

U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No: 50-397/91-28

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)

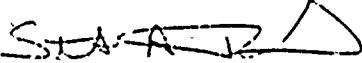
Inspection at: WNP-2 site near Richland, Washington

Inspection Conducted: August 7 - September 17, 1991

Inspectors: R. C. Sorensen, Senior Resident Inspector

D. L. Proulx, Resident Inspector

Approved by:


P. H. Johnson, Chief
Reactor Projects Section 3

10-18-91
Date Signed

Summary:

Inspection on August 7 - September 17, 1991 (Report No. 50-397/91-28)

Areas Inspected: Routine inspection by the resident inspectors of control room operations, licensee action on previous inspection findings, operational safety verification, engineered safety feature walkdown, surveillance program, maintenance program, licensee event reports, special inspection topics, procedural adherence, and review of periodic reports. During this inspection, Inspection Procedures 61726, 62703, 71707, 71710, 90712, 90713, 92700, 92701, 92702 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: No violations were identified.

Open Items Summary: Four open items and two LERs were closed: No new items were opened.

DETAILS

1. Persons Contacted

*J. Baker, Plant Manager
L. Harrold, Assistant Plant Manager
*R. Graybeal, Health Physics and Chemistry Manager
R. Webring, Plant Technical Manager
*J. Harmon, Maintenance 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

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 September 23, 1991.

2. Plant Status

At the start of the inspection period, the plant was shut down while improvements were made to the Emergency Operating Procedures and several crews of licensed operators were trained on the improvements. The plant stayed shut down for the entire inspection 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, as follows:

(Closed) Violation 397/90-31-02 - Failure to Take Appropriate Corrective Action for Emergency Diesel Generator (EDG) Bearing Oil Failure

The licensee had experienced a fire in the Division I EDG north bearing in May 1990. This had been due in part to a chronic oil leak causing a low bearing oil level and a subsequent loss of lubrication. The oil leak had reappeared in November 1990. An acceptable bearing oil level had not been established and an effective program for the monitoring of bearing oil leakage and oil additions had not been implemented. As a result, based on concern about potential repetition of the bearing failure event, a Notice of Violation was issued for failure to take appropriate corrective action.

The licensee instituted a number of corrective actions including:

- Establishing the lowest acceptable oil level at which adequate lubrication exists. Operating procedures were revised to require



immediate securing of the EDG if oil level went below this minimum level in a non-emergency condition.

- Trending of oil consumption.
- The generator was disassembled during the annual refueling outage in April 1991 and the cause of the oil leakage was apparently located and corrected.
- A modification was made to the bearing oil reservoir to increase its capacity, thus making adequate bearing lubrication less susceptible to minor changes in oil volume.

Based on the licensee's corrective actions, as discussed above, this item is closed.

(Closed) Followup Item 397/91-12-03 - Operators Eating at Panels in Control Room

The inspector had noted that PPM 1.3.1 (Conduct of Operations) mandates that control room operators not eat while attending to control panel functions. The inspector had observed on several occasions that control room operators were eating while attending to controls at certain control room panels.

Operations management acknowledged this finding and emphasized to the operations staff in the night orders the inappropriateness of this action. In addition, PPM 1.3.1 was revised to prohibit any eating of food within the red line in front of the control room panels.

This item is closed.

(Closed) Followup Item 397/91-18-03 - Commitment to Evaluate Leakage Through RHR "C" Prior to Restart

During the Integrated Leak Rate Test (ILRT) conducted in June 1991 the licensee had discovered leakage from the suppression pool through the RHR "C" suction valve. When the suction valve was closed the leakage stopped. The licensee had committed to locate the leakage path and evaluate it prior to restart from the 1991 outage.

The licensee determined that the leakage was through a condensate crosstie from RHR "C" into the condensate storage tank (outside of secondary containment). This condensate crosstie was used during plant preoperational testing to flush the RHR system. It has not been used since that time. Since the licensee does not intend to use this crosstie again, they elected to cut out a piece of the crosstie piping and install blank flanges. This was accomplished prior to plant startup, satisfying the licensee's commitment to the NRC.

This item is closed.



(Closed) Deviation 397/90-31-01 - Failure to Meet a Commitment Concerning
Vibration in the HPCS System

The plant manager had committed to assess the vibration problem in the HPCS system and correct it by the end of the 1990 refueling outage. However, late in 1990, after completion of the 1990 refueling outage, a leaking crack was discovered in a HPCS drain line which resulted from vibration-induced fatigue. This failure to address the vibration problem before the end of the 1991 refueling outage was considered to be a deviation from a commitment to the NRC.

