**ENCLOSURE**

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

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| Licensee: | Washington Public Power Supply System |
| Facility: | Washington Nuclear Project-2 |
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| Inspectors: | B. A. Smalldridge, Acting Senior Resident Inspector<br>J. E. Spets, Resident Inspector<br>J. F. Melfi, Project Engineer |
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| Attachment: | Supplemental Information |

## EXECUTIVE SUMMARY

Washington Nuclear Project-2
NRC Inspection Report No. 50-397/99-02

This information covers a 6-week period of resident inspection.

### Operations

- The licensee operated the station in a safe, reliable manner, conformed with Technical Specifications, and maintained safety-related and risk-significant systems in an operable condition (Section O1.1).

- One example of a noncited violation (NRC Enforcement Policy, Appendix C) of Technical Specification 5.4.1 occurred when operators failed to comply with a work instruction precaution and placed a local power range monitor (LPRM) on a damaged spent fuel pool (SFP) rack. This violation is in the licensee's corrective action program as Problem Evaluation Request (PER) 299-0470 (Section O4.1).

- The Plant Operating Committee (POC) meeting was thorough and rigorous. The diversity of committee members contributed positively to the depth and breadth of questions, and the review packages were well prepared and presented (Section O7.1).

- Operations department personnel identified multiple occurrences of poor work planning, scheduling, and coordinating. This was recognized as an improvement in performance on the part of operators because of a conscious effort on the part of operations department management to raise the standards for performance and expectations inside the department and across the station as a whole (Section M1.4).

### Maintenance

- Maintenance work was conducted in a manner that ensured reliable, safe operation of the station, and surveillance testing of station safety systems was conducted in accordance with the licensee's programs and Technical Specifications (Sections M1.1 and M1.2).

- One example of a noncited violation (NRC Enforcement Policy, Appendix C) of Technical Specification 5.4.1 occurred when the licensee failed to implement a Technical Specification surveillance procedure, which resulted in data that determined the need for an instrument gain adjust not being documented and reviewed when required. This violation is in the licensee's corrective action program as PER 299-0377 (Section M1.3).

- During review of licensee-generated PERs, the inspector noted several instances of poor planning, coordination, and execution of maintenance activities. These resulted in: (1) safety-related equipment being inoperable longer than was necessary, (2) safety-related equipment being unneccesarily rendered inoperable, (3) SFP temperature exceeding expected values, and (4) the potential for fire protection system compensatory measures to be incorrectly sequenced (Section M1.4).

- Material condition was generally good in that housekeeping was satisfactory. However, disconnected test equipment was unnecessarily left in the plant and a radiological controlled drip bag/funnel had become separated, potentially allowing any leakage to spill on to the floor (Section M2.1).

- One example of a noncited violation (NRC Enforcement Policy, Appendix C) of Technical Specification 5.4.1 was identified by the NRC. Maintenance technicians inappropriately left two upright ladders and an unrestrained hydraulic control unit accumulator cart immediately adjacent to safety-related equipment, which was contrary to procedures. Additionally, the technicians demonstrated poor housekeeping. This violation is in the licensee's corrective action program as PER 299-0335 (Section M4.1).

Engineering

- In 1988, the licensee had installed an undersized power supply in the emergency diesel generator (EDG) speed interlock circuits. The inspectors concluded that the marginal design of the power supply did not pose a significant risk for common mode failure of the Divisions I and II EDGs. However, the failure to correctly size the power supply is one example of a noncited violation (NRC Enforcement Policy, Appendix C) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," (Section E8.1).

- In 1998, the licensee discovered that the primary containment penetration for Valve RHR-MO-9 did not meet the overcurrent protection requirements of Regulatory Guide 1.63, "Penetration Assemblies in Containment Structures for Light-Water-Cooled Nuclear Power Plants," Revision 0, as committed to in the WNP-2 Final Safety Analysis Report (FSAR). The failure to translate the design basis specified in the license application into the design of the facility is one example of a noncited violation (NRC Enforcement Policy, Appendix C) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," (Section E8.2).

Plant Support

- Licensee personnel working in radiologically controlled areas generally exhibited good radiation worker practices in accordance with licensee radiation protection procedures. Radiation areas, high radiation areas, and contaminated areas were posted in accordance with NRC requirements and licensee procedures, and area surveys were current (Section R1.1).

