U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No: 50-397/89-08

Docket No: 50-397

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

Facility Name: Washington Nuclear Project No. 2 (WNP-2)

Inspection at: WNP-2 Site near Richland, Washington

Inspection Conducted: February 8 - March 14, 1989

Inspectors: C. J. Bosted, Senior Resident Inspector

R. C. Sorensen, Resident Inspector

Approved by: P. H. Johnson, Chief — 4/11/89 Date Signed
Reactor Projects Section 3

Summary:

Inspection on February 8 - March 14, 1989 (50-397/89-08)

Areas Inspected: Routine inspection by the resident inspectors of control room operations, licensee action on previous inspection findings, engineered safety feature (ESF) status, surveillance program, maintenance program, licensee event reports, special inspection topics, procedural adherence, and review of periodic reports. During this inspection, Inspection Procedures 30703, 41701, 60705, 61726, 62703, 71707, 71710, 90712, 90713, 92700, 92701, 92702 and 93702 were utilized.

Results: One violation of NRC requirements was identified involving changes to the Offsite Dose Calculation Manual (paragraph 13).

One item was opened to follow the results of the licensee's root cause assessment and recommendations following an event which involved the drifting of 34 control rods into the core (paragraph 9).

One other followup item was opened; six previously opened items and nine LERs were closed.

DETAILS

1. Persons Contacted

L. Oxsen, Assistant Managing Director for Operations
D. Bouchey, Director, Licensing and Assurance
*C. McGilton, Manager, Safety and Assurance
C. Powers, Plant Manager
*J. Baker, Assistant Plant Manager
K. Cowan, Nuclear Safety Assurance Manager
C. Edwards, Quality Control Manager
*R. Graybeal, Health Physics and Chemistry Manager
J. Harmon, Maintenance Manager
A. Hosler, Licensing Manager
D. Kobus, Quality Assurance Manager
R. Koenigs, Technical Manager
S. McKay, Operations Manager
*J. Peters, Administrative Manager
W. Shaeffer, Assistant Operations Manager
R. Webring, Assistant Maintenance Manager
M. Wuestefeld, Assistant Technical Manager

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

*Attended the Exit Meeting on March 9, 1989.

2. Plant Status

At the start of the inspection period, the plant was operating at 78% power, with a limitation on power level based on operating with three steam lines. Main steam isolation valve MS-V28A failed to operate before the previous startup and remained closed awaiting repairs. On February 10, at 9:05 a.m., an inoperable high pressure core spray (HPCS) valve, HPCS V-15, required that a plant shutdown be initiated and an Unusual Event declared (see paragraph 8 for additional details). At 12:25 p.m., the valve was restored to operable status and the shutdown and Unusual Event were terminated. Power was restored to 78% by 1:30 p.m. and remained at that level until March 10 when power was reduced due to the drifting of 34 control rods into the core (see paragraph 9 for additional details). Power was restored to 78% at 2:30 a.m. on March 11 and remained at that level through the end of the reporting period.

3. Previously Identified NRC Inspection Items (92701, 92702)

The inspectors reviewed records, interviewed personnel, and inspected plant conditions relative to licensee actions on previously identified inspection findings:

a. (Closed) Enforcement Item (397/88-02-03): Inadequate Design Reviews

The design reviews of a modification scheduled to be installed during the R-3 refueling outage were found not to have been performed in accordance with design procedures. The licensee undertook a design engineering improvement program which has been reviewed by Region V inspectors.

The review of the engineering improvement was documented in inspection report 50-397/88-37. The steps taken to correct this condition are considered adequate. This item is closed.

b. (Closed) Enforcement Item (397/88-21-01): Plant Heatup In Excess of Technical Specification Limits.

During a startup on June 27, 1988, the plant was heated up at a rate of 137 F per hour, exceeding the Technical Specification limit of 100 F per hour. Corrective actions were proposed by the licensee to prevent this occurrence. These actions included: (1) an administrative limit of 80 F per hour on heatup and cooldown rates, (2) directions requiring the operators to record the heatup/cooldown rates at 15-minute intervals, and (3) the addition of a heatup/cooldown computer program to assist the operators in the determination of these rates.

