APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-397/94-19

Operating License: NPF-21

Licensee: Washington Public Power Supply System
P.O. Box 968
Richland, WA 99352

Facility Name: Washington Nuclear Project 2 (WNP-2)

Inspection At: WNP-2 site near Richland, Washington

Inspection Conducted: May 15, 1994 - June 25, 1994

Inspectors: R. C. Barr, Senior Resident Inspector
D. L. Proulx, Resident Inspector

Approved by: D. F. Kirsch, Chief, Project Branch E — Date 7/20/94

Inspection Summary:

Areas Inspected: Routine, announced inspection by resident and Region-based inspectors of control room operations, licensee action on previous inspection findings, operational safety verification, surveillance program, maintenance program, licensee event reports, special inspection topics, and procedural adherence. During this inspection, Inspection Procedures 37551, 61726, 62703, 71707, 71750, 92700, 92901, 92902, 92903, and 93702 were used.

Results:

Operations:

- Operations personnel misoriented a fuel bundle during core alterations. This error was detected by engineering personnel during full core verification.

Maintenance:

- Maintenance associated with the replacement of selected containment electrical penetrations was properly performed and documented.
- Maintenance craftsmen, due to a failure to take adequate corrective action following the first light dropping into the reactor vessel, allowed two lights to be dropped in the reactor pressure vessel during operation of the reactor pressure vessel service platform.

- Maintenance craftsmen verified that a moisture separator hold down bolt was positioned for moisture separator removal when the bolt was not positioned for removal.

- Maintenance craftsmen, when attempting to remove the reactor moisture separator, deviated from their training when the applied lifting force exceeded 110 percent of the load and rigging due to an inadequate procedure.

Engineering:

- The in-service testing (IST) program appeared to be well managed and maintained with no equipment maintained in the "Alert" range.

- Problems with moisture intrusion in containment electrical penetrations were resolved in a technically sound manner..

Plant Support

- Procedures for verifying adequate dosimetry when entering high radiation areas were weak and the knowledge of health physics technicians on the operation of radiotelemetry dosimeters was weak, resulting in a craftsman in the drywell without the required dosimetry.

- Security response to a prank in the protected area was inadequate.

- Drywell cleanliness and housekeeping requires improvement.

Summary of Inspection Findings:

- Violation 397/9419-01 (Paragraph 2.1) was identified.
- Violation 397/9419-02 (Paragraph 2.2) was identified.
- Violation 397/9419-03 (Paragraph 2.2) was identified.
- Violation 397/9419-04 (Paragraph 5.2.1) was identified.
- Violation 397/9419-05 (Paragraph 8.2) was identified.
- Licensee Event Report 397/94-07 was reviewed and closed.

Attachments:

- Persons Contacted and Exit Meeting

DETAILS

1 PLANT STATUS

At the start of the inspection period, the reactor was in Mode 5 with core alterations in progress. The licensee completed core alterations on June 10, 1994. The reactor was in Mode 5 at the end of the inspection period.

2 ONSITE FOLLOWUP TO EVENTS (93702, 92901, 92902)

2.1 Dropping of Lights in the Reactor Vessel

On June 23, 1994, at 4:15 a.m and again at 5:22 a.m., during the installation of the reactor moisture separator, the cords of underwater inspection lights were severed and the lights dropped into the reactor vessel. The licensee documented these events in Problem Evaluation Request (PER) 294-0607. In the PER, the licensee noted that, while the service platform was rotated, the lights became hung on the moisture separator, resulting in severing the light cords.

During subsequent licensee efforts to recover the two lights, one of the lights became entrained in the Reactor Recirculation (RRC) Residual Heat Removal (RHR) suction piping. The licensee subsequently recovered that light from RHR Pump A suction. The licensee recovered all parts of the light with the exception of one half of the plastic bulb cover. The licensee concluded that the bulb cover presented no hazard to shutdown or power operation. Licensee inspection of RHR Pump A identified no damage. The licensee had not dispositioned PER 294-0607 at the conclusion of the inspection period.