In their response to this Notice of Deviation, the licensee stated that they would redesign the HPCS test return line to alleviate the vibration problem by June 30, 1991. The inspector verified that the redesign was completed, and was scheduled for implementation during the 1992 refueling outage. The licensee also conducted additional evaluations of other small bore piping configurations via nondestructive examination (NDE). A total of 119 welds were examined and no evidence of fatigue cracking was found. In addition to the NDE exams, five vent and drain connections were modified to an improved butt weld design as a precautionary measure to preclude vibration-induced cracking. Finally, plant compliance will review NRC inspection reports more systematically to ensure that all licensee commitments are accounted for.

This item is closed.

(Open) Followup Item 397/91-23-02 - Determine How Licensee Ensures All
Changes to Systems Described in FSAR Are Included in the Annual Report

The inspector had been concerned that the licensee was not including in its annual report, as required by 10 CFR 50.59, all design changes that had been accomplished on all structures, systems, and components described in the FSAR.

The inspector selected a representative sample of Plant Modification Records (PMRs) that had been implemented in 1990 and compared them against the FSAR and the licensee's annual report for 1990. Although no violations were identified, the inspector identified new uncertainties concerning the licensee's handling of potential unreviewed safety questions. This item will remain open until this issue has been resolved with the licensee.

4. Requalification Training Observation (41701)

The inspectors witnessed portions of requalification training for licensed operators on the simulator. The inspectors observed that the instructors appeared to be knowledgeable, that the students were generally alert, and that there was good interaction between the class and the instructors. Simulator scenarios in general were quite comprehensive and contained a high degree of difficulty, often with multiple events. Operator performance in the two crews observed improved noticeably during the inspection period. The inspector still noticed differences, however, in the performance of the two crews just prior to the exams that were scheduled on September 9. The inspector



brought this observation to the attention of corporate management, who disagreed with the inspector's observation. One of the crews subsequently failed the exam.

No violations or deviations were identified.

5. 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 that 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 could prevent the system from fulfilling its functional requirements. Annunciators were observed to ascertain their status and operability.
- (7) Fire Protection. Firefighting 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) Drywell. The inspector toured the drywell with licensee personnel on September 5, 1991 to determine the readiness of the drywell to be closed out prior to plant startup. The inspector noted that although some minor housekeeping deficiencies were found, the drywell appeared to be clean and free of problems that would impede safe plant operation. The operations staff member of the team that toured the drywell was thorough and conservatively questioned maintenance personnel about material that was still in the drywell.

c. Engineered Safety Feature Walkdown

Selected engineered safety features (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. Proper lubrication and cooling of major components were observed for adequacy. The inspectors also verified that certain system valves were in the required position by both local and remote position indication, as applicable.

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

<u>System</u>	<u>Dates</u>
Diesel Generator Systems, Divisions 1, 2, and 3.	August 28
Low Pressure Coolant Injection, (LPCI) Trains "A", "B", and "C"	September 3, 16
Low Pressure Core Spray (LPCS)	September 3, 16
High Pressure Core Spray (HPCS)	September 3, 16
Reactor Core Isolation Cooling (RCIC)	September 6, 16
Standby Liquid Control (SLC) System	September 6
Standby Service Water System	September 15
125V DC Electrical Distribution, Divisions 1 and 2	September 10
250V DC Electrical Distribution	September 10

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:

<u>Procedure</u>	<u>Description</u>	<u>Dates Performed</u>
7.4.9.7	Reactor Building Overhead Crane Interlocks	August 30

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 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:

<u>Description</u>	<u>Dates Performed</u>
MWR AR5542, Check Oil Drain Plug and Captivate for CAC-FN1B	September 8
MWR AR5533, Replace Blower CAC-FN-1A	September 9-10
MWR AR4954, Replace Remote Manual Switches for Containment Recirculation Fans	August 27

No violations or deviations were identified.

8. Walkdown of the Containment Atmospheric Control System (71710)

The Containment Atmospheric Control (CAC) system is a set of two redundant, skid-mounted, self-contained hydrogen recombiners. The inspector performed a detailed walkdown of the CAC system to verify that the plant configuration and system lineups were in accordance with the as-built drawings, that system operating procedures correctly reflected FSAR and as-built drawing recommendations, that the material condition of the system was satisfactory, and that the vendor-recommended preventive maintenance activities were being performed. The inspector noted the following:

a. Preventive Maintenance

On August 26, 1991 the inspector reviewed suggested preventive maintenance (PM) activities contained in the technical manual (CVI 02-71-00, "Post LOCA Hydrogen Recombiners System", Air Products and Chemicals, Inc., or APCI) and compared these to the actual PMs performed by the Supply System on the CAC system. The preventive maintenance printout from the Scheduled Maintenance System (SMS) contained 39 pages of activities needed to be performed, including gasket replacement frequency, lubrication schedules, etc. However, some maintenance activities specifically recommended in the technical manual were not being addressed by the licensee.

