U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-397/88-41

Docket No. 50-397

License No. NPF-21

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

Facility Name: Washington Nuclear Project No. 2

Inspection at: WNP-2 site, Benton County, Washington

Inspection Conducted: November 28-December 2, and December 12-16, 1988

Inspector: _____ 1-4-89
G. R. Cicotte, Radiation Specialist — Date Signed

Approved by: _____ 1/6/89
H. S. North, Acting Chief — Date Signed
Facilities Radiological Protection Section

Summary:

Inspection during period of November 28-December 2, and December 12-16, 1988 (Report No. 50-397/88-41)

Areas Inspected: Routine, unannounced inspection by a regionally based inspector of solid wastes, open items, onsite follow-up and tours of the facility. Inspection procedures 30703, 84750, 92701, 92702, 93702, and 83726 were addressed.

Results: Of the four areas addressed, no violations were identified in two areas. In one area, a violation of Technical Specification 6.12.1, failure to use dose rate monitoring devices in a high radiation area, was identified (Paragraph 4). In another area, a previously unresolved item, 50-397/88-26-01, was identified as a violation of Technical Specification 4.11.2.1.2 (paragraph 3.B).. The licensee's program appeared capable of meeting its safety objectives. However, more attention is needed to assure that all employees adhere to licensee procedures.

DETAILS

1. Persons Contacted

* C. M. Powers, Plant Manager
*+J. W. Baker, Assistant Plant Manager
*+L. L. Bradford, Health Physics Supervisor
*+T. M. Brun, Plant Quality Assurance (QA) Engineer
A. I. Davis, Senior Radiochemist
*+L. J. Garvin, Manager Programs and Audits
*+R. G. Graybeal, Health Physics/Chemistry Manager
+D. A. Kerlee, Principal QA Engineer
+W. A. Kiel, State Liaison-Licensing
D. E. Larson, Radiological Programs/Instrument Calibration Manager
+S. F. Peters Plant Administration Manager
+D. R. Pisacik, Health Physics Support Supervisor
*+K. A. Smith, Radwaste Program Leader
+S. L. Washington, Principal Plant Technical Engineer

+Denotes those present at the exit interview held on December 2, 1988.

*Denotes those present at the exit interview held on December 16, 1988.

In addition to the individuals identified above, the inspector met and held discussions with other members of the licensee's and contractors' staff and personnel.

2. Radioactive Waste Systems

A. Audits and Appraisals

The following audits and completed/committed corrective actions were reviewed:

Audit #87-420, Radioactive Process Control Program, November 24, 1987

Audit #87-420-A, (Corrective Action Follow-up Review of 87-420) Radioactive Process Control Program, December 2, 1988

Surveillance #2-88-247, Radioactive Work Control, October 12, 1988

Audit #87-420 resulted in six major findings and 18 additional concerns. The Manager, Programs and Audits, stated that 87-420-A was performed due to the extent and nature of the findings in 87-420, that a re-audit of this program area would normally have been scheduled in 1989. Corrective action or resolution of 87-420 findings had been completed. In the 87-420-A review of the same activities, the following concerns were identified:

- Audit #87-420 identified a problem with the method of radioactive waste resin sampling. Discussion with the auditors and other staff revealed that the transfer/dewatering system operator, a contractor, obtained resin samples during transfer by reaching into the resin stream with a sample bottle in his gloved hand. The auditor stated that the operator did not use respiratory or face protection during the sampling. Other actions by the operator, which had previously been observed by the inspector, resulted in the identification of concerns indicative of an apparent laxity in the control of activities during waste processing by Health Physics personnel (discussed in paragraph 2.C, below).

- Audit #87-420-A identified a failure to take committed corrective action, again related to hand sampling of resin. Part of the corrective action for audit #85-339 had been completion of Plant Maintenance Request (PMR) #85-0712-0, to install sample points in the transfer lines, in order to eliminate direct glove contact with the resin. The PMR had not been accomplished by the time audit #87-420-A was conducted. The inspector discussed the appropriateness of the licensee's current method. The licensee stated that the radioactivity concentrations were low enough, and the duration of contact short enough, to meet their criteria for not routinely issuing extremity dosimetry. This was verified through representative review of waste records. The inspector expressed concern that the variability of concentrations within each batch of resin transferred, and the lack of continuous monitoring of the transfer lines, might cause an unmonitored cumulative extremity dose higher than anticipated by the licensee. This matter, along with air monitoring as discussed in paragraph 2.C below, will be examined in a subsequent inspection (50-397/88-41-01).