- While no violations of NRC or licensee requirements occurred, inconsistencies in the marking and posting of the boundaries for two contaminated areas in the reactor building led to radiation worker confusion (Section R4.1).

- A noncited violation (NRC Enforcement Policy, Appendix C) of a License Condition was identified in that the licensee failed to implement and maintain in effect all provisions of the approved fire protection program as described in the FSAR. Specifically, the licensee failed to ensure that decontaminable coatings used on floors in the reactor building had a flame spread rate less than 25. This violation is in the licensee's corrective action program as PER 299-0278 (Section F8.1).

## Report Details

### Summary of Plant Status

The station operated at essentially 100 percent power and maintained the capacity to operate at 100 percent power for the duration of the inspection period. The station routinely reduced power to 85 percent during the evening hours and 65 percent over the weekends at the request of the Bonneville Power Administration for economic dispatch.

## I. OPERATIONS

### O1 Conduct of Operations

#### O1.1 General Comments

a. Inspection Scope (71707)

The inspectors frequently conducted tours of the control room and safety-related portions of the station, observed shift turnovers and control room communications, and assessed licensee compliance with Technical Specifications.

b. Observations and Findings

The inspectors found that the conduct of operations was professional and safety conscious. Plant status, operating problems, and work plans were appropriately addressed during daily turnover briefings. Operations personnel properly coordinated testing and maintenance. The inspectors observed shift turnovers and pre-evolution briefings and identified no issues. The inspectors found that the licensee operated the station in a safe and reliable manner that conformed with Technical Specifications. Except as described in Sections O4.1 and M1.3, operations personnel followed approved procedures. Except as described in Section M1.4, the licensee effectively maintained safety-related and risk-significant systems in an operable condition.

c. Conclusions

The licensee operated the station in a safe, reliable manner, conformed with Technical Specifications, and maintained safety-related and risk-significant systems in an operable condition.

### O4 Operator Knowledge and Performance

#### O4.1 SFP Operations

a. Inspection Scope (71707)

The inspectors observed operators perform work in accordance with Work Order PND8-01, Movement of Items in the SFP to Determine Radiation Levels, and Procedure 2.14.1, Revision 18, "Refueling Bridge Operations." In addition, the

inspectors discussed the procedure with the operators, system engineer, and technicians. The inspectors also reviewed Procedure 6.5.12, Revision 3, "Control Blade Shuffle or Replacement."

b. Observations and Findings

The inspectors found that operators moving and surveying pieces of equipment in the SFP failed to follow a precaution in Work Order PND8-01. The inspectors noted that Precaution 2.10 of the work instruction stated, "Do not hang blades or local power range monitors (LPRMs) on the first two racks on the North side of the SFP gates or on the first three racks on the South side of the SFP gates." However, the inspectors observed that an LPRM was hanging on the third rack on the south side of the SFP gates. The inspectors also noted that Procedure 6.5.12 had a similar precaution. This was identified in licensee PER 299-0470.

An operator informed the inspectors that he thought the precaution concerning the third rack was for the north side of the gates, not the south. In addition, the operator stated that he was not sure exactly when the precaution applied. The system engineer stated that the precaution that prohibited using the third rack was written because the rack had been previously damaged and was cracked. The system engineer also stated that radiation streaming could occur on the 606-foot elevation of the reactor building if an LPRM was hung on either of the first two racks.

The inspectors found that the failure to comply with the requirements of Procedure 6.5.12 and Work Order PND8-01, by hanging an LPRM on a prohibited hanger in the SFP, is one example of a noncited violation (NRC Enforcement Policy, Appendix C) of Technical Specification 5.4.1 (50-397/99002-01). This example of a violation is in the licensee's corrective action program as PER 299-0470.

c. Conclusion

The inspectors concluded that a violation of Technical Specification 5.4.1 occurred when operators failed to comply with a work instruction precaution and placed an LPRM on a damaged SFP rack. This violation is in the licensee's corrective action program as PER 299-0470.

