. The inspectors further verified that the removal and restoration of affected components were properly accomplished, test results conformed with Technical Specifications and procedure requirements, test results were reviewed by personnel other than the individual directing the test, and deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.
Portions of the following test activities were observed or reviewed:

- SP 2093, "D5 Diesel Generator Slow Start Test"
- SP 2305, "D6 Diesel Generator Slow Start Test"

a. Emergency Diesel Generator (EDG) Surveillance

During this inspection period, several EDG surveillance tests were conducted. Problems were identified during some of these tests. The following is a summary of the tests and associated problems.

1) September 12, 1994

During a normal monthly surveillance test of D6, a "voltage regulator rectifier failure" alarm was received. Per the corresponding alarm response procedure, the EDG was shut down. The backup circuit was selected and the test was resumed. During the subsequent test run, an EDG trip occurred on a "low lube-oil sump level" signal. Diesel operators had visually inspected the oil level via the sump dipstick both before and after the EDG run, and level was observed to be within the normal operating range. The licensee hypothesized that a combination of level instrumentation error and normal sump level "draw-down" during engine operation, may have caused the trip.

The D6 EDG was successfully tested later in the day. In accordance with Technical Specification 3.7.B.1, the D5 EDG was tested per SP 2093 within 24 hours of declaring the D6 EDG inoperable due to the low lube-oil sump level trip.

2) October 7, 1994

The D6 EDG was returned to service after successful completion of SP 2305 following an 18-month preventive maintenance outage.

3) October 10 - 13, 1994

During a normal monthly surveillance test of the D5 EDG, a trip occurred on a low lube-oil sump level signal. The oil level had been visually inspected with a sump dipstick both before and after the EDG test run, and level was observed to be within the normal operating range. The D5 EDG was declared inoperable, and on October 11, the licensee initiated an engineering evaluation to consider bypassing the low lube-oil sump level trip during testing. The engine trip signal was designed to provide a protective function only during EDG testing, and is automatically bypassed on receipt of a safety injection emergency start signal. The licensee informed the inspectors that the level switch used for the EDG trip signal is difficult to calibrate in terms of obtaining a reproducible trip setpoint, and that several "false" low lube-oil level trips of the Unit 2 EDGs have occurred since these diesels were installed. The licensee discussed their intent to bypass the low lube-oil sump level trip with the EDG vendor, who concurred that engine protection would still be provided by the low lube-oil pressure trip. In addition, bypassing the level trip during EDG testing would not render the associated low sump level alarm function or the EDG test start permissive signal, inoperable. The inspectors reviewed the licensee's safety evaluation, design report for the Unit 2 EDGs, and the Updated Safety Analysis Report, and determined that the licensee's decision to that bypassing the low lube-oil level trip function was adequately justified.

On October 11, 1994, the low lube-oil sump level trip was bypassed, and the D5 EDG was returned to operable status following successful completion of SP 2093.

The licensee conducted an operability test of the D6 EDG per SP 2305 on October 11, 1994, within 24 hours of declaring the D5 EDG inoperable, as required by Technical Specification 3.7.B.1. Near the end of the operability test, as engine load was being reduced, an "Engine No. 1 high exhaust temperature" alarm was received. Local temperature readings indicated that D5, engine No. 1,

cylinder 8b, exhaust temperature was approximately 1340 degrees Fahrenheit, about 400 degrees higher than normal. Diesel operators noted that the exhaust piping from this cylinder was "red hot," and heard an abnormal "pinging," noise emanating from the cylinder. The EDG was shut down and declared inoperable.