  Other problems identified by the audits noted above were failure to have the current revision of a vendor procedure (the affected portions had not been changed), failure to hold formal pre-job briefings (corrective action pending), some equipment only partially operable (corrective action pending or corrected), and inadequate procedures with respect to sample accountability and analysis (corrected).

  Overall, the depth and scope of licensee audits appeared to have improved, and appeared consistent with Quality Assurance requirements of 10 CFR 61.55-6. The inspector expressed concerns, with respect to response to the audits, as noted above. The concerns were acknowledged by the licensee.

B. Changes

No major changes in the licensee's program had taken place since the last inspection. A new Radwaste Program Leader (RPL) had been appointed, however, in part in response to audit #87-420, noted above.

The facility had originally been constructed to process resin and other wastes to be solidified into 55 gallon drums. The licensee has for some time been using high capacity (190 cubic feet (CF)) liners, with low activity resin processing taking place in the original drum/liner storage area. High activity resins are processed in the transport cask, due to the low capacity and shielding limitations of the current drum/liner transport mechanisms. The licensee stated that two improvements are under consideration:

- Upgrade or replace the current bridge-crane rail system, to allow heavier and/or more highly radioactive liners to be carried remotely with minimal direct handling of rigging, which would permit increased storage in the existing structure.

- Construction of a low-level radioactive waste storage facility near the current Warehouse 80 storage area (see Inspection Report (IR) 50-397/88-36).

C. Implementation

Representative records of processed radioactive waste were reviewed. The licensee characterizes waste for classification using a computer software program, which identifies concentrations of nuclides which exceed specified levels. The RPL stated that he verifies each characterization by sample calculation. No errors in the licensee's methodology were identified, and default values used by the licensee appeared to be conservative with respect to 10 CFR 61 and the Branch Technical Position on Radioactive Waste Classification requirements.

Resin transfer/dewatering operations were observed. The following concerns, identified by the inspector, were brought to the attention of the licensee:

- A large number of outstanding deficiency tags were observed on Radwaste Control Panel G-11-P001-1. The inspector noted that many of the deficiencies were identified as a result of the assessment of systems by the licensee (see Paragraph 3, item 50-397/88-22-01, below). Although the number appeared high, discussion with the resident NRC Inspector revealed that the licensee was making progress in reducing outstanding corrective maintenance items.

- RWP #2-88-00009, for resin processing, requires a protective clothing (PC) hood when hard hats are required to be worn, and glove changes after hose handling. The operator wore a skull-cap and no hard hat in a hard-hat required area, and did not change his gloves, after disconnecting the fill head hoses. A Health Physics Technician (HPT) was present but did not challenge those actions.

  RWP #2-88-00009 did not specifically state that either an HP escort or alarming integrating dosimeters would be required for

high radiation areas. The inspector observed the operator make routine entries into an area identified as having radiation levels greater than 1000 mrem/h, to operate processing equipment. The operator was observed to use dose rate monitoring equipment or HP escort as prescribed by Technical Specification 6.12.1. However, lack of such an RWP stipulation had been identified as a contributing factor in an earlier unauthorized high radiation area entry (see IR 50-397/88-22).

- The operator stated to the inspector that if resin clings to the fill head after dewatering, he routinely washes the resin down into the liner before removing the fill head. The inspector asked if humidity and/or water content were again monitored, or if such an action might affect the maximum free standing water procedural limitation of 0.5% by weight. The operator responded that the amount of water he used was minimal. When the concern was expressed to the RPL, he stated that although he had not been aware of the practice, no instances of failure to meet the freestanding water requirement had been observed at the disposal site. He further stated that such action was not permissible, and that he would so inform the operator.

- No air sampling was conducted during disconnection and removal of the dewatering/fill head from a full, dewatered resin liner. The operator removed the connections and reached into the fill head, placing his face within approximately 12 inches of the openings, without respiratory or face protection. No survey of the interior of the fill head was conducted during or after removal from the liner.