Followup NRC inspection, which included personnel interviews, procedure reviews, refueling observations and PER review, identified the following: (1) the licensee had not performed a detailed evaluation to determine the cause or implement corrective actions after having severed the first light cord; (2) licensee Procedure PPM 10.3.6, "Reactor Vessel Steam Dryer and Moisture Separator Removal and Replacement," did not address suspending or raising objects from the service platform; (3) positive grappling techniques were not used to recover the lights; and (4) RHR Pump A had not been secured during the recovery effort, even though the lights were located directly above the RRC suction piping, resulting in a light being sucked into the RHR suction from the reactor vessel.

After the cord of an underwater inspection light had been severed and the light dropped into the reactor vessel, the licensee did not take adequate measures to assure that the cause of the condition was determined nor provide corrective action to preclude repetition. As a result of this failure, a second underwater inspection light cord was severed and the light dropped into the reactor vessel about 67 minutes later. This is a violation of 10 CFR Part 50, Appendix B, Criteria 16 (Violation 397/9419-01).

Continuing with the bolting of the moisture separator after having parted the first light cord without having implemented actions to prevent recurrence and attempting to recover the lights without positive grappling are two examples of personnel proceeding in the face of uncertainty. Each of these examples is indicative of weak supervisory and management oversight of emergent problems.

2.2 Attempted Moisture Separator Removal Without Completely Unlatching a Locking Bolt

On June 25, 1994, on two occasions licensee craftsmen attempted to remove the reactor moisture separator with one of the 36 latching bolts engaged. The licensee documented these events in PER 294-0624. In the PER, the licensee concluded that the probable cause was, "Water in the vessel was cascading down the equipment pool shield block causing the water around the separator to exhibit turbulent flow. The turbulent flow made it difficult to verify separator bolt unlatching." The licensee had not dispositioned PER 294-0624 at the conclusion of the inspection period.

Followup NRC inspection, which included personnel interviews, procedure reviews, refueling observations and PER review identified the following: (1) licensee craftsmen failed to adhere to procedures; (2) PPM 10.3.6, "Reactor Vessel Steam Dryer and Moisture Separator Removal and Replacement," was inadequate; and (3) licensee craftsmen and the lift supervisor did not follow training that the indicated lift force should not exceed 110 percent of combined weight of the load and rigging.

PPM 10.3.6, Step 6.2.3 described the process for releasing the 36 latching bolts of the reactor moisture separator. The procedure required the performer to initial to confirm that the bolts were released. Step 6.2.4 required a second verification that all 36 latching bolts were aligned for removal. Additionally, from interviews the inspector learned that a third person had verified that the bolts had been disengaged.

After having performed these procedure steps, craftsmen attempted to remove the moisture separator from the core shroud. PPM 10.3.6 noted that the moisture separator weighed approximately 73.5 tons (147,000 pounds). According to the lift supervisor, the lifting force was increased slowly, stopping at approximately at 160,000 pounds, 180,000 pounds, and 200,000 pounds. When at 200,000 pounds, the lifting crew noted that the moisture separator was slightly cocked on one end. The lift team stopped to evaluate the situation and concluded that the crane may not have been centered over the load. The lift crew discussed the possibility of a bolt not being disengaged. However, since the bolts had been verified disengaged, the crew considered that the most likely cause of the cocking was that the crane was not exactly centered over the separator.

After recentering the crane, the lift crew again attempted to lift the separator off the core shroud. According to the lift supervisor, the lifting force was increased slowly, stopping at approximately at 160,000 pounds and 180,000 pounds. The lift was stopped when the lifting force reached

approximately 180,000 pounds. The lift was again discussed. The latching bolts were more closely inspected and one of the bolts was found not completely disengaged. Failure to properly verify disengagement per PPM 10.3.6 is a failure to follow procedures and a violation of TS 6.8.1.c (397/9419-02).

The craftsmen disengaged the bolt and removed the separator. The licensee concluded that flow turbulence made bolt disengagement verification difficult. A licensee stress calculation concluded that the bolt nor the shroud were overstressed. The inspector reviewed the licensee's calculation and arrived at a similar conclusion.

In interviews and review of the licensee crane and hoist training program, the inspector learned that personnel were trained not to exceed a lift force of 110 percent of the weight of the load. In this instance, the maximum lift force should not have exceeded approximately 167,000 pounds. Clearly, a lift of greater than 180,000 pounds should not have been attempted. PPM 10.4.12, "Crane and Hoist Program Control," Step 7.4.2.b states, "The item to be moved should be identified; its weight, dimensions and center of gravity determined. The total hook load should be determined by adding all components of the lift," and Step 7.4.2.e states, "The written instruction should contain each piece of equipment and accessory to be used by type, rated capacity. Rigging sketches, load paths, limitations and individual sign off steps should be included in the applicable written instruction."

