

VIRGINIA ELECTRIC AND POWER COMPANY  
RICHMOND, VIRGINIA 23261

July 2, 1993

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Serial No. 93-363  
JHL/EJL R3  
Docket Nos. 50-338  
50-339  
License Nos. NPF-4  
NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY  
NORTH ANNA POWER STATION UNITS 1 & 2  
INSPECTION REPORT NOS. 50-338/93-14 AND 50-339/93-14  
REPLY TO A NOTICE OF VIOLATION

We have reviewed your letter of June 3, 1993, which referred to the inspection conducted at North Anna Power Station from April 4, 1993, to May 8, 1993, and reported in Inspection Report Nos. 50-338/93-14 and 50-339/93-14. Our reply to the Notices of Violation is attached.

Because of recent trends and management sensitivity on the issue of adherence to procedures, we have been taking additional action to preclude further errors. Actions include: 1) more frequent monitoring of trends in human performance with increased followup actions, 2) holding information meetings with I&C technicians to discuss items such as self checking, verifications and applicable deviation reports or near misses, and 3) re-evaluation of the level of verification in I&C procedures. A HPES evaluation of specific events, Corporate Nuclear Safety assessment of I&C activities, and increased Quality Assurance coverage of I&C activities have also been implemented. Recommendations from these evaluations are being addressed by management. In addition, licensed operators were reminded to be attentive to control room indications upon returning instrumentation to service.

You expressed concern with Violation C because it represents a failure to test equipment required by the Technical Specifications. A review of the technical requirements for the hydrogen recombiner blowers and the purge blowers located in the auxiliary building has been performed. Based on this review, we have concluded that no violation of Technical Specification 4.6.4.2.a occurred. The basis for that conclusion is provided in our reply to Violation C. However, the purge blowers located in the Auxiliary Building have been tested without placing the unqualified piping in service to ensure their availability until final resolution of this issue is achieved.

080031  
9307090099 930702  
PDR ADDCK 05000338  
G PDR

JEO1 / 1

If you have any further questions, please contact us.

Very truly yours,



W. L. Stewart  
Senior Vice President - Nuclear

Attachment

cc: U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta Street, N.W.  
Suite 2900  
Atlanta, Georgia 30323

Mr. D. R. Taylor  
NRC Resident Inspector  
North Anna Power Station

REPLY TO A NOTICE OF VIOLATION  
INSPECTION REPORT NOS. 50-338/93-14 AND 50-339/93-14

NRC COMMENT

During an NRC inspection conducted on April 4 - May 8, 1993, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C, the violations are listed below:

- A. Technical Specification 3.0.4 requires entry into an operational mode or other specified applicability condition shall not be made unless the condition of the limiting condition for operation are met without reliance on provisions contained in the action statements unless otherwise excepted.

Technical Specification, Limiting Condition for Operation 3.7.1.2.b, requires for Modes 1, 2, and 3 one steam driven auxiliary feedwater pump capable of being powered from an operable steam supply system.

Contrary to the above, Technical Specification 3.0.4 was not met on April 8, and April 11, 1993, for changing from Mode 4 to Mode 3 and subsequently Mode 1 in that the steam driven auxiliary feedwater pump was not operable.

This is a Severity Level IV violation (Supplement I).

- B. Technical Specification 6.8.1 requires that written procedures be established, implemented and maintained covering activities which include Surveillance and Test activities of safety related equipment.

Contrary to the above, on March 22, 1993, Instrumentation Calibration Procedure, ICP-NI-2-N-42, Power Range Channel N-42 Protection Channel II, Revision 5, was not properly implemented as indicated below.

- ICP-NI-2-N-42 step 4.12.10.1. requires to remove detector B signal input plug P352 from the "Power Range Detector Load Box" and carefully connect it to jack J352. Step 4.12.10.2 requires to remove detector A signal input plug P351 from the "Power Range Detector Load Box" and carefully connect it to jack J351. Step 4.12.10.3 requires to have a qualified individual independently verify that Detector A and Detector B signal cables have been reconnected. On March 22, 1993, while implementing section 2.12.10 of ICP-NI-2-N-42, the procedure was not followed in that signal input plugs to Power Range Channel N-42 detector A and B were connected in reverse.