## 07 Quality Assurance in Operations

### O7.1 POC Meeting Review

a. Inspection Scope (71707)

The inspectors observed a POC meeting and reviewed an equivalent change package presented to the committee. In addition, the inspectors reviewed a PER that was generated as the result of discussion during the meeting.

b. Observations and Findings

The POC meeting was thorough and promoted rigorous discussion when merited. In addition, the inspectors noted that the diversity of committee members contributed positively to the depth and breadth of questions. One discussion resulted in the initiation of an additional PER. Furthermore, presenters (of POC review packages) were knowledgeable and prepared for the subject presentations.

c. Conclusions

The POC meeting was thorough and rigorous. The diversity of committee members contributed positively to the depth and breadth of questions. The review packages were well prepared and presented.

## II. MAINTENANCE

### M1. Conduct of Maintenance

M1.1 General Comments - Maintenance

a. Inspection Scope (62707)

The inspectors observed or reviewed portions of the following work activities:

- Work Order MLR1-24; Install fire protection system Riser TGB-3 vacuum breaker
- Work Order MLR1-07; Install fire protection system Riser RWB-1 vacuum breaker
- Work Order PND8-01; Fuel pool underwater dose survey
- Work Order RFR8-01; CRD-HCU-2639 refurbishment
- Procedure 9.3.3; Revision 8, "LPRM Calibration/Restoration"
- Procedure 6.5.12; Revision 3, "Control Blade Shuffle or Replacement"

b. Observations and Findings

In general, all maintenance work observed was performed according to the work instructions. The work instructions were present at the work sites and in active use. The inspectors frequently observed supervisors and system engineers monitoring job progress, and quality control personnel were present when required. The inspectors found that maintenance was being conducted in a manner sufficient to ensure reliable, safe operation of the station and plant equipment. With the exception of the details described in Sections M1.3, M1.4, and M4.1, the inspectors identified no concerns.

c. Conclusions

Maintenance work was conducted in a manner that ensured reliable, safe operation of the station.

M1.2 General Comments - Surveillance

a. Inspection Scope (61726)

The inspectors observed or reviewed all or portions of the following test activities:

- Test Procedure SP-APRM-C301, Revision 1, "APRM and Core Thermal Power Channel Calibration Check"
- Test Procedure OSP-ELEC-M702, Revision 5, "Diesel Generator 2 Monthly Operability Test"
- Test Procedure OSP-CRD-M701, Revision 4, "Control Rod Exercise"
- Test Procedure OSP-SW-M101, Revision 5, "Standby Service Water Loop A Valve Position Verification"

b. Observations and Findings

In general, all surveillance testing observed was conducted satisfactorily in accordance with the licensee's procedures, programs, and Technical Specifications. The inspectors found that testing was conducted in a well-controlled manner with communication between the operators and supervision appropriate for the circumstances. The inspectors found that surveillance testing of station safety equipment was satisfactory. With the exception of the details described in the following sections, the inspectors identified no concerns.

c. Conclusions

Surveillance testing of station safety systems was conducted in accordance with the licensee's programs and Technical Specifications.

M1.3 Restoration and Calibration of LPRMs

a. Inspection Scope (62707/61726)

The inspectors observed maintenance technicians perform Procedure 9.3.3, Revision 8," LPRM Calibration/Restoration." In addition, the inspectors reviewed TSP-APRM-C301, Revision 1, "APRM and Core Thermal Power Channel Calibration Check," and PER 299-0377.

b. Observations and Findings

The inspectors found that personnel performing Procedure 9.3.3 failed to perform step 6.3.11 as required. Specifically, step 6.3.11 stated, "Perform TSP-APRM-C301 following return of the local power range monitors to service and after the LPRM gain adjustments have been completed, but prior to returning the average power range monitor (APRM) to service." Surveillance TSP-APRM-C301 required, in part, that the process computer was to be accessed to determine if an APRM gain adjustment was required and, if an APRM gain adjustment was not required, the procedure specified that the supporting data on the process computer screen was to be printed and signed.

However, the inspectors found that an LPRM was adjusted and the associated APRM returned to service without TSP-APRM-C301 being completed. Specifically: (1) the procedure steps were not initialed as being complete; (2) data on the process computer screen, demonstrating that an APRM gain adjust was not required, was not printed and signed; and (3) the completed procedure was not reviewed and approved as required.

Technicians informed the inspectors that they had discussed performing TSP-APRM-C301 with the shift technical advisor, and that they had decided not to document its completion at step 6.3.11 because they anticipated completing the procedure in the near future. The shift technical advisor informed the inspectors that all required actions of TSP-APRM-C301, less the documentation and review, were performed. The inspectors and shift supervisor verified that all APRMs were within the required limits. This was identified in PER 299-0377.