Procedure PPM 10.3.6 was an inadequate procedure because it did not conform to the requirements of procedure PPM 10.4.12 in that it did not contain the total hook load, center of gravity determination, or have load lift force limitations identified. This is a violation of TS 6.8.1.c (397/9419-03).

2.3 Conclusions

Verifying the moisture separator bolt's position with flow turbulence and causing the lifting force to exceed 110 percent of the load and rigging weight are two examples of personnel proceeding in the face of uncertainty. Each of these examples is indicative of weak supervisory and management oversight of emergent problems. When activities did not proceed as expected, the activities were not stopped and the problems thoroughly resolved. In addition, personnel did not adhere to procedures and implement their training. The inspectors concluded that the licensee's response to unusual and off-normal activities was weak and needing improvement.

3 PLANT OPERATIONS (71707, 92901)

3.1 Plant Tours

The inspectors toured the following plant areas:

- Reactor Building
- Primary Containment

- Control Room
- Diesel Generator Building
- Radwaste Building
- Service Water Buildings
- Technical Support Center
- Turbine Generator Building
- Yard Area and Perimeter

3.2 The inspectors observed the following items during the tours:

3.2.1 Operating Logs and Records

The inspectors reviewed operating logs and records against Technical Specification and administrative control procedure requirements.

3.2.2 Monitoring Instrumentation

The inspectors observed process instruments for correlation between channels and for conformance with Technical Specification requirements.

3.2.3 Shift Manning

The inspectors observed control room and shift manning for conformance with 10 CFR 50.54 (k), Technical Specifications, and administrative procedures. The inspectors also observed the attentiveness of the operators in the execution of their duties, and the control room was observed to be free of distractions such as nonwork-related radios and reading materials.

3.2.4 Equipment Lineups

The inspectors verified valves and electrical breakers to be in the position or condition required by Technical Specifications and administrative procedures for the applicable plant mode. This verification included routine control board indication reviews and conduct of partial system lineups. Technical Specification limiting conditions for operation were verified by direct observation.

3.2.5 Equipment Tagging

The inspectors observed selected equipment, for which tagging requests had been initiated, to verify that tags were in place and the equipment was in the condition specified. The inspectors did not identify any deficiencies in observing clearance orders.

3.2.6 General Plant Equipment Conditions

The inspectors observed plant equipment for indications of system leakage, improper lubrication, or other conditions that would prevent the system from fulfilling its functional requirements. Annunciators were observed to ascertain their status and operability.

3.2.7 Plant Chemistry

The inspectors reviewed chemical analyses and trend results for conformance with Technical Specifications and administrative control procedures.

3.3 Engineered Safety Features Walkdown

The inspectors walked down selected engineered safety features (and systems important to safety) to confirm that the systems were aligned in accordance with plant procedures. During the walkdown of the systems, items such as hangers, supports, electrical power supplies, cabinets, and cables were inspected to determine that they were operable and in a condition to perform their required functions. Proper lubrication and cooling of major components were also observed for adequacy. The inspectors also verified that certain system valves were in the required position by both local and remote position indication, as applicable.

The inspectors walked down accessible portions of the following systems on the indicated dates:

System	Dates
Diesel Generator Systems, Divisions 1, 2, and 3.	May 18 and June 22
Low Pressure Coolant Injection Trains A, B, and C	May 26
Low Pressure Core Spray	June 3
High Pressure Core Spray	June 7
Reactor Core Isolation Cooling (RCIC)	June 9
RHR Trains A and B	June 15, 16
Standby Gas Treatment (SGT)	June 21
Standby Liquid Control	June 21
Standby Service Water	June 24
125V DC Electrical Distribution, Divisions 1 and 2	May 19
250V DC Electrical Distribution	May 19

3.4 Conclusions

The inspectors determined that routine plant operations appeared to be adequate during this inspection period. In addition, the inspectors determined that the engineered safety feature systems were in good order and aligned in accordance with plant procedures.