These actions were reviewed by the inspector. Based upon discussions with the operators and supervisors in the Control Room, the inspector concluded that the crews understood the requirements of the Technical Specification. Subsequent startups and shutdowns have occurred at the 80F/hr rate. This item is closed.

c. (Closed) Enforcement Item (397/88-21-02): LER Not Submitted Within 30 Days of Discovery.

Plant Quality Assurance inspectors determined that on several occasions, the Technical Specification heatup and cooldown limits had been exceeded, but a Licensee Event Report (LER) had not been submitted to the NRC within the time required by 10 CFR 50.73.

An LER (88-28) was submitted and plant QA procedure PQA-03 was revised to provide direction to evaluate deficiencies against the plant problem procedure to insure that a nonconformance report (NCR) is required.

The inspector verified the completion of these items. This item is closed.

d. (Closed) Followup Item (397/87-19-23): Evaluate Need for Increased Testing of Transformer TR-B.

The backup station transformer was not being functionally tested to its full capabilities. The licensee revised several procedures to increase the loads on TR-B during testing.

The inspector reviewed procedures 7.4.8.1.1.2.5B, "DG1 Loop Test;" 7.4.8.1.1.2C, "DG2 Loop Test;" and 7.4.8.1.1.2.7A, "Standby DG LOCA Test," which were recently revised. These procedures were found to address the loading of backup transformer TR-B to levels expected during off-normal conditions. This item is closed.

d. (Closed) Followup Item (397/87-19-27): Basis for Notes on Installation of Temperature Element Support.

A design change package, DCP 86-0155-0A, modified the support for a temperature element in the service water pool. The original design had perforations in the support, but the new support did not have perforations and a note in the design package stated that due to the slow temperature change, perforations were not needed. There were no calculations to support the note. The licensee performed a calculation, MF 02-88-56, to justify the values used in the design calculation.

The inspector reviewed this calculation and the values used in the design calculation, and concluded that the licensee's conclusion was appropriate. This item is closed.

e. (Closed) Followup Item (397/87-30-01): Provide clearer Definition of Operable Time for Equipment Returned to Service Following Surveillance.

This item involved the time at which equipment being returned to service following surveillance or maintenance would be declared operable. A difference of opinion was demonstrated by the Shift Managers and Maintenance Management. The issue involved whether the Shift Manager's review or the Maintenance Department's review was the final review required before the item was again declared operable.

Plant management resolved this issue based on the time the maintenance department returns control of the item of equipment to Operations. After the Shift Manager is satisfied that the equipment has passed appropriate surveillance tests, it is accepted for operation and declared operable. This item is closed.

The following items were reviewed by the inspector, but the licensee was not ready to close these items at the time of the inspection.

87-19-10	Procedures Lacking in Maintenance Program.
87-19-11	Nitrogen Tank Potential Threat to Diesel Generators.
87-19-13	Ineffective Fuel Oil Connections.
87-19-25	No Procedure Covering Seismic Control of Lifting Equipment.

87-19-14 Evaluate Combined Effects of Normal Operations for Set Point Methodology.

87-19-16 Constraint Requirements on Use of ADS Inhibit Switch.

87-19-18 Annunciator Response for Low Pressure Alarm.

4. Operational Safety Verification (71707)

a. Plant Tours

The following plant areas were toured by the inspectors during the course of the inspection:

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

b. The following items were observed during the tours:

(1) Operating Logs and Records. Records were reviewed against Technical Specification and administrative control procedure requirements.

(2) Monitoring Instrumentation. Process instruments were observed for correlation between channels and for conformance with Technical Specification requirements.

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

(4) Equipment Lineups. Valves and electrical breakers were verified 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.

(5) Equipment Tagging. Selected equipment, for which tagging requests had been initiated, was observed to verify that tags were in place and the equipment was in the condition specified.

(6) General Plant Equipment Conditions. Plant equipment was observed 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.

(7) Fire Protection. Fire fighting equipment and controls were observed for conformance with Technical Specifications and administrative procedures.

(8) Plant Chemistry. Chemical analyses and trend results were reviewed for conformance with Technical Specifications and administrative control procedures.

(9) 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 Exposure 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.