Paragraph 3.2.1.b of the maintenance instructions contained in the technical manual states, in part, "The blower oil should be changed at least annually." In addition, the (Switzer Co.) vendor manual for the blower itself recommended that the lubricating oil be changed every 500 hours of operation, or at least every 6 months, whichever came first. The inspector brought this to the attention of the licensee. Subsequently, on September 3, 1991 CAC-FN-1A was found seized during a CAC system functional test. A pipe plug had vibrated loose and drained the lubricating oil from the bearings. In attempting to determine the type of oil needed to replace the oil that had drained out, the Supply System also became aware that no lubrication schedule at all existed for the CAC blowers. The licensee appeared to have concluded during initial plant startup that since the CAC blowers are run on a very infrequent basis for a short period of time, a lubrication change out frequency of 40 years was sufficient. Based on this, the licensee has no lubrication schedule for the blowers.

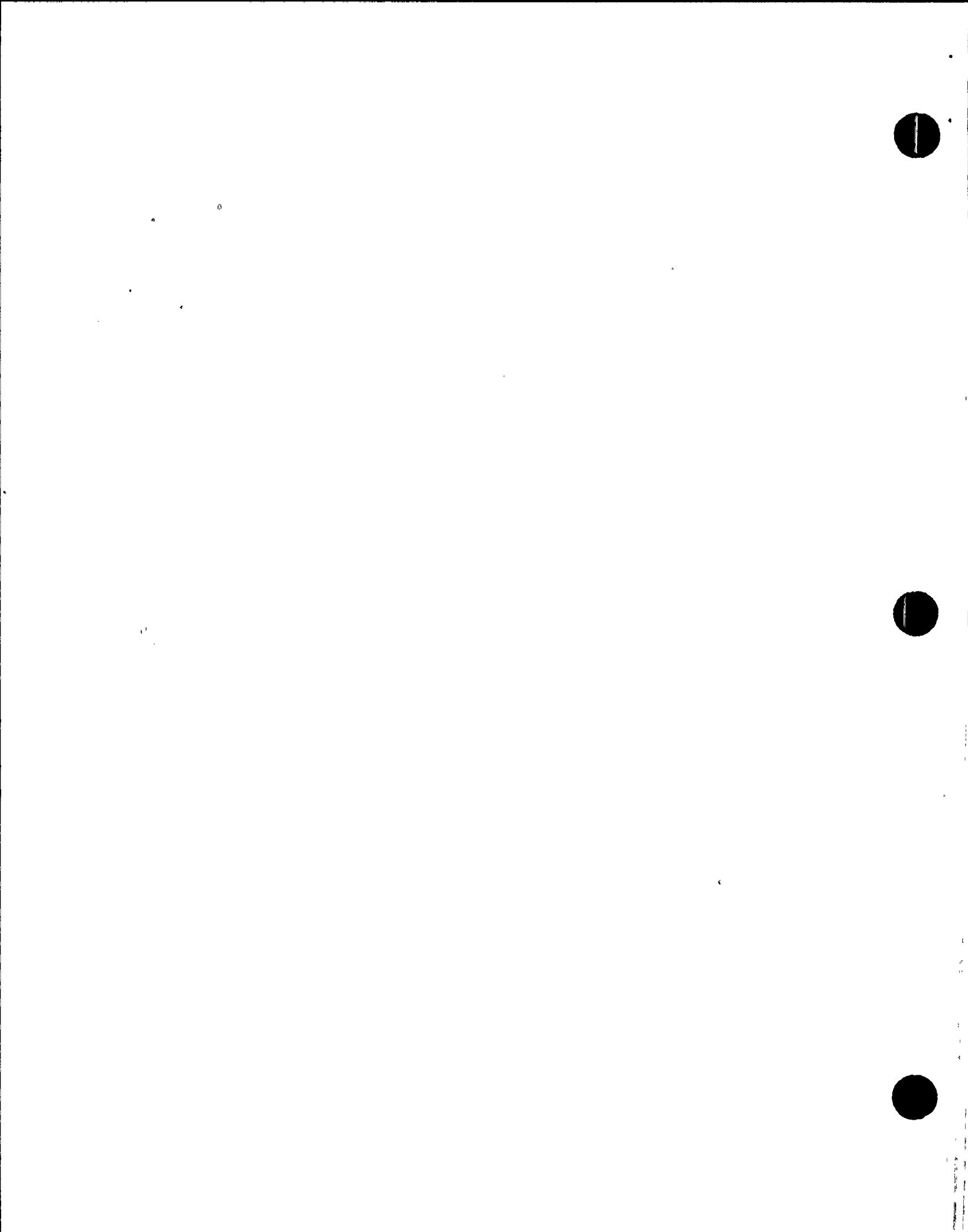
It was noted by the inspector that the motor vendor recommends a lubrication schedule less restrictive than the one for the blower. However, the licensee's lubrication schedule for the motor that drives the CAC blower is more restrictive in that it requires the oil to be changed every 5 years. The vendor technical manual for the motor recommends an oil change every 3 to 9 months of operation. It therefore appeared that the licensee has used inconsistent engineering judgement in the rationale for developing lubrication schedules for these safety related components.

