U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No: 50-397/91-04

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: January 14 - February 17, 1991

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

Approved by: P. H. Johnson, Chief — Date Signed: 3/19/91
Reactor Projects Section 3

Summary:

Inspection on January 14 - February 17, 1991 (50-397/91-04)

Areas Inspected: Routine inspection by the resident inspector and a region-based inspector of control room operations, licensee action on previous inspection findings, operational safety verification, surveillance program, maintenance program, licensee event reports, special inspection topics, procedural adherence, occupational safety, and review of periodic reports. During this inspection, Inspection Procedures 61726, 62703, 71707, 71710, 90712, 90713, 92700, 92701, 92702, 93001 and 93702 were utilized.

Safety Issues Management System (SIMS) Items: None.

Results:

General Conclusions and Specific Findings

Significant Safety Matters: None.

Summary of Violations and Deviations: One violation was identified, involving failure to properly test the standby gas treatment system in accordance with Technical Specification requirements.

Open Items Summary: Four followup items and one LER were closed; one new item was opened.

DETAILS

1. Persons Contacted

J. Baker, Plant Manager
*L. Harrold, Assistant Plant Manager
C. Edwards, Quality Control Manager
*R. Graybeal, Health Physics and Chemistry Manager
*J. Harmon, Maintenance Manager
*H. McGilton, Operational Assurance Manager
*A. Hosler, Licensing Manager
S. Davison, Quality Assurance Manager
*R. Koenigs, Generation Engineering Manager
*S. McKay, Operations Manager
*J. Peters, Administrative Manager
G. Gelhaus, Assistant Technical Manager
W. Shaeffer, Assistant Operations Manager
*R. Webring, Plant Technical Manager

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 February 19, 1991.

2. Plant Status

At the start of the inspection period, the plant was operating at 100% power. Power was reduced on February 16 to approximately 70% power due to problems with the "A" reactor feedwater (RFW) turbine governor. The "A" RFW pump was removed from service and the actuator for the turbine governor was replaced. The "A" RFW pump was returned to service on February 17 and reactor power was in the process of being returned to 100% at the end of the inspection period.

3. Standby Gas Treatment (SGT) System Surveillance Testing Problems (61726)

On January 24, the licensee performed a surveillance test of the upstream charcoal adsorber bed on the "A" train of SGT, in accordance with Plant Procedures Manual (PPM) 7.4.6.5.3.6, "SGT System Adsorber Bypass Leakage Test," Revision 5. This test is conducted by injecting Freon at a point upstream of the charcoal bed and measuring the Freon concentrations both upstream and downstream of the charcoal bed. The results are acceptable if the downstream concentration is less than 0.05% of the upstream concentration, indicating no significant bypass leakage. Each train of SGT at WNP-2 contains two separate charcoal beds in series, and they had normally been tested separately. Unsatisfactory results were obtained for the upstream bed on January 24, and the "A" train of SGT was declared inoperable. A Problem Evaluation Request (PER) was initiated and was addressed by the Management Review Committee (MRC) on January 25. MRC dispositioned the PER for Generation Engineering review and evaluation. Later on January 25, Generation Engineering determined the "A" train of SGT to be operable and the Technical Specification (TS) action statement was exited. On January 28 the

inspector reviewed the PER to determine the rationale for returning the "A" train to an operable status.

The inspector noted that, as a result of the PER, the licensee revised PPM 7.4.6.5.3.6 to test both charcoal adsorber beds concurrently, in series. The inspector also noted from review of the procedure that the sample points both upstream and downstream of the charcoal beds were moved, and the injection point was moved also. The charcoal beds in both trains were then retested concurrently and their operability (when treated as one integral adsorber unit in each train) was demonstrated. The inspector subsequently verified that this test method, after the procedure revision, satisfied the TS for testing of the charcoal beds.