4 ONSITE ENGINEERING (37551, 92903)

The inspectors performed followup of the following engineering related activities during this inspection period:

4.1 IST

The inspector reviewed the status of the IST program from June 20-24, 1994. The inspector noted that there were no pieces of safety-related equipment being maintained in the "Alert" range. The inspector also observed that thorough corrective actions were undertaken for equipment that had entered the "Action" range to restore them to operability. The inspector concluded that the IST program was well managed and maintained.

4.2 Containment Penetrations

The inspector observed maintenance on two containment electrical penetrations. The inspector noted that licensee craftsmen were following procedures and work practices for splicing electrical connections. The inspector noted that good housekeeping practices had been implemented to catch and collect the debris generated in performing the maintenance. The inspector closely followed the destructive examination of two containment electrical penetrations. The examinations were detailed and controlled.

4.3 Conclusions

The licensee maintained the IST in a good manner. Engineering personnel performed well in resolving moisture intrusion problems in containment electrical penetrations.

5 PLANT SUPPORT ACTIVITIES (71750)

The inspectors evaluated plant support activities based on observation of work activities, review of records, and facility tours. The inspectors noted the following during this evaluation.

5.1 Fire Protection

The inspectors observed firefighting equipment and controls for conformance with administrative procedures. Due to concerns with thermolag and fire seals, and because a number of fire doors were propped open to support outage work, the inspectors noted that a very high number of fire impairments existed for which fire tours were being conducted.

5.2 Radiation Protection Controls

The inspectors periodically observed radiological protection practices to determine whether the licensee's program was being implemented in conformance with facility policies and procedures and in compliance with regulatory requirements. The inspectors also observed compliance with radiation work permits, proper wearing of protective equipment and personnel monitoring devices, and personnel frisking practices. Radiation monitoring equipment was frequently monitored to verify operability and adherence to calibration frequency. The inspectors noted that the licensee had exceeded their exposure and contamination goals for the outage.

5.2.1 Entry into High Radiation Area without Dosimetry

On May 23, 1994, a contractor employee entered the drywell (a high radiation area) without dosimetry. The individual worked under the reactor vessel for approximately 1.5 hours. The licensee determined that the individual received 216 millirem (mrem) for this event. The inspector determined that weak licensee barriers and poor individual performance contributed to this event.

Background

During Refueling Outage R-9, the licensee rebuilt selected control rod drives (CRDs). This task required that personnel work in the drywell under the reactor vessel. The licensee required personnel to wear a full set of protective clothing (PCs) and plastic outer PCs that are also known as "bubble suits." This clothing was required because the drywell is contaminated and because water was expected when pulling CRDs.

The dose rates underneath the reactor vessel were approximately 300-600 mrem/hour general area. The licensee requires a thermoluminescent dosimeter and an alarming dosimeter for entry into such areas. The licensee used Merlin-Gerin (MG) radio-linked dosimetry for the under-vessel work. The MGs provided a signal from the individual's dosimeter to a health physics (HP) computer. The individual's dose rate and total integrated dose were displayed on computer screens located at the drywell access point on the 501 foot elevation of the reactor building and the HP control point located on the 471 foot elevation of the reactor building. In addition, the computer screens displayed any alarming conditions of the dosimetry (e.g., high dose rate).

Event Description

On May 22, 1994, the licensee was rebuilding CRDs. Two contractor employees logged on to Radiation Work Permit 294-00148 at the HP control point on the 471 elevation of the reactor building to continue the CRD rebuild work on May 23, 1994, on the graveyard shift. One of these contractor employees received his dosimetry, dressed out in PCs, but left his dosimetry on a bench at the dress-out station (a low-dose area less than 1 mrem/hr). After these contractor employees dressed-out in regular PCs at the 471 foot elevation, they proceeded to the drywell access point on the 501 foot elevation to put on

their bubble suits. The lead HP technician assisted the workers with the bubble suits. Neither the lead HP technician (HPT) nor the drywell HPT physically verified that the workers had their dosimetry prior to the craftsmen entering the drywell. The lead HPT noted a "bulge" in the pocket of the individual and assumed the contractor was wearing his dosimetry. This is an example of a failure to personally verify a condition and proceed in the face of uncertainty. Licensee procedures did not specifically require a positive check for dosimetry by HP. The inspector concluded that the lack of a positive HP check for dosimetry was a missed barrier that could have prevented this event.