Section 3.2, "Maintenance Instructions," Section 3.2.1.a, states in part, "The blower and the motor should be run once a year during the recommended periodic testing In order to prevent flat spots from developing on shafts, the blower and motor should be bumped at least once every two weeks by applying power and rotating the shafts to a new position." The Supply System has not periodically rotated these fans since plant startup, and was unaware of this vendor recommendation. The system engineer stated that this could lead to "running the CAC fans to destruction," and felt that the biweekly rotation of the fans was not warranted. The inspector noted, however, that the vendor manuals guarantee that the CAC motors and/or blowers could run up to several years of continuous operation without failure.

b. System Material Deficiencies

The following material deficiencies were noted during the CAC walkdown:

- * The label plates for valves CAC-V-307A and CAC-V-308A were switched.
- * The label plates for valves CAC-V-301A and CAC-V-302A were switched.



- * Several valves on both Hydrogen Recombiner skids had cut gaskets on the valve supports.
- * Loose bolts were noted on the torque switch cover for CAC-V-6.

The licensee acknowledged these inspection findings :

c. Review of CAC Operating Procedures PPMs 2.3.3A and 2.3.3B

The inspector concluded that use of these operating procedures would result in satisfactory operation of the CAC system. However, the inspector noted the following minor discrepancies that appeared to indicate weaknesses in the operating procedure preparation.

- * Paragraph 6.7, "Alternate Supply and Return Paths," of both PPM 2.3.3A and 2.3.3B, steps 1)d. and 2)d. directed the operator to use a key to operate keylocked switches for valves CAC-FCV-1A, 1B, 4A, and 4B. None of these valves have keylocked switches for operation from the control room.
- * Attachment 7.1, page 23 of 32 of these two PPMs listed drawing M-554, Revision 16 as the applicable reference for the valve lineup. The actual revision for drawing M-554 in effect during the inspection period was Revision 46. Revision 16 dates from prior to plant startup.
- * CAC-TCV-4B was listed as CAC-TCV-48 in PPM 2.3.3B.
- * The as-built drawing listed the proper position of CAC interface valves RHR-V-134A and RHR-V-134B as open, while PPMs 2.3.3A and 2.3.3B required these valves to be shut.
- * Valves CAC-V-5A and CAC-V-5B perform identical functions for Divisions 1 and 2 of CAC, respectively. However, the required position of CAC-V-5A was open in PPM 2.3.3A and the required position of CAC-V-5B was shut in PPM 2.3.3B.
- * Drawing M-554 and PPMs 2.3.3A and 2.3.3B listed different positions for CAC-V-316A and CAC-V-316B (both are isolation valves for a similar pressure gauge).

The Supply System acknowledged the inspector's findings and resolved these items prior to the end of the inspection period, but stated that they probably would have identified these discrepancies on their own during the verification and validation (V&V) of the most recent revision to these procedures. The inspector noted that the V&V had not yet been performed on the most recent revision due to the workload of the operations department. However, the inspector also noted that these errors had existed in these operating procedures in several previous revisions.

No violations or deviations were identified

9. Licensee Event Report (LER) Followup (90712, 2700)

The following LERs associated with operating events were 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 following LERs are considered closed.

<u>LER NUMBER</u>	<u>DESCRIPTION</u>
91-19	Technical Specification Violation for Failure to Report Seismic Monitor Out of Service
91-21	Tritium not Sampled During Startup and Shutdown as Required by Technical Specifications

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 reports were reviewed by the inspector.

* Monthly Operating Report for July, 1991.

No violations or deviations were identified.

11. Exit Meeting

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 September 23, 1991. 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 inspector during the inspection.