Each train of SGT at WNP-2 also contains two separate high efficiency particulate air (HEPA) filter banks in series (one upstream and one downstream of the charcoal adsorber bed), with four HEPA filters in each bank. The HEPA filters have bypass leakage testing requirements similar to those for the charcoal adsorber beds, except that particulate dioctyl phthalate (DOP) is used for the HEPA filters in place of Freon. The TS direct that bypass leakage testing for the HEPA filters and charcoal beds be conducted per the guidance in Regulatory Positions C.5.c, and C.5.d, respectively, of Regulatory Guide 1.52. These Regulatory Positions of Regulatory Guide 1.52 direct this testing to be conducted per Sections 10 and 12, respectively, of ANSI Standard N510-1975. Sections 10 and 12 of ANSI N510-1975 both state specifically that Section 9 of ANSI N510-1975 is a prerequisite. Section 10 also states that if the HEPA filter system contains more than one bank of filters in series, each bank must be tested separately.

Section 9 of ANSI N510-1975, "Air-Aerosol Mixing Uniformity Test," states that it is to be performed once upon completion of initial SGT system installation, and after modification or major repair. It is not required each time an in-place test of the HEPA filters or adsorbers is conducted. The purpose of this test is to verify that tracer (DOP or Freon) injection and sample points are located so as to provide proper mixing of the tracer in the air approaching the HEPA filter bank or adsorber stage. The testing done pursuant to Section 9 validates the injection and sample points which are to be used for all subsequent bypass leakage testing per Sections 10 and 12, so that the testing performed pursuant to these sections is meaningful and representative.

The inspector reviewed preoperational test SLT-S39.0-5 and portions of preoperational test SLT-S39.0-4, both conducted in 1983 (after initial SGT system installation) to comply with Section 9 of ANSI N510-1975. These preoperational tests did in fact establish the injection and sample points to be used in subsequent bypass leakage testing performed per Sections 10 and 12 of ANSI N510-1975. The inspector noted that an injection manifold was used for injecting DOP to challenge the downstream HEPA filter bank. The 1983 preoperational test confirmed that this injection manifold ensured a homogeneous mixture of the DOP and air approaching the HEPA filters such that a representative upstream sample would be obtained. In addition, the 1983 preoperational testing of the charcoal beds validated tracer injection and sample locations for two different test methods -- for testing the charcoal units separately or

concurrently. The validated method for testing the charcoal beds separately, which the licensee had done before the procedure change discussed above, also required that manifolds be used for tracer injection and upstream sampling when testing the downstream charcoal bed. Otherwise, per SLT-S39.0-5, the adsorber beds were to be tested concurrently.

Licensee personnel responsible for testing SGT were questioned about the use of the injection and sampling manifolds and, to their knowledge, they had never been used. Failure to use the injection manifolds for testing the downstream HEPA filter bank, and the injection and sampling manifolds for testing the downstream charcoal bed, is a violation of TS Section 4.6.5.3.b.1 (Violation 397/91-04-01). The licensee appears to have corrected the portion of this violation which pertains to the charcoal beds by making the procedure change discussed above. However, this change appears to have been made because acceptable test results could not be obtained when the beds were tested separately, not because the licensee was aware that the previous test method was in violation of the requirements. The portion of this issue involving the charcoal beds is therefore not considered to be a licensee-identified violation.

On February 1 at 9:00 p.m., after the inspector noted that the procedure for testing the downstream HEPA filter was incorrect, the licensee entered TS 4.0.3, which allows 24 hours to successfully complete a surveillance test that has not been performed as required. The licensee attempted to validate the injection method that had been used for testing the downstream HEPA filters by conducting a test per Section 9 of ANSI N510-1975. The results failed the acceptance criteria. They were finally able to successfully test the downstream HEPA filter bank by removing the upstream HEPA filters and using its previously established injection and sample points. The upstream bank was then tested after reinstallation. TS 4.0.3 was exited at about 12:00 p.m. on February 2.

Additional concerns expressed to the licensee included:

* PPM 7.4.6.5.3.5, "SGT System HEPA DOP Test and Visual Inspection," did not indicate specifically where injection and sample ports were located.