On February 23, 1989, the licensee informed the inspector that during the period February 2 - February 20, 1989 several instances of damage had occurred to the personnel contamination monitors that had been recently installed at the entrance to the control room and the radwaste control room. Some of the damage could not be explained as accidental and appeared to have been intentional. The licensee began an investigation and had not determined who was responsible by the end of the inspection period. The licensee's actions will be reviewed during a future inspection (Followup Item 89-08-01).

(10) Plant Housekeeping. Plant conditions and material/equipment storage were observed 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.

(11) 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.

No violations or deviations were identified.

5. Engineered Safety Feature System Walkdown (71707, 71710)

Selected engineered safety feature systems (and systems important to safety) were walked down by the inspectors 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. The inspectors also verified that system valves were in the required positions and locked as appropriate. The local and remote position indication and controls were also confirmed to be in the required position and operable.

Accessible portions of the following systems were walked down on the indicated dates.

System	Dates
Diesel Generator Systems, Divisions 1, 2, and 3.	February 23, March 10
Hydrogen Recombiners	March 2
Low Pressure Coolant Injection (LPCI), Trains "A", "B", and "C"	February 28
Low Pressure Core Spray (LPCS)	February 28
Reactor Core Isolation Cooling (RCIC)	February 28
Scram Discharge Volume System	February 28
Standby Liquid Control (SLC) System	March 1, 6
125V DC Electrical Distribution, Divisions 1 and 2	March 2
250V DC Electrical Distribution	March 2

No violations or deviations were identified.

6. Surveillance Testing (61726)

a. Surveillance tests required to be performed by the Technical Specifications (TS) were reviewed on a sampling basis to verify that: (1) the surveillance tests were correctly included on the facility schedule; (2) a technically adequate procedure existed for performance of the surveillance tests; (3) the surveillance tests had been performed at the frequency specified in the TS; and (4) test results satisfied acceptance criteria or were properly dispositioned.

b. Portions of the following surveillance tests were observed by the inspectors on the dates shown:

Procedure	Description	Dates Performed
7.4.7.1.3	Spray Pond Sediment Level Measurement	February 7
7.4.7.9.1	Weekly Bypass Valve Test	February 10
7.4.5.1.19	HPCS Suction Transfer Test	February 12
7.4.6.1.2.4	Local Leak Rate Test of CSP-V-6 & CSP-V-8	March 3

No violations or deviations were identified.

7. Plant Maintenance (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 safety tags, proper equipment alignment, and use of jumpers, personnel qualifications, and proper retesting. The inspectors verified that reportability for these activities was correct.

The inspectors witnessed portions of the following maintenance activities:

Description	Dates Performed
Rework Insulation and Heat Trace on containment monitoring system CMS-SR-13 per AT 8506	February 6
Repair high pressure core spray valve, HPCS-V-15, per AV 1925	February 10
Replace PSR-PI-661 per AT 7982	March 8

No violations or deviations were identified.

8. Unusual Event Due to Required Reactor Shutdown (93702)

On February 10, at 5:05 a.m., high pressure core spray (HPCS) valve V-15 failed to open during surveillance testing, and was declared inoperable. The plant entered a four-hour Technical Specification action statement (3.6.3) which required that the valve be made operable or that the plant be shut down. At 9:00 a.m., following maintenance efforts, the valve was thought to be shut, but testing had not been performed to confirm closure. As required by the action statement in the Technical Specifications, the plant staff commenced a normal reactor shutdown. The site

emergency plan implementing procedures require that a Notice of Unusual Event (NOUE) be declared whenever a Technical Specification action statement requires the plant to be shutdown. At 9:05 a.m., a NOUE was declared and a 10 CFR 50.72 notification was made. At 12:25 p.m., local leak rate testing confirmed that the valve was shut, the reactor power reduction was stopped, and the NOUE was terminated. Power was restored to 78% by 1:30 p.m.

The cause of HPCS V-15's failure to operate was found to be a failed motor operator worm shaft clutch assembly. The licensee performed a root cause assessment on the failure and concluded that the most probable cause of failure was improper assembly by the vendor. The licensee stated that they had contacted the vendor about an evaluation to submit a 10 CFR 21 report.

No violations or deviations were identified.