The inspectors found that the failure to perform TSP-APRM-C301, as required by Procedure 9.3.3, is one example of a noncited violation (NRC Enforcement Policy, Appendix C) of Technical Specification 5.4.1 (50-397/99002-01). Specifically, Procedure 9.3.3, step 6.3.11, was not performed as written, in that TSP-APRM-C301 was not completed prior to returning an APRM to service.

c. Conclusions

A violation of Technical Specification 5.4.1 occurred when the licensee failed to implement a Technical Specification surveillance procedure, which resulted in data that determined the need for an instrument gain adjust not being documented and reviewed when required. This noncited violation is in the licensee's corrective action program as PER 299-0377.

M1.4 Planning and Coordination of Maintenance

a. Inspection Scope (61707)

The inspectors reviewed several PERs associated with inadequate maintenance planning and scheduling and reviewed the circumstances that led to the suspension of work on fire protection system modification work.

b. Observations and Findings

During review of licensee-generated PERs, the inspector noted several instances of poor planning, coordination, and execution of maintenance activities.

- Poor communication led to a portion of the reactor core isolation cooling system remaining inoperable for several hours after maintenance was complete (PER 299-0434).

- A control room heating, ventilation, and air conditioning emergency filtration unit was unnecessarily isolated for maintenance that did not occur (PER 299-0474).

- During an SFP maintenance outage: (1) pool temperature exceeded expected values, and (2) operations did not have a clear understanding of the expected SFP heatup rate at the initiation of the SFP cooling outage (PER 299-0301).

- During a review of clearance orders and work orders, a senior reactor operator, assigned to the work control center, identified inadequacies in the work packages and in the schedule for work that day on Fire Protection System Standpipe RWB-2 (PER 299-0341). The inadequacies included: (1) the standpipe was scheduled to be isolated before establishment of compensatory measures, (2) some compensatory measures were not identified in the work package, and (3) some compensatory measures permits were not prepared.

The inspectors recognized that finding these inadequacies during the final review before authorizing the fire protection system standpipe work was a good catch on the part of the reviewer. However, the inspectors questioned the effectiveness of corrective actions taken previously to prevent recurrence of inadequate compensatory measures during fire protection system outages. Additionally, the licensee identified another recent instance where the compensatory measures specified for fire protection system impairments were incorrect. This was identified in PER 299-0522.

The inspectors noted that all of the examples of inadequate work planning, scheduling, and coordinating discussed in this section were identified by operations department personnel. The inspectors recognized this as an improvement in performance on the part of operators and attributed this improvement to a conscious effort on the part of the operations department to raise the standards for performance and expectations inside the department and across the station as a whole.

c. Conclusions

During review of licensee-generated PERs, the inspector noted several instances of poor planning, coordination, and execution of maintenance activities. These resulted in: (1) safety-related equipment being inoperable longer than was necessary, (2) safety-related equipment being unneccesarily rendered inoperable, (3) SFP temperature exceeding expected values, and (4) the potential for fire protection system compensatory measures to be incorrectly sequenced.

The inspectors identified that operations department personnel identified multiple occurrences of inadequate work planning, scheduling, and coordinating. The inspectors recognized this as an improvement in performance on the part of operators due to a conscious effort on the part of operations department management to raise the standards for performance and expectations inside the department and across the station as a whole.

## M2 Maintenance and Material Condition of Facility and Equipment

### M2.1 Review of Material Condition During Plant Tours

a. Inspection Scope (62707)

The inspectors performed routine plant tours to evaluate general housekeeping and material condition at the station. In addition, the inspectors reviewed PER 299-0436, "Unused Equipment Left in the HPCS Day Tank Room."

b. Observations and Findings

In most cases, the inspectors found the housekeeping to be satisfactory and the material condition of plant equipment to be good. The inspectors identified several discrepancies, which are identified as follows:

- The inspectors identified unused equipment in the high pressure core spray EDG fuel oil day tank room. The equipment, which appeared to be temporary, consisted of tygon tubing, instrument fittings, and tape used as a level marker. In addition, the inspectors found a piece of scaffolding lying on the ground below a scaffold erected in the room. The licensee stated that the equipment might have been used at one time to calibrate the high pressure core spray day tank level switch and that it had not been used recently. This was identified in PER 299-0436, and the equipment was promptly removed.