  The inspector expressed concern to the HPT at the work site regarding the lack of either respiratory protection or airborne monitoring. The response was that no problems had in the past been identified. The inspector asked the HP Supervisor when that type of operation had last been monitored for airborne radioactivity. The HP Supervisor stated that it had been approximately six weeks earlier, and provided a copy of the analysis record. The analysis record did not clearly indicate whether it addressed the breathing zone described above. The inspector requested that the licensee provide an analysis of whether more frequent or comprehensive controls and monitoring would or would not be appropriate, and the basis for those conclusions. This matter will be examined in a subsequent inspection in conjunction with open item 50-397/88-41-01, identified above.

Although the concerns identified above were noted, the licensee's program appeared capable of meeting its safety objectives.

No violations or deviations were identified.

3. Open Items

A. Follow-up

50-397/IN-88-63 (Closed) This refers to an Information Notice (IN) regarding Traversing In-core Probe (TIP) hazards. The licensee had received and distributed the IN. This matter is considered closed (50-397/IN-88-63 Closed).

50-397/IN-88-79 (Closed) This refers to an IN regarding misinterpretation of Standard Technical Specification 6.12, High Radiation Areas. The licensee had received and distributed the IN, and plant Health Physics (HP) personnel were aware of the matters discussed therein. This matter is considered closed (50-397/IN-88-79 Closed).

50-397/88-22-01 (Closed) This matter refers to valve lineups and partially unused installed systems (see IR 50-397/88-22, paragraph 2.C.1.). Based on discussions with the Assistant Plant Manager, the Radwaste Systems Engineer, and the Senior Resident NRC Inspector, it was determined that the licensee had taken action to perform a comprehensive assessment of the status of such systems. The licensee had identified and corrected erroneous valve identifications, lack of valve identifications, and system diagram errors, had reperformed numerous valve lineups, and had developed a method for maintaining the improved system status. This matter is considered closed (50-397/88-22-01 Closed).

50-397/88-22-02 (Closed) This matter refers to inadvertent transfer of highly radioactive resins to a floor drain sump and subsequent inadvertent transfer to a floor drain tank (see IR 50-397/88-22, paragraph 2.C.3). The licensee had transferred the resins for disposal and flushed the affected systems. Area radiation dose rates were verified by direct measurement to have been significantly reduced. This matter is considered closed (50-397/88-22-02 Closed).

50-397/88-22-03 (Closed) This matter refers to difficulty in reading the Area Radiation Monitor (ARM) strip chart recorder, ARM-RR-600 (See IR 50-397/88-22, paragraph 2.C.4). The licensee was performing continuing maintenance to keep the recorder operating in a readable condition. The recorder was functional at the time of the inspection. This matter is considered closed (50-397/88-22-03 Closed).

B. Follow-up on Items of Non-Compliance and Unresolved Items

50-397/88-26-01 (Closed) This matter refers to an interpretation by the licensee of TS 4.11.2.1.2 and of TS 4.11.2.8.3 (See IR 50-397/88-26, paragraph 5.B). The inspector had concluded that the licensee's interpretation was not correct, and that this had resulted in the licensee being in non-compliance with TS 4.11.2.1.2 for many routine primary containment vents and/or purges during plant operation from November 25, 1985, to the time of that inspection (as reported in IR 50-397/88-26). The licensee disagreed

with the inspector's conclusion.

The licensee had been informed on July 22, 1988, that this appeared to be a violation of TS 4.11.2.1.2. The matter was subsequently referred to NRR on August 26, 1988, for review to determine:

- If the licensee is indeed required to obtain and analyze grab samples of primary containment atmosphere prior to each vent and/or purge during operation through the standby gas treatment (SGT) system, in view of the licensee's interpretation to the contrary.

- If the licensee is required to include consideration of such sampling and analysis in the calculation of dose rates using the methods contained in the Offsite Dose Calculation Manual (ODCM).

The results of the review by NRR were sent to NRC Region V on December 27, 1988. NRR had concluded that in addition to samples obtained monthly, or in conjunction with startup, shutdown, and (greater than 15%) thermal power changes (which the licensee had been obtaining) the licensee is required to sample prior to each vent and or purge of the primary containment, whether or not the effluent path is through the SGT system. NRR further concluded that the results of sample analyses should be addressed in the ODCM.