* Sample and injection ports on the filtration units themselves were only identified by writing in black marker pen. There was inconsistency in the labeling for injection and sample points between the "A" and "B" trains, especially where the downstream HEPA filters were concerned. Conversations with licensee personnel responsible for SGT testing indicated that for the downstream HEPA filters the intended injection point was in doubt.

* Confusion existed as to whether the 1975 or 1980 version of ANSI N510 applied for bypass leakage testing of SGT or other safety related filtration systems. Some differences exist between the two which may be significant, and Regulatory Positions C.5.c and C.5.d of Regulatory Guide 1.52 specifically endorse the 1975 version. The licensee has committed to the 1980 version in the FSAR. This issue was resolved in subsequent discussions with cognizant licensee personnel.

The licensee issued a PER to document and resolve the SGT testing deficiency. A Level I root cause evaluation was initiated to determine why the original preoperational tests had not been followed. Licensee Event Report (LER) 91-003, issued after the end of the inspection period, also discussed this issue.

One violation was identified, as discussed above.

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

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

a. (Closed) Part 21 Report 90-03-P - Potential Problem with Rockbestos Cables with KS-500 Insulation

Rockbestos, a vendor of electrical cable, submitted a Part 21 report to the NRC concerning a discrepancy in Rockbestos cable with certain silicon rubber insulation. This insulation was designated KS-500. The discrepancy involved the use of the wrong activation energy in the calculation for its equipment qualification. Use of the wrong activation energy would adversely impact the environmental qualification of the cable. A copy of the Part 21 report was sent to each licensee to which this type of cable had been supplied, including the Supply System.

After a search of records, the licensee determined that the cable originally bought under the purchase order referenced by Rockbestos had been received at the WNP-3/5 projects. No cable had been transferred from either WNP-3 or WNP-5 to WNP-2. In addition, no procurement history for this type of cable was found for WNP-2, indicating that that no cable of this type had been purchased from Rockbestos for use at WNP-2. Further, it was determined that the cable received by WNP-3 had been sold to a contractor for non-nuclear use.

This item is closed.

b. (Closed) Followup Item 397/90-28-02 - Drawing Revision Not Issued for Cross-connected Control Room Instrument Power Supplies

A deficiency was discovered by the licensee in October 1990 involving 24 VDC power supplies for certain control room instrumentation. Class 1E power supplies had effectively been cross-connected with non-Class 1E power supplies, rendering safety related instruments susceptible to faults on non-safety related power supplies. This was the result of a design change that had been implemented in 1983 by a Burns and Roe engineer. The applicable drawing had not been updated to reflect the design change that had implemented this wiring error. The inspector left this item open to determine if this was a generic problem.

In response, the licensee reviewed several design changes implemented during the 1983 time frame. All had correctly updated design documents with the exception of the one discussed above. Thus, it appeared that the problem was an isolated one, and that the design engineer at the time had neglected to modify the panel connection diagram as required to reflect the as-built configuration.

This item is closed.

c. (Closed) Followup Item 397/90-31-03 - Weaknesses in Implementation of Cold Weather Preparations

Several weaknesses were identified with regard to implementation of the cold weather preparation program. They were corrected as follows:

* One circuit on the heat trace panel in the Condensate Storage Tank (CST) pit area had a low temperature alarm, even though the ambient temperature was above the alarm point of 35 degrees at the time. Operations submitted an MWR and the problem was corrected.

* The procedure for cold weather operations, PPM 1.3.37, stated, "Ensure there is no debris in the CST pit area that could plug the drain and flood." However, several inches of water were observed in the CST pit area, indicating that the drain was indeed plugged, and appeared to hamper efforts to check the heat trace panel in the area. Per the Assistant Operations Manager, the normal drain system for the CST pit has never been used because the radiation monitor originally installed in the drain piping was inadequate for the application. Therefore, the CST pit has always been pumped to the turbine building sump via a temporary pumping arrangement, making the process a difficult one. The Assistant Operations Manager stated that the CST pit will be pumped out when the water gets one inch deep or greater, and PPM 1.3.37 will be revised to reflect this.