On October 12, 1994, the licensee conducted an operability test of the D5 EDG per SP 2093 within 24 hours of declaring the D6 EDG inoperable due to the high cylinder exhaust temperature condition. The licensee bypassed the low lube-oil sump level trip before performing the operability test. In addition, an EDG vendor representative arrived onsite to assist the licensee in its investigation of the D6 failure. The licensee determined that the fuel injector pump for the affected cylinder apparently continued to inject fuel into the cylinder at a high flow rate when the engine fuel rack was repositioning as EDG load was being reduced. No damage to the cylinder liner or valves was noted during an inspection of the engine cylinder. Accumulated carbon deposits were cleaned from the cylinder, and the fuel injector pump was replaced with an available onsite spare. The licensee initiated a nonconforming item report to document the unexpected pump failure, and returned the pump to the vendor for failure analysis. Following equipment restoration, the D6 EDG was returned to operable status on October 13, 1994, after completion of SP 2305.

The inspectors noted that while all of the EDG tests and outages described above appeared to comply with the Technical Specifications, an unusually large number of EDG starts and periods of EDG inoperability occurred during the report period. The inspectors will continue to monitor EDG operations to determine if this adverse trend in EDG performance and availability becomes more significant.

b. Inservice Inspection (ISI) Activities

The inspectors reviewed the licensee's activities related to followup of ISI program deficiencies identified by the licensee's Quality Services Department. During the recent Unit 1 refueling outage, personnel within the Quality Services Department identified instances in which ISI flaw indications were evaluated for acceptability using the wrong section of the ASME Code. Due to potential operability concerns associated with the incorrect disposition of ISI flaw indications, the licensee conducted a comprehensive review of selected aspects of the ISI program, implemented by the Materials and Special Processes (M&SP) Department, to determine the scope of the apparent problem. The licensee identified several programmatic and performance concerns with M&SP's implementation of the ISI program. The inspectors discussed the results of the ISI audit with the licensee, and with

an NRC Region III ISI specialist. The licensee verified that all flaw indications that had originally been evaluated using the wrong section of the ASME Code, were either Code acceptable, or acceptable based on a fracture mechanics analysis.

In response to the audit findings, the licensee developed a corrective action plan. The inspectors reviewed this plan with the plant manager and other selected staff. The plan appeared sufficiently comprehensive to address the identified programmatic deficiencies and performance weaknesses. The inspectors will continue to monitor the licensee's activities in the area of ISI. The inspectors considered the licensee's identification and evaluation of problems with implementation of the ISI program, an example of effective self-assessment.

No violations, deviations, unresolved items, or inspection followup items were identified.

7. Engineering and Technical Support (93702, 92903)

The inspectors reviewed and evaluated engineering and technical support activities to assess the adequacy of these activities in supporting operations, maintenance, testing, training, fire protection, and configuration management.

No violations, deviations, unresolved items, or inspection followup items were identified.

8. Non-cited Violation

The NRC uses the Notice of Violation as a standard method for formalizing the existence of a violation of a legally binding requirement. However, because the NRC wants to encourage and support licensee initiatives for self-identification and correction of problems, the NRC will not generally issue a Notice of Violation for a violation that meets the criteria of 10 CFR Part 2, Appendix C, Section VII.B. These criteria are:

(1) it was not a violation that could have reasonably been prevented by corrective action to a previous violation;

(2) the violation was not of major safety significance;

(3) the violation was or will be corrected, including measures to prevent recurrence, within a reasonable time; and

(4) it was not a willful violation.

Violations of regulatory requirements identified during this inspection for which a Notice of Violation will not be issued are discussed in paragraphs 2.e and 4.c of this report.

9. Inspection Followup Item

Inspection Followup Items are matters which have been discussed with the licensee, which will be reviewed by the inspector and which involve some action on the part of the NRC or licensee or both. An Inspection Followup Item disclosed during the inspection is discussed in paragraph 3.c.

10. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations, or deviations. An unresolved item is discussed in paragraph 5.b.

11. Exit Interview

The inspectors met with the licensee representatives denoted in paragraph 1 during the inspection period and at the conclusion of the inspection on October 27, 1994. The inspectors summarized the scope and results of the inspection, and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.