The contractor employees entered the drywell at 1:20 a.m. for the CRD rebuild work. These individuals were under constant surveillance via television cameras and were in communication with HP. After monitoring the individuals for approximately 15 minutes, the HPT noted that one individual's MG display indicated zero dose and zero dose rate (despite working in a 300 mrem/hr field). This contractor was working closely with his partner, whose dose and dose rate appeared to be correct for the task undertaken. HP assumed that this individual's dosimetry was not working properly or that the dosimetry had lost radio contact with the MG. HP technicians had noted that they had frequently seen MGs lose contact with the computer screen display during this outage. The inspector concluded that this assumption was flawed in that if the dosimetry was malfunctioning or failed, the computer screen would annunciate "NTX" and, if the dosimeter lost radio contact, it should have annunciated "CON." Therefore, HP went to the 501 elevation and taped a new MG to the outside PCs of the person without any dosimetry. HP made no attempts to investigate the inconsistent signals that were received from his MG or to verify that the craftsman had his dosimetry. HP asked no questions concerning the personnel dosimetry of the individual. The individual continued on with his work after receiving a new MG.

At approximately 2:10 a.m., a licensee laborer discovered an abandoned thermoluminescent dosimeter and MG alarming dosimeter on a bench in the dress out area of the 471 foot elevation of the reactor building. This individual turned in the dosimetry to HP. HP then stopped the CRD work and removed the contract individuals from the drywell. HP generated a PER 294-0459 and the licensee initiated an Incident Review Board (IRB).

The IRB consisted of interviews with personnel, procedures and processes, review of training, and review of previous PERs. The IRB concluded that this instance was an isolated failure of the individual to self-check, and that a contributing cause was that there were problems with the radio-linked dosimetry. The incident review board also concluded that this event did not result in violation of the Technical Specification or 10 CFR Part 20, but was a violation of licensee procedures PPM 1.11.11 "Entry Into, Conduct In, and Exit From Radiologically Controlled Areas," and PPM 1.11.16, Personnel Exposure Limits and Monitoring Requirements." The licensee's corrective actions consisted of (1) Discussing the event with the contract and HP personnel, (2) determining the exposure of the individual, (3) issuing night orders for HPTs to check dosimetry for entry into high radiation areas (4)

determining if a consistent policy of how to verify dosimetry on a person is needed, (5) determine if improvements could be made for radio-linked dosimetry.

Inspector Actions

On June 23, 1994, the inspector followed up on the licensee's investigation into the event. On June 20, 1994, the Radiation Protection Manager (RPM) signed for formalizing the above corrective actions in the PER dispositioning manner. The PER disposition indicated that this event had no generic impact, despite information that two previous PERs since 1992 indicated problems with individuals entering controlled areas without dosimetry. The inspector noted that none of the proposed corrective actions addressed making this event known to the entire WNP-2 staff to ensure that the event was not repeated. In addition, neither the corrective actions nor the conclusions of the IRB adequately addressed the missed opportunity by HP to initially identify the event. The inspector also noted that HP missed the opportunity to identify this event due to a weak understanding of the radio-linked dosimetry. The inspector's review of the HP's training for the MGs found that the licensee had not conducted formal training on use of the MGs for all HPTs. In addition, the inspector concluded that providing direction in night orders to check for dosimetry, rather than formalizing their procedures, was weak and would not fully preclude recurrence of this event.

The inspector, assisted by a lead HPT, checked out a radio-linked dosimeter and noted that, if the MG was located anywhere at the dress-out station, it would not lose contact with the HP desk computer screen. The dose rate for this MG was displayed as 0 mrem/hour.

The inspector reviewed the licensee's dose assessment for the individual without dosimetry. The licensee determined that the individual received 216 millirem for the job. The inspector reviewed the radiation surveys for the dates involved with the event. The radiation levels in the general area under the reactor vessel were approximately 300 millirem/hour. The individual in the high radiation area without dosimetry was in the area for less than 1-hour. The other contractor employee received 216 millirem for the job and had been in the area longer than the individual without dosimetry. Therefore, the inspector concluded that the licensee's dose assessment was reasonable and conservative.

