ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No.:	50-397
License No.:	NPF-21
Report No.:	50-397/97-12
Licensee:	Washington Public Power Supply System
Facility:	Washington Nuclear Project-2
Location:	Richland, Washington
Dates:	May 25 through July 5, 1997
Inspectors:	S. A. Boynton, Senior Resident Inspector G. D. Replogle, Resident Inspector C. E. Skinner, Resident Inspector, Cooper Nuclear Station
Approved By:	H. J. Wong, Chief, Reactor Project Branch E

Attachment: Supplemental Information

EXECUTIVE SUMMARY

Washington Nuclear Project-2
NRC Inspection Report 50-397/97-12

Operations

- The formality of control room activities was noted as a strength during the inspection period (Section O1.1).

- Operations response to an inadvertent depressurization of the control air header was both timely and appropriate (Section O1.2).

- An equipment operator failed to follow plant procedures when directed to shift the control air system (CAS) dryers, resulting in an inadvertent depressurization of the CAS header and the lifting of a system relief valve (Section O1.2).

- Three valves required to be locked by the licensee's procedures were found with their chain locks improperly installed. Unclear guidance for verifying the integrity of the locking device allowed these three deficiencies to go undetected (Section O1.3).

Maintenance

- The licensee's efforts to control foreign materials and maintain cleanliness in the primary containment during the refueling outage were generally effective. However, the licensee's inspection activities associated with this area were not always thorough, indicating a lack of attention to detail on the part of the personnel performing the inspections (Section M1.1)

Plant Support

- The control room emergency response organization adequately demonstrated its capability to respond to a simulated radiological emergency during the July 1 quarterly drill.

Report Details

Summary of Plant Status

The plant began the inspection period in Mode 5 as the licensee continued activities associated with Refueling Outage R12. Following reactor vessel reassembly, the plant reentered Mode 4 on June 7. The plant was restarted on July 4 and was in Mode 2 at the end of the inspection period.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

The formality of control room activities was noted as a strength during the inspection period. Shift turnovers were observed to be detailed and methodical with proper control board walkdowns performed with the individual oncoming and offgoing crew members. When alarms were received, the alarms were announced and independently verified and responses were timely. Good communication practices, including the use of feedback for common understanding, were utilized consistently.

O1.2 Loss of Normal Control Air

a. Inspection Scope (71707)

The inspector observed operations personnel respond to a loss of normal control air when the header was inadvertently isolated from its associated air dryers and the relief valve for CAS Receiver 1B lifted unexpectedly.

b. Observations and Findings

On June 9, during realignment of the air dryer trains to the CAS, the relief valve on CAS Receiver 1B lifted unexpectedly. The inspector, in the turbine building at the time of the event, monitored the licensee's response in the plant. Following receipt of a control air header low pressure alarm, control room personnel made a general plant announcement to secure all use of control air. Operations personnel reported to the CAS receiver area within approximately 1 minute of the lifting of the relief valve. The relief valve reseated when operators isolated Receiver 1B. The service air system automatically cross-connected with the CAS, by design, to maintain adequate pressure in the CAS header.

The licensee's investigation of the event found that the relief valve lifted due to an improper system lineup. Just prior to the event, an equipment operator was requested to shift the CAS air dryers. During the lineup, the equipment operator noted that a caution tag had been applied to the isolation valve to the oncoming dryer. A note was included on the tag to contact the control room prior to manipulating the valve. The equipment operator, having received direction from the control room to switch the air dryer trains, believed he had already received implicit

permission to operate the valve and so did not contact the control room prior to opening it. Additionally, the operator failed to review the amplifying information on the back of the caution tag, which indicated that the downstream flowpath needed to be verified prior to opening the isolation valve. In fact, the downstream inlet valves to the after-filters were closed at the time and a flowpath was not available through the oncoming dryer. As a result, the instrument air header began to depressurize and pressure increased in the CAS air receivers until it reached the relief valve setpoint on CAS Receiver 1B.