The inspector verified that the licensee's previous practice had continued despite discussions of the inspector's concerns with the licensee on July 22, 1988.

Technical Specification 3/4.11.2.1 requires, in part, that in order to determine that the dose rate limits of 3.11.2.1 are not exceeded, samples must be obtained in accordance with Table 4.11-2, and the dose rates determined in accordance with the methodology and parameters of the Offsite Dose Calculation Manual (ODCM). Table 4.11-2 requires, in part, that iodine and particulate grab samples be obtained prior to each vent and/or purge of the Primary Containment atmosphere. Table 4.11-2 further requires, in part, that these samples be analyzed for principal gamma emitters, as specified therein. The failure to take all the samples required and to include the results of analyses in dose rate calculations, in accordance with ODCM methods, appears to be a violation of TS 4.11.2.1.2. The unresolved item 50-397/88-26-01 is closed and item 50-397/88-41-02 is opened (50-397/88-26-01 Closed) (50-397/88-41-02 Open).

50-397/88-33-01 (open) This refers to a failure to obtain a grab sample of the main plant vent (MPV) effluent, in accordance with TS Table 3.3.7.12-1 (see IR 50-397/88-33, paragraph 4). The licensee's timely response to the Notice of Violation (NOV) was received. Verification of corrective action will await additional testing

during the next refueling outage, to which the licensee committed in their response to the NOV. The licensee was reminded that the results of a test conducted October 11, 1988, could not be considered conclusive, with respect to continued operability of the MPV effluent radiation monitor, REA-SR-37, under low flow conditions. This matter will remain open pending review of the results of the tests (50-397/88-33-01 Open).

50-397/88-36-01 (Open). This refers to a failure to post a radiation area in accordance with 10 CFR 20.203. (See IR 50-397/88-36, paragraph 5). The licensee's timely response to the NOV was received. The licensee acknowledged the validity of the NOV. The inspector verified that the licensee had reconfigured one posting such that ingress/egress could be accomplished without removing the barricade to which the sign was attached. However, the response referred to the posting in the singular, when in fact the room could be entered from another direction (there are two entrances), without observing the posting, as described in IR 50-397/88-36. The inspector noted to the licensee that such was the case. The physical configuration versus personnel performance aspects of radiological posting violations were discussed with the Plant Manager during the exit interview. While it was concluded that the specific non-compliance condition had been corrected, corrective action to prevent recurrence will be verified after receipt of the licensee's analysis of Radiological Occurrence Reports, as to which the licensee committed in their response to the NOV (50-397/88-36-01 Open).

No other violations or deviations were identified.

4. Onsite follow-up of Events at Operating Power Reactors

At approximately 11:33 pm on November 30, 1988, the licensee declared an Unusual Event after determining that they were in a forced shutdown condition, pursuant to TS 3.0.3 (See Inspection Report 50-397/88-40). The event was terminated when the licensee achieved a shutdown condition. The inspector observed licensee HP activities and preparation for radiological work in conjunction with that forced outage. Discussions with various members of the HP staff and review of licensee documents revealed that a lack of specific work prioritization was expected to result in cancellation or postponement of some tasks requiring HP coverage. Most preparatory work such as ALARA reviews and Radiation Work Permits (RWP) had been completed.

At approximately 12:10 pm PST on December 1, 1988, the inspector observed two individuals in a posted high radiation area on the 501' elevation of the Reactor Building (RB). The high radiation area barricade and sign had been removed, and the individuals were erecting a scaffold and contamination control tent around a floor drain line immediately inside the location where the barricade had previously existed. The sign, however, was still visible when approaching the area.

The inspector called the Lead (HPT), and asked if he was aware of the removal of the posting. He stated that he was not, and that he would

send an HPT up to the area. When the HPT arrived, he asked the workers if they had informed an HPT that they were removing the posting. The workers stated they had. The inspector noted that the workers did not appear to be wearing alarming dosimeters, and asked the HPT what were the dosimetry requirements for the area. The HPT asked the workers if they were wearing alarming digital dosimeters. When the workers responded that they were not, the HPT ordered them to leave the area, which they did.