- The inspectors observed that a drip bag and funnel temporarily installed on Valve RCIC-RV-19T, a reactor core isolation cooling lube oil cooler relief valve, was inadequate to control leakage from the valve. The drip bag was supported on only two of four available supports and was separated from the funnel, such that any leakage was directed to the floor. The inspectors did not observe any leakage. The health physics supervisor on shift inspected the drip bag, agreed that it was inadequate, and took steps to correct the deficiency. The inspectors asked the licensee how often drip bags were monitored after initial installation and which licensee organization was responsible for maintaining the drip bags. The licensee informed the inspectors that there was no formal tracking program for monitoring drip bags or evaluating the adequacy once the initial installation was complete. The inspectors found the lack of a licensee program to track and monitor the adequacy of drip bags installed in the radiologically controlled area to be inconsistent with the licensee's stated goal of improvement in contamination controls at the site.

c. Conclusions

Material condition was generally good and housekeeping was satisfactory. However, disconnected test equipment was unnecessarily left in the plant and a radiological controlled drip bag/funnel had become separated, potentially allowing any leakage to spill on the floor.

M4.1 Improper Storage of Unstable Equipment

a. Inspection Scope (62707)

The inspectors reviewed improperly stored unstable equipment in the vicinity of safety-related equipment.

b. Observations and Findings

On February 19, the inspectors observed the contaminated area established in the reactor building around Control Rod Drive Hydraulic Control Unit 5415 for work on the unit. No work was in progress when the inspectors observed the work area and no maintenance technicians were present.

The inspectors found that two stepladders had been left in an upright position, and a hydraulic control unit accumulator cart had been left unrestrained, all immediately adjacent to the control rod drive hydraulic control units. Additionally, the inspectors observed that tools, equipment, and trash were left lying in the work area in a manner that indicated poor housekeeping practices.

The inspectors reported these conditions to the shift manager who took immediate actions to correct the deficiencies. These conditions were identified in PER 299-0335. The inspectors determined that the upright stepladders and the unrestrained hydraulic control unit accumulator cart that were left adjacent to the control rod drive hydraulic control units did not comply with step 7.2 of Procedure 10.2.53, Revision 16, "Seismic Requirements for Scaffolding, Ladders, Man-lifts, Tool Gang Boxes, Hoists, and Metal Storage Cabinets." Step 7.2 required that the ladders be laid on the floor or stored in an assigned storage rack when not in use. Additionally, step 7.2 required that the height-to-width ratio of the accumulator cart not exceed an overturning criteria of 2.0.

However, neither the stepladders left upright in the work area, nor the unrestrained accumulator cart complied with the requirements of step 7.2. Additionally, the poor housekeeping practices demonstrated by maintenance technicians did not meet licensee management expectations.

The inspectors found that failure to comply with the requirements of Procedure 10.2.53 for storage of two ladders and an accumulator cart in the vicinity of safety-related equipment was one example of a noncited violation (NRC Enforcement Policy, Appendix C) of Technical Specification 5.4.1 (397/99002-01). This example of a violation is in the licensee's corrective action program as PER 299-0335.

c. Conclusions

In violation of Technical Specification 5.4.1, maintenance technicians inappropriately left two upright ladders and an unrestrained hydraulic control unit accumulator cart immediately adjacent to safety-related equipment. Additionally, the technicians demonstrated poor housekeeping.

## III. ENGINEERING

### E8 Miscellaneous Engineering Issues (92903)

E8.1 (Closed) Unresolved Item 50-397/98019-03: undersized power supply installed in EDG voltage regulator.

In August 1998, during postmaintenance testing of the Division II EDG, the EDG output breaker unexpectedly failed to close on a loss-of-power test. The licensee initiated PER 298-1029 to resolve this issue. Investigation into the failure revealed that the power supply to the speed interlock circuitry of the EDG was undersized. In addition, prior to the failure, the EDG had been started many times for an unrelated problem. These multiple starts cycled the battery and led to a lower battery capacity and a lower state of charge. The licensee determined that the undersized power supply in combination with the discharged battery did not provide sufficient voltage to actuate the speed interlock relays. These relays were required to actuate to complete the permissive logic for closing the EDG output breaker.