The inspector noted that 10 CFR 20.1502(a)(3) requires licensees to monitor the exposure of each individual that enters a high radiation area. Because the contractor employee worked in a high radiation area for 15 minutes without dosimetry, this event was a violation of 10 CFR 20.1502(a)(3) (Violation 397/9419-04). The inspector informed the RPM that the IRB erred in stating that no violation of NRC requirements occurred. The RPM concurred with the inspectors' conclusion.

Conclusions

Because of the radiation areas involved, the time to perform the task, and the fact that HP was monitoring one of the contract employees with dosimetry, the inspector concluded that this event was not representative of a substantial potential for overexposure. The individual involved with this event and the inspecting HPT used poor work practices in not ensuring that his dosimetry was present prior to entry into a high radiation area. Although this event was identified by the licensee, a clear missed opportunity occurred in which weak HP knowledge allowed the job to continue with no real probing or questioning when problems were noted with the contract employee's dosimetry. The licensee's investigation (including the IRB and the PER resolution) did not fully address the broad based and programmatic corrective actions necessary to preclude this significant event. The IRB also did not address the inadequacy of training on the MG radio-linked dosimetry.

5.3 Plant Housekeeping

The inspectors observed plant conditions and material/equipment storage to determine the general state of cleanliness and housekeeping. Housekeeping in the radiologically controlled area was evaluated with respect to controlling the spread of surface and airborne contamination.

The inspectors toured the primary containment several times during Refueling Outage 9. The inspectors noted that licensee housekeeping practices had degraded as compared to the Refueling Outage 8. Even when taking into consideration that an outage was in progress, the inspectors considered drywell cleanliness to be poor. The inspectors noted significant debris, which included buckets, rags, tools, flashlights, used protective clothing, chain falls, hard hats, pens, nuts, bolts, and other miscellaneous work debris from completed job tasks. The inspectors noted that the observed poor housekeeping could have the following affects: (1) increased time and personnel exposure in closing the drywell and the wetwell; (2) increased potential for debris to enter the wetwell; and (3) tripping hazards. The inspectors noted that the licensee had written several PERs due to work debris falling in the wetwell.

The inspectors noted that personnel needed to improve their attention to detail in not walking on insulation and components. The inspectors observed a number of insulation pads that had been significantly damaged due to being walked on. The inspectors noted that licensee engineers had concluded that the damage to an RRC flow control valve feedback mechanism resulted from someone walking on the mechanism. The malfunction of this valve resulted in a manual reactor scram just prior to the beginning of Refueling Outage 9. These observations were indicative of poor housekeeping implementation and poor supervisory oversight.

5.4 Security

The inspectors periodically observed security practices to ascertain that the licensee's implementation of the security plan was in accordance with site procedures, that the search equipment at the access control points was operational, that the vital area portals were kept locked and alarmed, and that personnel allowed access to the protected area were badged and monitored and the monitoring equipment was functional.

On June 17, 1994, security guards observed two individuals who were wearing black ski masks driving a motorized cart in the protected area. The security officers responded to these individuals and ordered them to remove their ski masks. The licensee did not notify the NRC resident inspectors of this significant security event until June 20, 1994. Subsequent NRC followup of this event is documented in NRC Inspection Report 50-397/94-21.

5.5 Emergency Planning

The inspectors toured the emergency operations facility, the Operations Support Center, and the Technical Support Center and ensured that these emergency facilities were in a state of readiness. Housekeeping was noted to be good and all necessary equipment appeared to be functional.

5.6 Conclusions

Overall Plant Support performance was good but had declined from previous inspection periods. The licensee had exceeded their outage goals for exposure and personnel contaminations. Poor individual performance and weak HP barriers lead to a violation of 10 CFR Part 20 in that an individual worked in a high radiation area without dosimetry. Housekeeping in the drywell was poor, which appeared to require additional containment entries to clean and may have resulted in increased exposure.

6 SURVEILLANCE TESTING (61726)

The inspectors reviewed surveillance tests required to be performed by the Technical Specifications on a sampling basis to verify that: (1) a technically adequate procedure existed for performance of the surveillance tests; (2) the surveillance tests had been performed at the frequency specified in the TS and in accordance with the TS surveillance requirements; and (3) test results satisfied acceptance criteria or were properly dispositioned.