TS 6.12, High Radiation Areas, states in part:

"6.12.1 In lieu of the "control device" or "alarm signal" required by paragraph 20.203(c)(2) of 10 CFR Part 20, each high radiation area in which the intensity of radiation is greater than 100 mrems/h but less than 1000 mrems/h shall be barricaded and conspicuously posted as a high radiation area...."

"...Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

a. A radiation monitoring device which continuously indicates the radiation dose rate in the area.

b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received...."

c. A health physics qualified individual (i.e., qualified in radiation protection procedures) with a radiation dose rate monitoring device ...."

A licensee HPT and the inspector conducted a survey at approximately 1:00 pm on December 1, 1988. The results were as follows:

	NRC Instrument Model #RO-2 Serial #015843 Calibration Due 4-26-89	Licensee Instrument Model #RO-2 Serial #R0136 Calibration Due 4-28-89
Maximum whole body dose rate in the accessible work area	130 mr/h	110 mr/h
Dose rate in the remainder of the work area	30-50 mr/h	30-50 mr/h

° The laborers had signed on, but stated they had not read, RWP #2-88-00032, which clearly stated in part under "Special Instructions":

"4) Integrating alarming dosimeter required when not accompanied by HP."

- The laborers stated they had first entered the area under RWP #2-88-00406, which required constant HP coverage, at 7:20 a.m. on December 1, 1988. The HPT who accompanied them stated he had told them they could sign on the routine RWP (2-88-00032) for the remainder of their work. The workers signed off of RWP #2-88-00406 and subsequently signed on to RWP #2-88-00032 at 7:45 am. They later stated that they had not actually entered the posted high radiation area until approximately 11:30 a.m.

Based on discussion with the licensee and review of their preliminary root cause analysis, the following observations were made:

- The workers did not understand (having not read) their RWP, and appeared to be unfamiliar with RWP access controls in that they signed in on an RWP for high radiation area (HRA) work for long periods of time without working in HRAs. Additionally, they failed to sign off of RWP #2-88-00032 after they were ordered to leave the radiologically controlled area (RCA). The workers stated they had seen the video presentation on access controls, which the licensee had developed as corrective action for a previous violation (See IR 50-397/88-22, Paragraph 2.E, and IR 50-397/88-36, paragraph 3.A).

- The decision of the HPT to allow unsupervised work on RWP #2-88-00032 was consistent with the licensee's procedures. The area had been well characterized by surveys and was properly posted. The licensee stated that the HPT had indicated to the workers that construction of the tent should take place outside the area, with only erection of the tent to take place in the HRA. The workers stated they had assumed they had permission to remove the barricade in order to construct the tent, as the rope crossed through the area where the tent would need to be.

- The licensee had identified deficiencies in the video noted above, and in the wording of the RWPs in use by the workers, which were deemed to have been instrumental in creating confusion for the workers.

The licensee had tentatively identified several areas in which improvement was needed:

- Reemphasis of importance of RWP signature as witness to having read RWP
- Pre-work briefings for all HRA work
- Greater accessibility of "review copies" of RWPs
- Reemphasis of boundary relocation procedure
- Additional briefings during work-scope/RWP changes
- Video upgrade
- Evaluation of RWP procedures with respect to INPO guidelines in INPO 88-010, Guidelines for Radiological Protection of Nuclear Power Stations.

The above matters were discussed with the licensee at the exit interview on December 2, 1988. The recurrent nature of inadequate or ineffective access controls was discussed in particular with the Assistant Plant

Manager. The entry into a high radiation area without the required instrumentation or accompaniment appears to be a violation of TS 6.12.1 (50-397/88-41-03).

No other violations or deviations were identified.

5. Facility Tours

Tours of the RWB, RB, and Turbine Building (TB) were conducted. Independent radiation surveys were performed with an NRC ion chamber survey instrument Model #RO-2, Serial #015843, calibrated 10-26-88 and due for calibration 4-26-89.