The power supply, a 125 Vdc to 24 Vdc voltage converter, was installed in 1988 as part of a modification to allow the slow start of the Division I and II EDGs and limit component wear during testing. The voltage converter was a resistor network rated to provide 330 milliamps (mA) at 24 Vdc. The licensee concluded that the modification did not adequately address the design requirements of the voltage converter. Specifically, the 330 mA voltage converter was supplying a nominal circuit load of 750 mA. The modification package did not specify the circuit load requirements for the voltage converter. The 750-mA load of the speed switch circuit significantly exceeded the 330-mA rating of the power supply. As described in NRC Inspection Report 50-397/98-19, the power supplies on both the Division I and II EDGs were replaced with power supplies rated at 1800 mA. The design modification effectively addressed the operability concerns with the EDGs.

In reviewing past operability of the Division II EDG, the inspectors noted that, despite this design flaw, there were no previous failures of the EDG output breakers to close related to the speed interlock circuit. Based on interviews with licensee personnel regarding the results of troubleshooting activities at the time of the failure, the inspector concluded that the speed interlock relays were robust in that they functioned over a wide range of pickup voltages. This appeared to compensate for the undersized power supply. The inspector found that the EDG output breaker circuitry was routinely tested to demonstrate EDG capability to provide the necessary power during a loss-of-coolant accident coincident with loss of offsite power. The inspector noted that the load profile

for the battery, during this routine test, exceeded the load profile expected during a design basis accident. In addition, the last previous performances of the Division II EDG test (May 1997) and the Division I EDG test (June 1998) were successful.

The inspectors concluded that the marginal design of the power supply did not pose a significant risk for common mode failure of the Divisions I and II EDGs. This conclusion was supported by both a licensee and NRC risk assessment of the failure. However, the failure to correctly incorporate the circuit load requirements into the design specifications for the voltage converter is one example of a noncited violation (NRC Enforcement Policy, Appendix C) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" (397/99002-02).

E8.2 (Closed) Licensee Event Report (LER) 50-397/98-004-00: primary containment penetration overcurrent protection does not meet design basis specified in license application

During a 1998 review of an ongoing modification, the licensee discovered that the overcurrent protection for one primary containment penetration did not meet the guidelines of Regulatory Guide 1.63, "Penetration Assemblies in Containment Structures for Light-Water-Cooled Nuclear Power Plants," Revision 0, as committed in the WNP-2 FSAR. This condition had existed since 1982.

Upon discovery, the licensee immediately installed an additional fuse to bring the overcurrent protection configuration in compliance with their commitments and initiated PER 298-0494. The licensee stated that the valve associated with this penetration, Valve RHR-MO-9, was normally deenergized and would not normally need overcurrent protection. The licensee reviewed other drawings and did not find any other penetrations with this electrical configuration.

The failure to translate the design basis specified in the license application into the design of the facility is one example of a noncited violation (NRC Enforcement Policy, Appendix C) of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," (397/99002-02).

## IV. PLANT SUPPORT

### R1 Radiological Protection and Chemistry Controls

R1.1 General Comments

a. Inspection Scope (71750)

The inspectors routinely toured the radiologically controlled areas and observed health physics personnel and radiation workers in the field.

b. Observations and Findings

The inspectors observed health physics personnel, including supervision, routinely touring the radiologically controlled areas. Licensee personnel working in radiologically controlled areas generally exhibited good radiation worker practices in accordance with licensee radiation protection procedures.

In general, radiation areas, high radiation areas, and contaminated areas were posted in accordance with NRC requirements and licensee procedures, and area surveys were current. The inspectors checked a sample of doors, required to be locked for radiation protection, and found no problems. With the exception of the details described in Section R4.1, the inspectors identified no concerns with the licensee's radiation protection program.

c. Conclusions

Licensee personnel working in radiologically controlled areas generally exhibited good radiation worker practices in accordance with licensee radiation protection procedures. Radiation areas, high radiation areas, and contaminated areas were posted in accordance with NRC requirements and licensee procedures, and area surveys were current.