The root cause of the event was determined to be personnel error in that the equipment operator failed to shift the CAS dryers in accordance with plant procedures. Section 5.3.1 of Plant Procedures Manual (PPM) 2.8.1, Revision 20, "Control and Service Air System," directs the operator to ensure that one of the pre-filters and one of the after-filters are in service for the oncoming dryer. Additionally, Section 2.4.1 of PPM 1.3.8, Revision 31, "Plant Clearance Orders," states that caution tags are utilized to assure that the system or equipment will be operated only as provided by the instructions or limitations described on the Caution Tag Clearance Order. Both procedures provided adequate information to the operator to preclude this event.

The CAS is not designated as a safety-related system. However, it does supply air to a number of safety-related components, including the control rod drive hydraulic control units and the outboard main steam isolation valves. Consequently, a loss of the CAS can initiate a complicated plant transient when the plant is operating at power. Based upon the safety classification of the CAS and the plant operating mode at the time of the event (Mode 4), the failure of the operator to adhere to plant procedures was not a violation of NRC requirements. However, the potential consequences of a loss of the CAS make this event and its root cause noteworthy.

c. Conclusions

Operations response to the loss of control air was both timely and appropriate.

The cause of the event was determined to be personnel error in that an equipment operator failed to follow plant procedures when directed to shift the CAS dryers.

O1.3 Locked Valve Checklist

a. Inspection Scope (71707)

As a part of routine plant tours, the inspector evaluated the licensee's implementation of its locked valve program by observing the position of those valves associated with the program and the condition of their associated locking devices.

b. Observations and Findings

The inspector observed approximately 100 of the 369 valves listed in PPM 1.3.29, Revision 28, "Locked Valve Checklist." All of the valves were noted to be in their appropriate positions. However, in three cases, Valves RHR-V-111A, SW-V-24B and SW-V-24C, the configuration of the lock and chain securing the valve would not have prevented valve manipulation. Specifically, for Valves SW-V-24B and C, the chains had sufficient slack to allow them to be removed from their anchor point. For Valve RHR-V-111A, the chain was wrapped around the housing of the manual handwheel. This configuration allowed the chain to slide around the housing in the direction of rotation of the handwheel.

Section 4.3 of PPM 1.3.29 requires individuals that are checking sealed valves to physically manipulate the seal to verify it is intact and prevents significant valve movement. Although the chain locks on the above served as a deterrent to valve manipulation, the locks did not meet the intent of Section 4.3 in that the configuration did not necessarily prevent significant valve movement, an individual could have attempted to manipulate the chain and concluded that it was intact. That is, the expectations for physically manipulating a seal are unclear in Section 4.3 and individuals could erroneously conclude that a seal is being effective if the extra effort is not taken to verify that the seal (chain) is properly anchored.

c. Conclusions

The locked valve program has been effective in preventing inadvertent manipulation of valves important to plant safety. However, the identification of three valves with improperly installed chain locks indicates the need for addition guidance in this area to help ensure the program remains effective.

III. Maintenance

M1 Conduct of Maintenance

M1.1 Foreign Material Controls and Material Condition in the Primary Containment

a. Inspection Scope (62707)

In response to NRC Bulletin 96-03, "Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling Water Reactors," the licensee committed to install passive strainers in the suppression pool. The NRC approved the licensee's request to defer the modification to the Spring 1998 refueling outage based upon, in part, the licensee's commitments to: (1) perform an inspection of insulation in the drywell to determine the need to repair or replace any damaged insulation, and (2) perform a thorough drywell and wetwell closeout inspection to ensure that all

foreign material has been removed. During Refueling Outage R12, the inspector performed several tours of the drywell and wetwell to verify adequate implementation of the above commitments.

b. Observations and Findings

Wetwell

Following the licensee's foreign material controls inspection of the wetwell and prior to the operations department closeout inspection, the inspector toured the wetwell with a system engineer. Material condition of systems and structures was generally good, with only a few minor exceptions. Those exceptions, which included pitting on the wetwell spray header and a missing anchor for the wetwell thermocouple capillary tubing, were appropriately dispositioned by the licensee.

No large pieces of foreign material, such as the plastic bag and life ring found during the initial entry of the refueling outage (documented in NRC Inspection Report 50-397/97009), were present in the wetwell. However, a number of smaller pieces of foreign material were identified. These included a scaffold support bracket, a halogen light bulb, and numerous pieces of adhesive tape. Although the inspector did not believe that the items found would adversely affect emergency core cooling system performance, the number of items identified indicated a lack of attention to detail on the part of the personnel who performed the foreign material controls inspection.