The inspectors observed portions of the following surveillance on the dates shown:

Procedure	Description	Dates Performed
7.0.3	Shift and Daily Instrument Checks - Mode 5	June 1

7.4.6.6.1.3.F Calibrate CAC-TIC-4B June 24

The inspectors concluded that these surveillances were performed and documented properly.

7 MAINTENANCE OBSERVATIONS (62703)

During the inspection period, the inspectors observed and reviewed documentation associated with maintenance and problem investigation activities to verify compliance with regulatory requirements and with administrative and maintenance procedures, required QA/QC involvement, proper use of clearance tags, proper equipment alignment and use of jumpers, personnel qualifications, and proper retesting. The inspectors verified that reportability for these maintenance activities was correct.

The inspectors witnessed portions of the following maintenance activities:

Description	Dates Performed
KA2601, Rebuild CRD-SPV-182	June 21
EV7201, Replace CRD-V-63A	June 21
LF4401, Replace SGT-CF-1A1	June 22
PER294-0606 and PPM 2.7.2 Troubleshoot DG-2 Voltage Regulator	June 23
DA-1904, Change Out Gaskets for CSP-V-5	June 24

The inspectors determined that these maintenance activities were performed and documented properly.

8 OPERATIONS FOLLOWUP (92901)

8.1 Refueling Error

On June 11, 1994, during performance of the core verification to ensure that refueling was performed properly, licensee engineers found that Bundle UD4098 had been placed in the core in Location 11-06 facing southwest rather than northwest, as required. The licensee initiated PER 294-0553 to document this deficiency and to propose corrective actions. Subsequently, the licensee corrected this refueling error. Previous similar errors in refueling were discussed in NRC Inspection Report 50-397/94-14.

The licensee's investigation of the of this error indicates that this fuel bundle was a peripheral bundle in which the channel fasteners were more difficult to verify. The licensee noted that the camera mounted on the refueling mast was not operable; therefore, the crew verified orientation with binoculars. In addition, a full scram was inserted into the core, the result

of which was air bubbles, which adversely affected water clarity. Corrective actions included contacting other utilities to determine their methods for preventing refueling errors and allowing for misorientations to be corrected upon discovery.

8.2 Inspector Followup

The inspector obtained a copy of the tape taken of the core verification. The inspector noted that the misorientation of 90 degrees was obvious because the pattern of the fuel bundle handles was asymmetrical. The inspector concluded that careful observation of the fuel bundle handle pattern by the mast operators was adequate to identify that the bundle was improperly placed in the core. The inspector did not identify any further deficiencies in core loading.

In reviewing the licensee's procedures, the inspector noted that PPM 6.3.2, Revision 8, "Fuel Shuffling and/or Offloading and Reloading," Paragraph 6.1.3 states, "Verify the identity of each fuel assembly by orientation and location on the Nuclear Components Transfer List (NCTL) when it is loaded. The refueling supervisor or designee shall initial the appropriate line of the NCTL as each step is completed. Verification of each step will be documented by the verifiers/designee's initials." The inspector noted that Step 1338 of the NCTL was initialed by the equipment operator and refueling senior reactor operator as satisfactory. The failure to positively verify correct positioning of Bundle UD4098 as required in PPM 6.3.2 is a violation of Technical Specification 6.8.1.c (Violation 397/9419-05).

8.3 Conclusions

The inspector noted that the licensee was cited for a similar violations in NRC Inspection Reports 50-397/93-18 and 50-397/94-14. The licensee's disposition of the previous PERs included installing a camera on the refueling mast for ease of observation of bundle orientation, yet refueling operations continued with the camera inoperable. (Although this was not a specific commitment, the use of the camera was an additional barrier to ensure proper verification of core loading). In addition, core alterations were in progress with a full scram inserted into the core, hindering visibility in the reactor cavity. Even when faced with this uncertainty, the operators signed off Step 1388 as satisfactory.

The inspector also noted that the disposition of PER 294-0553 did not include any corrective actions for the individual errors that led to the mistake. Thus, it appeared that the individuals were not being held accountable for their actions. In addition, it did not appear that training for refuelers would be augmented to ensure that placement of peripheral bundles was correct. The inspector discussed these observations with the Operations Division Manager. The Operations Division Manager stated that actions for the individual errors would be added to the PER disposition.