## R4 Staff Knowledge and Performance

### R4.1 Contaminated Area Boundary Inconsistency

a. Inspection Scope (71750)

The inspectors reviewed the contaminated area boundaries and postings around control rod drive hydraulic control units and throughout the reactor building. Additionally, the inspectors reviewed Procedure 11.2.7.1, Revision 12, "Area Postings."

b. Observations and Findings

The inspectors found that contamination areas on the 501- and 548-foot levels of the reactor building were not marked consistently with most markings for other permanent contamination area boundaries. Specifically, contaminated area boundary tape was not reapplied to mark the contaminated area boundary on the floor following decontamination and resurfacing of the floor. The licensee promptly marked the floor at the contaminated area boundary with yellow and magenta tape and placed a step-off pad at the boundary to be consistent with other permanent contaminated area boundaries at the station.

The inspectors observed that two contaminated area boundaries temporarily established around several banks of control rod drive hydraulic control units on the 522-foot level of the reactor building did not fully encompass the hydraulic control units. The boundary was left unmarked on several sides of the contaminated area along the length of the

bank of hydraulic control units. Paragraph 4.6 of Procedure 11.2.7.1 allowed the use of walls or equipment as an acceptable means of establishing a barrier into a contaminated area. However, a bank of hydraulic control units, comprised of many hydraulic control units and associated piping, has many openings accessible for "reaching across." When asked, licensee management informed the inspectors that the contaminated area boundary was assumed to run midway down the length of the bank of hydraulic control units. The inspectors then informally questioned four radiation workers about the location of the boundary along the bank of hydraulic control units. None of the responses reflected the licensee management response, and all of the responders were unsure of the exact location of the boundary. This indicated confusion on the part of radiation workers over the location of the boundary along the banks of hydraulic control units inside the two contaminated areas, which could lead to future personnel contaminations.

c. Conclusions

While no violations of NRC or licensee requirements occurred, inconsistencies in the marking and posting of the boundaries for two contaminated areas in the reactor building led to radiation worker confusion.

**F8 Miscellaneous Fire Protection Issues**

F8.1 Flame Spread Rate of Floor Coatings

a. Inspection Scope (71750)

The inspectors toured the reactor building and observed material conditions associated with the application of a decontaminable floor coating. In addition, the inspectors reviewed: (1) Calculation FP-02-858-03, Revision 5, for combustible loading; (2) Followup Assessment of Operability for PER 299-0278, "Floor Coating Does Not Meet FSAR Flame Spread Requirements;" and (3) PER 299-0179, "An Evaluation is Warranted to Determine if Special Coatings Should be Included in the Combustible Loading Analysis." The inspectors also discussed flame spread requirements and combustible loading with the Fire Marshal and plant fire protection engineers. In addition, the inspectors reviewed Procedure 10.2.14, Revision 15, "Maintenance Coating Program," Temporary Change Notice 97-0539.

b. Observations and Findings

The inspectors found that decontaminable self-leveling epoxy coatings used on reactor building floors did not meet the flame spread rate specified in the FSAR. The inspectors noted that painters had applied a coating to a floor in the reactor building and that the material label indicated the material was combustible. The inspectors also noted that the coating appeared to be applied thicker than similar coatings in the plant. The inspectors reviewed the combustible loading calculations for the facility and found that the coating was not addressed.

The licensee initially stated that, as long as the materials had a flame spread rate less than 25, it was not required to be in the combustible loading calculation and that the FSAR specifically stated "Decontaminable coatings have flame spreads less than 25." The licensee determined, through vendor information, that the flame spread rate of the floor coating was dependent on the dry film thickness and that a thickness greater than 32 mils would result in a flame spread rate greater than 25. The licensee took floor coating thickness samples throughout the plant and determined that coating thicknesses were generally greater than 32 mils. Therefore, the flame spread rate was greater than 25, which was not in compliance with the facility FSAR, the design specification, or the engineering standard used for the coating. In addition, the inspectors found that the material had not been applied in accordance with the licensee's instructions. Specifically, the licensee's instructions stated that the dry film thickness was to be 30 mils. However, thicknesses of up to 42 mils were identified.

The licensee performed a followup assessment of operability for PER 299-0278 based on a combination of laboratory fire tests and more recent NRC guidance that had either relaxed or eliminated flame spread rate requirements. The licensee determined that the floor covering was adequate from a fire hazards perspective but did not conform with the FSAR. The licensee also stated that additional research was required to determine what standards were appropriate and applicable for floor coatings used within the reactor plant. In addition, PER 299-0278 stated that actions were required to revise the (1) FSAR, (2) design specifications, (3) engineering standard, and (4) application instructions.