This is a Severity Level IV violation (Supplement I).

- C. Technical Specification 4.6.4.2.a requires that each hydrogen recombiner system shall be demonstrated operable at least once per six months by verifying during a recombiner system functional test that the minimum heater sheath temperature increases to  $\geq 700$  °F within 90 minutes and is maintained for at least 2 hours and that each purge blower operates for 15 minutes.

Contrary to the above, since March 16, 1992, the licensee failed to verify that each purge blower, 1(2)-HC-F-1, is operated for 15 minutes at least once per 6 months.

This is a Severity Level V violation (Supplement I).

## REPLY TO NOTICE OF VIOLATION A

### 1. REASON FOR THE VIOLATION

The violation was caused by personnel error which resulted from the failure to follow procedure. Personnel performing a test on the steam driven auxiliary feedwater pump following preventive maintenance inadvertently failed to reset the speed setting of the pump as required by Maintenance Procedure 0-MPM-0102-01, AFW Preventive Maintenance. This failure of human performance is attributed to lack of attention to detail. North Anna Unit 1 was in Mode 4 during the test and subsequently changed plant modes without performing pump operability testing because insufficient steam pressure is available to perform the test. Technical Specification 4.7.1.2 allows the mode change without the surveillance test being performed. Subsequently, the incorrect speed setting of the steam driven auxiliary feedwater pump was discovered during pump operability testing which was conducted when Unit 1 was in Mode 1.

### 2. CORRECTIVE STEPS WHICH HAVE BEEN TAKEN AND THE RESULTS ACHIEVED

The steam driven auxiliary feedwater pump speed was adjusted to the required setting. An operability check of the steam driven auxiliary feedwater pump was completed satisfactorily.

Maintenance personnel were coached on the importance of self check techniques and the consequences of failing to follow procedures.

Maintenance Procedure 0-MPM-0102-01 was enhanced to ensure pump speed is reset within the required limits following preventive maintenance.

### 3. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

No further corrective actions are required.

### 4. THE DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance has been achieved.

## REPLY TO NOTICE OF VIOLATION B

### 1. REASON FOR THE VIOLATION

The violation was caused by personnel error. Personnel failed to use proper self checking and independent verification techniques for reconnecting the detector input cables to the power range nuclear instrumentation (NI) drawers following calibration testing.

### 2. CORRECTIVE STEPS WHICH HAVE BEEN TAKEN AND THE RESULTS ACHIEVED

Upon discovery of the abnormal delta flux indication on power range NI channel N-42, the channel was placed in the trip condition in accordance with Technical Specification 3.3.1.1, Table 3.3-1, Action 2.(a). Subsequently, a calibration test was performed and the channel returned to an operable condition.

After returning power range NI channel N-42 to an operable condition, an investigation ensued to determine the cause of the abnormal delta flux indication. The investigation, which included returning the detector to the trip condition, determined that during the performance of the procedure maintenance personnel inadvertently reversed and reconnected the upper and lower detector input signal cables for power range NI channel N-42 to the wrong drawers.

A study was conducted on the effects of the detector input cables being reversed and connected to the wrong power range NI drawers. Although power range NI channel N-42 was inoperable because of the reversed detector input cables, the study determined that given the plant conditions at the time of the event, N-42 remained capable of generating the required reactor trip inputs that are assumed in the accident analysis.

The individuals responsible for the maintenance on the power range NIs were coached on the necessity and importance of self checking and independent verification.

Licensed operators were reminded to be attentive to control room indications upon returning instrumentation to service.

### 3. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS

No further corrective actions are required.

### 4. THE DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance has been achieved.

## REPLY TO NOTICE OF VIOLATION C

### 1. REASON FOR THE VIOLATION

A review of the technical requirements for the hydrogen recombiner blowers and the purge blowers located in the Auxiliary Building has been performed. Based on this review, we have determined that there has not been a violation of Technical Specification 4.6.4.2.a. The basis for this conclusion is provided below.