The clarity of the water in the suppression pool was very good, indicating that the licensee's efforts to clean the suppression pool had been effective.

Drywell

During the several tours conducted by the inspectors, no foreign material was identified that was not being properly controlled. The overall material condition in the drywell was good with good housekeeping practices evidenced by a high level of cleanliness.

Utilizing the licensee's criteria for evaluating the condition of the drywell insulation, the inspector sampled a substantial portion of the accessible insulation to determine if the licensee's inspection and repair of the insulation was reasonably thorough. The drywell insulation was noted to be generally in good repair. Several areas of damaged insulation that met the licensee's criteria for replacement were noted, however. Most significant was a number of fiberglass insulation jackets on the main steam line whip restraints where the inner fibrous insulation was exposed. The system engineer agreed that most of the areas identified by the inspector met the criteria established for repair or replacement and noted that the damaged insulation on the main steam lines was overlooked. These areas were subsequently evaluated for acceptability or the insulation was replaced.

c. Conclusions

The licensee's efforts to control foreign materials and maintain cleanliness in the wetwell and drywell were generally effective. Although not a significant safety concern, the amount of foreign material identified by the inspector in the wetwell, along with the damaged insulation found in the drywell, represent a lack of attention to detail in the licensee's inspection activities for those areas.

M8 Miscellaneous Maintenance Issues (92902)

M8.1 (Closed) Unresolved Item 50-397/9709-03:

Background: On March 21, 1997, the licensee identified that seven blind flanges, which were relied upon for containment isolation, had not been visually inspected every 31 days in accordance with the requirements of Technical Specification (TS) Surveillance Requirement (SR) 3.6.1.3.2. The licensee had taken prompt and expansive corrective actions in response to the finding. Specifically, all the subject blind flanges were verified in the proper position in accordance and the applicable surveillance procedure was revised to include the flanges within the scope of the document.

Upon further review of the issue, the licensee concluded (based on a review of the TS Bases) that the violation had not occurred because the subject blind flanges were difficult to misposition. Some of the flanges were physically connected to mass duplicators while others were in areas which were difficult to access. Based on this conclusion, the licensee did not report the event to the NRC in accordance with 10 CFR 50.73 requirements.

NRC Assessment: The inspector reviewed the licensee's position and determined that the licensee had misinterpreted the TS Bases and erroneously concluded that the failure to perform the surveillance was not a TS violation. However, because the original corrective actions were effective, this licensee-identified and corrected violation of TS SR 3.6.1.3.2 is being treated as a noncited violation consistent with Section VII.B.1 of the NRC Enforcement Policy (NCV 50-397/9712-01).

In response to the inspector's concern, the licensee submitted Licensee Event Report (LER) 97-006, dated June 26, 1997. The inspector reviewed the LER and found the assessment and corrective actions to be acceptable. LER 50-397/97-006 is also closed based on the previously noted review.

M8.2 (Closed) Violation 50-397/95020-02): inappropriate qualitative or quantitative acceptance criteria to assure proper installation of the control rod drive housing support. The inspectors verified that the corrective actions described in the licensee's response letter, dated September 15, 1995, were completed. During this review the inspector noted that the licensee's response letter stated that two procedures, a maintenance procedure and a visual inspection procedure, would be

developed. Two procedures were developed, but at the time of the inspection only one procedure existed; this procedure contained both the maintenance and visual inspection aspects. The inspectors did not identify any concerns with having one procedure containing steps to perform the two tasks.

The inspectors review of PPM 10.5.8, "Control Rod Drive Housing Steel Removal/Replacement," Revision 1, identified that Steps 7.3.2 and 7.3.9, both require that a 1-inch go/no-go gauge be used to verify the clearance between the top of the control rod drive grid plates and the control rod drive mechanism ring flange cap screws be within 1 inch -0.125 inch and +0.375 inch. The step also states, "If necessary use the 0.875 inch and 1.375 inch go/no-go gauges to verify this required gap." The procedure does not require that the actual clearance be measured to verify it is within the tolerance allowed by the procedure, greater than or equal to 0.875 inch and less than or equal to 1.375 inch. The licensee agreed with the inspectors and stated that the procedure would be revised to remove the 1 inch go/no-go gauge measurement and to require that the 0.875 inch and 1.375 inch go/no-go gauge be used to ensure the procedural tolerances are being met.