* Various heat trace panels were being checked once a day by equipment operators even though PPM 1.3.37 stated that these panels should be checked by each shift when they are in service during cold weather. The Assistant Operations Manager stated that the equipment operator log sheets would be changed to require that heat trace panels be checked each shift for continuity and low temperatures.

This item is closed.

d. (Closed) Followup Item 397/88-32-01 - Discrepancies/Concerns Regarding ATWS Modifications

The inspector had reviewed the licensee's implementation of the Anticipated Transient Without Scram (ATWS) rule, 10 CFR 50.62, and

had determined that followup inspection was necessary to resolve certain aspects that were incomplete at the time of the inspection. These aspects, and their resolutions, are itemized below:

* Some operators had not been aware of the manual reset characteristic of the alternate rod insertion (ARI) system, or of the minimum required time to reset. The inspector interviewed a number of licensed operators, and found that they were familiar with the manual reset function of ARI and were aware that there was a minimum time to wait before attempting to reset. In addition, this minimum time to reset (45 seconds) had been incorporated into the applicable emergency operating procedure that the control room operators follow when responding to an ATWS event.

* At the time of the previous inspection, ARI modifications had not been added to the simulator. The inspector verified that ARI modifications installed in the plant had been added to the simulator.

* The licensee's ATWS Criteria Design Implementation Review document had identified certain commitments associated with ATWS implementation that were not complete. The inspector verified by reviewing applicable documentation that all 18 issues remaining open at the time of the inspection in the Design Implementation Review Document had subsequently been completed.

* The logic scheme used for the ATWS recirculation pump trip (RPT) had been a one out of two taken once for each recirculation pump. This logic was different from the one out of two taken twice scheme that had been found acceptable by the NRC. The licensee subsequently modified the RPT logic to a one out of two taken twice for each recirculation pump.

This item is considered closed.

5. Operational Safety Verification (71707, 93001)

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
* 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 compliance 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 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 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.

(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.

(12) Occupational Safety. Plant conditions which could result in an occupational risk, such as exposure to toxic non-radioactive materials, were monitored by the inspectors. The inspectors periodically monitored for other such industrial hazards in the workplace.

c. Safety System Walkdowns

Selected engineered safety features (and systems important to safety) were walked down by the inspector to confirm that the systems were aligned in accordance with plant procedures. During the walkdown of the systems, items such as lubrication of major components and cooling water/ventilation 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 position by both local and remote position indication, as applicable.

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

System	Dates
Scram Discharge Volume System	February 4
125V DC Electrical Distribution, Divisions 1 and 2	January 30
250V DC Electrical Distribution	January 30

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) 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.

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

Procedure	Description	Dates Performed
7.4.8.1.1.2.1	Monthly Operability of Emergency Diesel Generators (EDGs)	January 15
7.4.6.5.3.6	Standby Gas Treatment System Adsorber Bypass Leakage Test	February 1
7.4.3.6.23	Recirculation Flow Channel "B" Upscale or Inoperable Control Rod Block	February 5
10.2.77TP	Reactor Closed Cooling (RCC) Heat Exchanger "B" Flush Chemical Cleaning	February 6

While observing the conduct of the EDG surveillance test on January 15, the inspector noted the following:

Step 18 on page 16 of PPM 7.4.8.1.1.2.1 is a prerequisite step in which the operator verifies that Standby Service Water (SSW) flow is 1650-1750 gallons per minute (gpm). However, according to the local gauge, the flow rate of SSW was actually 1810 gpm, outside the required band. The operator noted this discrepancy and reported the out of specification flow rate to the control room. The operators in the control room replied that since the logs for an operating diesel generator allowed a wider control band (1400-2200 gpm), the SSW flow was satisfactory. The local operator then signed off the prerequisite step, and the surveillance continued through completion.