9. Control Rod Drift Caused By Low Air Header Pressure (93702)

On Saturday, March 11, a drift in the "B" steam line radiation monitor high voltage trip setpoint caused a number of erroneous half-scrams and isolations on the "B" channels of the reactor protection system (RPS) and nuclear steam supply safety system (NSSSS). Operators manually reset these half-scrams four or five times within three minutes. The trip resets increased air flow into the scram air system causing a low scram air header pressure. The low scram air header pressure was believed to have allowed the air-operated scram valves to open slightly, allowing several control rods to drift in. Control rod drift was limited to the period of time that the scram air header pressure was low (estimated by the licensee to be approximately 5-10 seconds). Plant engineers determined that 34 control rods inserted between two and seven notches. Following a computer determination of core thermal limits, plant power was reduced to 30-35% by reducing recirculation flow and shifting the recirculation pumps to slow speed. After the plant power was reduced the control rods were returned to the correct positions.

The inspector arrived at the site and reviewed circumstances associated with the event shortly after the recovery process had begun. The inspector's review of core power distribution data indicated that none of the Technical Specification core thermal limits were exceeded. At that time, the inspector was informed that during the event, the operators had consulted two of three procedures that applied to this circumstance. Operators told the inspector that the alarm response procedure 4.603.A7 was not consulted until after the event had been terminated and that this procedure stated that the reactor should be scrammed if rod drifts occurred because of a "low scram air header pressure". The other procedures -- 4.1.1.1, "Rod Drift," and 4.8.1.1, Control Air System Failure" -- were directed to a single rod drift or to a flux tilt if more than one rod drifted. These two procedures did not appear to cover the event conditions and the operators told the inspector that procedure 4.603.A7 could be interpreted to mean that the plant should have been scrammed if the scram air header pressure were low or lost.

Later calculations by the licensee indicated that if the core had initially been at 100% power some of the thermal limits could have been exceeded. Had this occurred, the Technical Specifications action statement would have required that action be initiated within 15 minutes to restore core power distribution to within the thermal limits within two hours. However, the Lead Nuclear Engineer did not believe that fuel damage would have resulted if the event had started from 100% power.

At the end of the inspection period, the licensee was in the process of performing a root cause assessment on this event. The licensee issued temporary changes to the three procedures on April 14 which clarified management's intentions and provided better guidance if this condition should occur in the future. The inspectors noted that the procedures in effect at the time of the event did appear inadequate to address the situation encountered. The inspectors will review the licensee's procedures, operator actions, and root cause assessment report further during a future inspection (Unresolved Item 89-08-02).

No violations or deviations were identified. One unresolved item was noted (see paragraph 15).

10. Observation of Fuel Receipt and Inspection (60705)

The inspector witnessed the complete sequence of fuel receipt and inspection, at various times, for adherence to approved procedures. This sequence included offloading from the delivery truck, transport into the railroad bay, transport to the refueling floor, upending, transport into the fuel inspection area, inspection, and storage in the fuel pool. In addition, the inspector reviewed the following approved procedures for adequacy:

6.2.1 - Receipt of New Fuel and Shipping Truck to Bay Activities
6.2.2 - New Fuel Handling, Railroad Bay to Refueling Floor Activities
6.2.3 - New Fuel Handling on the Refueling Floor
6.2.4 - New Fuel Inspection
6.2.5 - Fuel Channel Preparation, Inspection, and Installation

Improvements appeared to have been made to portions of this process since last year, when two fuel bundles were dropped on the refueling floor. These improvements included directions to secure the fuel bundles by redundant means from the time they are removed from the inner boxes until they are placed in the fuel pool, an increased number of personnel involved in the upending process, and a requirement for signed documentation to verify that a fuel bundle has been properly restrained. Overall, the inspector observed the various evolutions to be controlled and licensee personnel to be attentive to their responsibilities.

The inspector did not observe plant management involvement with the various fuel movement activities. Only two QA management individuals were observed by the inspector during his observations. At the exit meeting, licensee management personnel stated that they had witnessed portions of fuel receipt.

No violations or deviations were identified.