The licensee initiated PER 299-0179 to address the impact of thick floor coatings on combustible loading. In the initial operability assessment, the licensee determined that, because of conservatism in the combustible loading calculations, adequate margin existed even though the coating was not specifically addressed. The licensee stated that an additional review would be performed to determine what specific materials were required to be addressed in the combustible loading calculations.

The inspectors identified a violation of License Condition 2.C. (14), in that the licensee failed to implement and maintain in effect all provisions of the approved fire protection program as described in the FSAR, Appendix F, "Fire Protection Evaluation." Specifically, the licensee failed to ensure that a decontaminable coating had a flame spread rate less of than 25. This Severity Level IV violation is being treated as a noncited violation, consistent with Appendix C of the NRC Enforcement Policy (397/99002-03). This violation is in the licensee's corrective action program as PER 299-0278.

c. Conclusions

A noncited violation of License Condition 2.C was identified in that the licensee failed to implement and maintain in effect all provisions of the approved fire protection program as described in the FSAR. Specifically, the licensee failed to ensure that decontaminable coatings used on floors in the reactor building had a flame spread rate of less than 25.

## V. MANAGEMENT MEETINGS

### X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management on March 18, 1999. The licensee acknowledged the findings presented.

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

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Hillyer, Radiation Protection Manager
P. Inserra, Licensing Manager
J. McDonald, Production Manager
S. Oxenford, Operations Manager
D. Perry, Radiation Operations Supervisor
D. Poirier, Maintenance Manager
G. Smith, Vice President - Generation/Nuclear Plant General Manager

INSPECTION PROCEDURES USED

| | |
|---|---|
| IP 37551: | Onsite Engineering |
| IP 61726: | Surveillance Observations |
| IP 62707: | Maintenance Observations |
| IP 71707: | Plant Operations |
| IP 71750: | Plant Support |
| IP 92901: | Plant Operations Followup |
| IP 92902: | Maintenance Followup |
| IP 92903: | Onsite Engineering Followup |
| IP 92904: | Plant Support Followup |

ITEMS OPENED AND CLOSED

Opened

| | | |
|---|---|---|
| 397/99002-01 | NCV | LPRM found on prohibited hanger in the SFP; APRM returned to service without documented surveillance; improper storage of equipment (Sections O4.1, M1.3, and M4.1) |
| 397/99002-02 | NCV | Undersized power supply installed in EDG voltage regulator; primary containment penetration overcurrent protection does not meet Regulatory Guide 1.63 (Sections E8.1 and E8.2) |
| 397/99002-03 | NCV | Failure to ensure flame spread rate criterion was met for decontaminable floor coverings (Section F8.1) |

Closed

| | | |
|---|---|---|
| 397/99002-01 | NCV | LPRM found on prohibited hanger in the SFP; APRM returned to service without documented surveillance; improper storage of equipment (Sections O4.1, M1.3, and M4.1) |
| 397/99002-02 | NCV | Undersized power supply installed in EDG voltage regulator; primary containment penetration overcurrent protection does not meet Regulatory Guide 1.63 (Sections E8.1 and E8.2) |
| 397/99002-03 | NCV | Failure to ensure flame spread rate criterion was met for decontaminable floor coverings (Section F8.1) |
| 397/98019-03 | URI | Undersized power supply installed in EDG voltage regulator (Section E8.1) |
| 397/98-004-00 | LER | Primary containment penetration overcurrent protection does not meet Regulatory Guide 1.63 |

LIST OF ACRONYMS USED

| | |
|---|---|
| APRM | average power range monitor |
| CFR | Code of Federal Regulations |
| EDG | emergency diesel generator |
| FSAR | Final Safety Analysis Report |
| LER | licensee event report |
| LPRM | local power range monitor |
| NCV | noncited violation |
| NRC | U.S. Nuclear Regulatory Commission |
| PDR | public document room |
| PER | Problem Evaluation Request |
| POC | Plant Operating Committee |
| SFP | spent fuel pool |
| URI | unresolved item |
| WNP-2 | Washington Nuclear Project-2 |