The licensee's No Significance Hazard Evaluation for Custom Technical Specification: 3/4.1.3.8 - Control Rod Drive Housing Support, Revision A, states that the control rod drive housing support would limit outward movement of a control rod to less than 3 inches. Final Safety Analysis Report Section 4.6.1.2.3 states, "Hanger rods, approximately 10 feet long and 1.75 inches in diameter, are supported from the beams on stacks of disc springs. These springs compress approximately 2 inches under the design load." Based on the limit of less than 3 inches of control rod drive housing movement specified in the licensee's No Significance Hazard Evaluation, the inspector questioned the use of a gap greater than 1 inch, since a housing failure during plant startup would result in control rod movement of 3.375 inches (2 inch spring compression plus 1.375 inch movement to close the gap).

In response to the identified discrepancy between the licensee's No Significant Hazards Evaluation and PPM 10.5.8, the licensee provided analyses that demonstrated that control rod drive housing movement of up to 6 inches would not threaten the integrity of the fuel cladding. Therefore, the procedural allowance of a gap of 1.375" would not impact the conclusions drawn in the No Significant Hazards Evaluation and would be acceptable.

IV. Plant Support

P1 Conduct of Emergency Preparedness Activities

P1.1 Emergency Response Drill on 7/1/97

a. Inspection Scope (71750)

The inspector observed portions of the licensee's quarterly emergency response drill conducted on July 1. The inspection focused upon the emergency preparedness functions performed by the control room staff during the initial portions of the drill. The timeliness of staffing the other emergency response facilities and the licensee's dose assessment capabilities were not evaluated.

b. Observations and Findings

The operating crew in the simulator was generally enthusiastic and showed good drillmanship, providing a more realistic training environment. Closed loop face-to-face and radio communications were utilized to ensure clarity.

The shift technical advisor and shift manager appropriately evaluated the sequence of events in the context of emergency classification and were proactive in looking ahead at the potential pathways for escalating the event. The classification of the emergency as an unusual event and an alert were both timely. The notifications to offsite authorities from the control room also appeared to meet the licensee's objectives.

c. Conclusions

The control room emergency response organization adequately demonstrated its capability to respond to a simulated radiological emergency.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management after the conclusion of the inspection on July 9, 1997. The licensee acknowledged the findings presented.

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

ATTACHMENT

Supplemental Information

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Atkinson, Quality Assurance Manager
P. Bemis, Vice President for Nuclear Operations
P. Inserra, Licensing Manager
A. Langdon, Assistant Operations Manager
M. Monopoli, Operations Manager
W. Pfitzer, Regulatory Services
G. Smith, Plant General Manager
R. Webring, Vice President Operations Support
R. Wolfgramm, System Engineer
J. Wyrick, Outage Manager

INSPECTION PROCEDURES USED

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

ITEMS OPENED AND CLOSED

Opened

50-397/9712-01 NCV Failure to visually inspect blind flanges per TS SR 3.6.1.3.2

Closed

50-397/9520-02	VIO	Inappropriate qualitative/quantitative acceptance criteria for control rod drive housing support installation
50-397/9709-03	URI	Blind flange inspection
50-397/9712-01	NCV	Blind flange inspection
50-397/9706	LER	Blind flange inspection

LIST OF ACRONYMS USED

CAS	control air system
LER	Licensee Event Report
NCV	noncited violation
NRC	U.S. Nuclear Regulatory Commission
PPM	Plant Procedures Manual
TS	Technical Specifications
SR	Surveillance Requirement
URI	unresolved item
WNP-2	Washington Nuclear Project-2
VIO	violation

JUL 30 1997

E-Mail report to T. Boyce (THB)
E-Mail report to NRR Event Tracking System (IPAS)
E-Mail report to Document Control Desk (DOCDESK)
E-Mail report to Richard Correia (RPC)
E-Mail report to Frank Talbot (FXT)

bcc to DCD (IE01)

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