11. Licensed Operator Training

The inspector chose three licensed operators at random and reviewed selected portions of their training records for completeness and adequacy. The records reviewed included medical evaluations, the most recent requalification examination with the individual's responses, documentation of required control manipulations, and the most recent yearly evaluation. The inspector also reviewed documentation of attendance at all required lectures, and documentation of additional training received in identified weak areas. Several operators were also interviewed to determine the extent of training for specific tasks such as refueling or complicated surveillance tests. All required training was found to be current and required records were in place.

No violations or deviations were identified.

12. Licensee Event Report (LER) Followup (90712, 92700)

The following LERs associated with operating events were reviewed by the inspectors. Based on the information provided in the reports, it was concluded that reporting requirements had been met, root causes had been identified, and corrective actions were appropriate. The following LERs are closed:

LER NUMBER	DESCRIPTION
LER 88-13	NSSSS Isolation caused by EPA Breaker Trip
LER 88-19-01	Control Room Emergency Filtration System Actuation During Test
LER 88-23-01	Violation of Technical Specifications for Secondary Containment Caused by Design Errors
LER 88-25	Isolation Actuation Channel Inoperable

The following LERs were followed up at the time of occurrence of the event. Based upon this followup and subsequent review of the licensee's report, these LERs are closed:

LER 88-24	Special Report - Reactor Containment Temperature Greater Than 150 Degrees
LER 88-28-00	Excessive Plant Heatup and Cooldown Rates
LER 88-29	Technical Specification Required Shutdown Due to High Unidentified Leakage
LER 88-31	Single Failure Which Could Cause Control Room Ventilation (HVAC) to Operate in an Unanalyzed Mode

LER 88-32 Inadvertent Closing of RCIC Steam Supply Valve Due to Personnel Error

No violations or deviations were identified.

13. Review of Periodic and Special Reports (90713)

Periodic and special reports submitted by the licensee pursuant to Technical Specifications 6.9.1 and 6.9.2 were reviewed by the inspector.

This review included the following considerations: the report contained the information required to be reported by NRC requirements; test results and/or supporting information were consistent with design predictions and performance specifications; and the reported information appeared valid. Within the scope of the above, the following reports were reviewed by the inspectors.

- Monthly Operating Report for January 1989.
- Semiannual Radioactive Effluent Report for the period July 1 to December 31, 1988.

During review of the Semiannual Radioactive Effluent Report (SRER), and in discussions with the NRR Project Manager, the inspector noted that the requirements of the Technical Specifications (TS) concerning changes to the Offsite Dose Calculation Manual (ODCM) had not been met. Specifically, Section 6.14 of the TS requires that for licensee-initiated changes to the ODCM, the SRER contain:

1. Sufficiently detailed information to totally support the rationale for the change without benefit of additional or supplemental information.
2. A determination that the change will not reduce the accuracy or reliability of dose calculations or setpoint determinations.
3. Documentation of the fact that the change has been reviewed and found acceptable by the Plant Operations Committee.

These criteria were not addressed for Amendment 6 to the ODCM as contained in the latest submittal of the SRER dated February 15, 1989. This is considered a violation of the TS (89-08-03). Pursuant to the NRC Enforcement Policy (discussed in paragraph 14), since the licensee initiated corrective action prior to the end of the inspection period, a Notice of Violation was not issued.

14. Severity Level V Violations

As stated in Section V.A of 10 CFR Part 2, Appendix C, "General Statement of Policy and Procedure for NRC Enforcement Actions," 53 Fed. Reg. 40019 (October 13, 1988), a Notice of Violation will not normally be issued for isolated Severity Level V violations provided that the licensee has

initiated appropriate corrective actions before the inspection period ends. A Severity Level V violation for which a Notice of Violation was not issued is discussed in paragraph 13 of this report.

15. Unresolved Item

An unresolved items is an item about which the NRC needs additional information to determine whether the item is a violation, a deviation, or an acceptable condition. One unresolved item in this inspection report is discussed in paragraph 9.

16. Exit Meeting (30703)

The inspectors met with licensee management representatives periodically during the report period to discuss inspection status, and an exit meeting was conducted with the indicated personnel (refer to paragraph 1) on March 9, 1989. The scope of the inspection and the inspectors' findings, as noted in this report, were discussed and acknowledged by the licensee representatives.

The licensee did not identify as proprietary any of the information reviewed by or discussed with the inspectors during the inspection.