The inspector questioned why a procedure change was not initiated prior to continuing with the surveillance in order to clearly document and rectify the discrepancy. This would also allow an improvement of the procedure to make it more feasible the next time it was worked. Finally, since this was a Technical Specification required surveillance test, the inspector questioned why a sound technical justification was not provided for deviating from certain steps of it.

During discussions with the Assistant Operations Manager, he stated that this problem had minimal safety significance because the

higher flow rate was anticipated by operations personnel and did not affect EDG operability. The SSW system was also being operated in the "splash mode" (which bypasses the spray pond spray nozzles during cold weather), resulting in less back-pressure in the SSW system, and therefore a higher flow rate in the system. However, the Assistant Operations Manager stated that the procedure would be revised to allow for higher flow rates when the SSW system is operated in the above-mentioned cold weather lineup.

No violations or deviations were identified.

7. Evaluation of the Licensee's Self Assessment Capability (40500)

The inspector conducted interviews with several personnel associated with the licensee's oversight groups, and reviewed Plant Operations Committee (POC) minutes, the Operational Experience Assessment (OEA) group's monthly summaries and recommendations, and inspection reports issued by Technical Assessments personnel. During this inspection, the inspector ascertained that the licensee appeared to be in compliance with the Technical Specifications (TS) and appeared to have strong programs for these oversight groups. Some examples of the particular strengths are listed below:

* POC is required by the TS to meet monthly to discuss plant operations and approve Licensee Event Reports (LERs), replies to Notices of Violations (NOVs), changes to the TS, and other items. POC actually meets at least weekly, and sometimes even more often, which keeps POC closely involved with plant operations.

* OEA reviews events from other utilities, INPO reports, Generic Letters and other items in the nuclear industry to determine if action needs to be taken at WNP-2 to prevent similar occurrences or correct similar problems. The inspector noted several examples of significant recommendations that kept the licensee ahead of potential problems. For example, at the Grand Gulf nuclear power plant, the licensee lost control of a fuel bundle during refueling due to problems with certain refueling bridge equipment. The OEA at WNP-2 recommended that the refueling equipment at WNP-2 be checked for similar problems prior to use. Upon inspection, some of the problems noted with the Grand Gulf refueling equipment were noted at WNP-2 also. Thus, the licensee took timely action to correct these problems before they became more significant.

* Technical Assessments performs inspections similar to the NRC and INPO. Technical Assessments has some experienced personnel (including former operators) who are highly knowledgeable in the areas they inspect. A Safety System Functional Inspection (SSFI) of the SSW system, performed recently by the group, made approximately 70 observations and was generally of high quality. In addition, Technical Assessments issued an Outage Modification Inspection that identified several significant issues.

No violations or deviations were identified.

8. Plant Maintenance (62703)

During the inspection period, the inspector 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 inspector verified that reportability for these activities was correct.

The inspector witnessed portions of the following maintenance activities:

Description	Dates Performed
Investigation of oil leak from Division I EDG per AR 2330.	January 14
Recalibrate (Diesel Mixed Air) DMA-TIS-11/1 per AR 2248	January 14
Replace rubber rollers on south fuel preparation machine per AR 1413	February 1

No violations or deviations were identified.

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

The following LER associated with an operating event was reviewed by the inspector. Based on the information provided in the report it was concluded that reporting requirements had been met, root causes had been identified, and corrective actions were appropriate. The below LER is considered closed.

LER NUMBER	DESCRIPTION
91-01	RCIC-V-8 ESF Actuation Due to Failed Electronic Component in Leakage Detection System

No violations or deviations were identified.

10. 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, and the reported information appeared valid. Within the scope of the above, the following report was reviewed by the inspector.

* Monthly Operating Report for December, 1990.

No violations or deviations were identified.

11. Exit Meeting (30703)

The inspector 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 February 19, 1991. The scope of the inspection and the inspector's findings, as noted in this report, were discussed with and acknowledged by the licensee representatives.

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