Work in several locations was observed. The inspector accompanied an Equipment Operator on a tour of the turbine area. Upon exit from the posted contaminated area, an HPT who was guarding the HRA access was observed to pick up several items from the inside of the contaminated area, while not wearing gloves. Several other instances of personnel using poor contamination control practices, such as touching the outside of protective clothing and gloves to exposed skin surfaces, were observed. The licensee stated at the exit interview on December 16, 1988 that part of their analysis of radiological events, as discussed in paragraph 3.B (Item 50-397/88-36-01), above, would address whether such instances actually result in an increase in contamination incidents.

Work on the refueling floor bridge crane, approximately 30' above the 606' elevation of the RB, was observed. Two individuals were observed to be working on the crane rail in a contaminated area, with another individual assisting below. None were wearing hard hat head protection. The workers above were using hand tools passed to them by the individual assisting, who then turned his attention to operation of a drill press which was also located directly below the crane rail. The inspector asked another individual nearby, if he was the supervisor for the workers. He stated that he was, and when the concern was expressed to him, he counseled the workers on proper industrial safety. The concern was brought to the attention of the licensee, who stated the matter would be examined.

Cleanliness of the facility appeared to have deteriorated since the last inspection (50-397/88-36). In particular, the 606' elevation of the RB and the 507' and 437' elevations of the RWB, appeared cluttered. A later discussion with the plant Quality Control (QC) group revealed that the matter had already been addressed with respect to contamination control practices, in QC Surveillance #2-88-250. Although some contaminated areas had been reduced in total area, others had increased in size. QC surveillance #2-88-254, Contaminated Area Minimization, addressed trending of contamination, and had concluded that the plant typically varied from 20%-50% of total area as contaminated, compared to the maximum 10% recommendation by INPO 88-010. This concern was discussed with the licensee. The licensee acknowledged the concern and noted that the surveillance corrective action was still in progress.

While observing work in preparation for entry into the primary containment, the inspector commented to an Instrumentation and Controls

Technician (ICT) that no radiation dosimetry was visible on his protective clothing (PCs). The ICT responded by outlining his dosimetry on his upper front torso inside his PCs, worn as prescribed by licensee procedure PPM 11.2.6.2, Direct Reading Pocket Dosimeters and Xetex Alarming Dosimeters, Revision 6, dated 8-9-88. The inspector asked the ICT's escort HPT whether the RWP required a digital alarming dosimeter. The HPT responded by asking the ICT where his alarming dosimeter was. The ICT stated it was in his back pocket, and that he had been instructed to place it there by the HPT who had escorted him in the containment on his previous entry, "...to make it more accessible to reading." PPM 11.2.6.2 states that alarming dosimeters are placed next to the other dosimetry except when otherwise directed by the HPT. The inspector expressed concern that the radiation sources in the area in which the ICT was to work may not have been considered by the HPT in directing him to wear the alarming dosimeter directly opposite, versus adjacent to, his other dosimetry. The HP/C Manager committed to an evaluation of the matter of dosimetry placement. This matter will be reviewed during a subsequent inspection (50-397/88-41-04).

While touring the 501' TB on November 30, 1988, it was noted that a flashing light, which the licensee had placed at an opening in the turbine generator shield wall, was not lit. The licensee had placed the light after determining that the opening might be large enough to allow access, in accordance with TS 6.12.2, which requires areas with dose rates greater than 1000 mrem/h to be locked. The licensee had initiated Technical Evaluation Request (TER) #88-0412-0 to further determine accessibility and/or the need for construction of an enclosure. Licensee records indicated that the light had been checked and was operational approximately one hour prior to the discovery of the failure. When the light failure was brought to the attention of the licensee, the light was immediately repaired.

Overall, the licensee's program appeared capable of meeting it's safety objectives, although problems with access controls (see paragraph 4, above) continue to be observed.

No violations or deviations were identified.

6. Exit Interview

The inspector met with those individuals denoted in Paragraph 1 on December 2, 1988, and at the conclusion of the inspection on December 16, 1988. The scope and findings of the inspection were summarized. The apparent violation discussed in paragraph 4, and commitments noted in paragraphs 2 and 5, were acknowledged by the licensee in the meeting on December 2, 1988. The licensee was informed of NRR's verification of sampling requirements and subsequent identification as an apparent violation with respect to item 50-397/88-26-01, in a telephone conversation to the HP/C Manager on December 30, 1988.