9 ONSITE REVIEW OF LICENSEE EVENT REPORTS (LERs) (92700)

The inspectors reviewed the following LERs associated with operating events. The below LERs were reviewed during this inspection period.

9.1 (Closed) LER 50-397/94-07: Reactor Core Isolation Cooling Level 8 Isolation Miscalibration

Original LER

This LER discussed an event in which instrument and control (I&C) technicians miscalibrated a safety-related switch such that it was out of TS tolerance. The switch tripped on decreasing pressure. On November 19, 1993, the technicians, however, transposed two of the trip and reset values during as-found testing, then proceeded to adjust the switches based on this erroneous information. This was identified during the subsequent performance of this surveillance for one of these instruments on January 29, 1993. I&C technicians initiated a PER for this instrument. On April 10, 1994, during closeout actions of the PER to review similar instruments for additional miscalibrations, the I&C supervisor identified that Switch MS-LIS-24B was calibrated out of Technical Specification tolerance.

Licensee's Actions in Response to the LER

Licensee corrective actions consisted mainly of discussing this event with I&C personnel. In addition, additional reviews of similar surveillance procedures were performed.

Discussion and Conclusion

The inspector concluded that this LER, while acceptable to meet 10 CFR 50.73, was difficult to understand and did not provided relevant data, such as the procedure (number, title, and paragraph) and the data recorded versus data required. Because of this, this LER required significant onsite followup to close.

The inspector discussed these conclusions with the licensee. The licensee took the position that the LER was fully satisfactory and that no further corrective actions were necessary.

The inspector noted that four separate individuals as well as the three technicians performing the surveillance signed that the surveillance was performed properly. This fact was not discussed in the LER; therefore, the corrective actions did not appear to fully address the issues associated with inadequate reviews. The inspector noted that the operations shift engineer and shift manager first review the completed surveillance after performance. The equipment was declared operable upon completion of the operations reviews. However, licensee procedures (PPM 1.5.1) state that the operations reviewers are only responsible to ensure that all of the blocks are filled in and that

PERs are being written for any unsatisfactory data. The inspector concluded that no thorough technical review of the surveillance was required prior to declaring the equipment operable.

ATTACHMENT

1 PERSONS CONTACTED

Washington Public Power Supply System

*V. Parrish, Assistant Managing Director for Operations
*M. Flasch, Engineering Director
J. Gearhart, Quality Assurance Director
J. Swailes, Plant Manager
*J. Baker, Technical Training Manager
*G. Smith, Operations Division Manager
*R. Barbee, System Engineering Manager
*S. Kirkendall, Plant Support Engineering Manager
*J. McDonald, Quality Support Manager
*J. Sampson, Maintenance Production Manager
*P. Bemis, Regulatory Programs Manager
*J. Albers, Radiation Protection Manager
*V. Shockley, Assistant Radiation Protection Manager
*W. Shaeffer, Operations Manager
*J. Givin, Security Force Manager
*D. Martin, Security Programs Manager
*M. Mann, Assistant Operations Manager
*J. Muth, Plant Assessments Manager
*D. Swank, Compliance Manager
*W. Barley, Radiation Protection Consultant
*W. Rigby, Health Physics Planning/ALARA Supervisor
*D. Dinger, Acting Health Physics Planning Supervisor
*T. King, Radwaste Craft Supervisor
R. Rana, Lead Engineer
*C. Madden, Technical Specialist
*S. Kim, Health Physicist
*B. Hugo, Licensing Engineer

Bonneville Power Administration

*D. Williams, Nuclear Engineer

Nuclear Regulatory Commission

*D. Kirsch, Chief, Projects Branch E
*R. Barr, Senior Resident Inspector
*D. Proulx, Resident Inspector

The inspectors also interviewed various control room operators, shift supervisors and shift managers, maintenance, engineering, quality assurance, and management personnel.

*Attended the exit meeting on July 14, 1994.

2 EXIT MEETING

An exit meeting was conducted on July 14, 1994. During this meeting, the inspectors reviewed the scope and findings of the report. The licensee acknowledged the inspectors' findings. The licensee did not identify as proprietary any of the information provided to, or reviewed by, the inspectors.