The North Anna Technical Specifications (TS) include a limiting condition for operation (LCO) for the hydrogen recombiners. The hydrogen recombiner TS includes a requirement that each purge blower be operated at least once per six months for a minimum of 15 minutes. It is our position that the blowers specified by TS Surveillance Requirement 4.6.4.2.a are the hydrogen recombiner blowers. The purge blowers located in the Auxiliary Building, 1/2-HC-F-1, are not part of the recombiner system and therefore, are not required by TS 4.6.4.2.a, since they cannot provide a suction source for the hydrogen recombiners. In addition, testing of the purge blowers in the Auxiliary Building does not contribute to establishing the operability of the hydrogen recombiners. LCO 3.6.4.2 and its associated surveillance requirement is specifically addresses the hydrogen recombiner system. No specific TS LCO exists for the purge blowers that are located in the Auxiliary Building.

The North Anna UFSAR (Section 6.2.5) describes the Containment Atmospheric Cleanup System that would be used to maintain containment hydrogen concentration at safe levels following a design basis accident. Two identical skid-mounted hydrogen recombiners, two hydrogen analyzers, two purge blowers and associated piping comprise the system. The UFSAR also describes the hydrogen recombiner system. Each recombiner consists of a blower, an electric preheater, a reaction chamber and cooler, instrumentation, and piping, all of which are mounted on a skid. The system is also designed to allow either recombiner to be operational on either containment. Each of the hydrogen recombiners is a 100% capacity system and can maintain hydrogen concentrations inside containment at safe levels following a design basis accident. The piping associated with the hydrogen recombiner blowers is seismically qualified.

Each of the skid-mounted hydrogen recombiner blowers is also designed to provide containment purge if necessary to maintain the hydrogen concentration at safe levels in the unlikely event that it is required.

The UFSAR also provides a description of the containment purge blowers as a permanently installed, 50 standard cubic foot per minute, positive-displacement, containment purge blower in parallel with the containment vacuum pumps for each unit. This purge blower can draw air from the containment after a LOCA and discharge it to the gaseous waste disposal system. It can be operated in parallel with the hydrogen recombiner system blowers when the containment is to be purged, ensuring that a failure of both recombiner systems will not leave the containment without purge capability.

However, the piping for the purge blowers in the Auxiliary Building is not totally seismically qualified. Therefore, these purge blowers can not be used to take suction from the containment and discharge to the process vents when operating in Modes 1 through 4. Therefore, T. S. Surveillance Requirement 4.6.4.2.a clearly does not apply to this system. Our response and NRC's acceptance on a TMI "lessons learned" item provided an additional basis that the purge blowers identified in the Technical Specifications are not the auxiliary building purge blowers.

NUREG-0737, Item II.E.4.1 requires plants using external recombiners or purge systems for post accident combustible gas control of the containment atmosphere to provide containment penetration systems for external recombiner or purge systems that are dedicated to that service only, that meet the redundancy and single failure requirements of General Design Criteria 54 and 56 of Appendix A to 10 CFR 50, and that are sized to satisfy the flow requirements of the recombiner or purge system.

Our response to NUREG-0737, Item II.E.4.1 describes our redundant external hydrogen recombiner system. It also describes our backup hydrogen purge system. The response states "The backup Hydrogen Purge system is presently isolated from the hydrogen analyzers and recombiners by an administratively locked closed valve. This system is not operated during normal plant operations. Its use would only be contemplated if both hydrogen recombiners fail and after a radiation survey had been made to determine personnel accessibility to the manual isolation valves."

NRC Inspection Report 50-338/339 82-04 dated March 5, 1982 closed NUREG-0737, Item II.E.4.1 from a design modification view and NRC Inspection Report 50-338/339 83-05 dated April 1, 1983 closed NUREG-0737, Item II.E.4.1 from a procedure and testing view. In addition, the NRC has recorded the status of NUREG-0737, Item II.E.4.1 on the TMI-2 Action Plan Status as complete.

Based upon the UFSAR, North Anna TS, and the NRC acceptance of our response to NUREG-0737, Item II.E.4.2, it is our position that the hydrogen recombiner blower is the referenced component in Technical Specification Surveillance Requirement 4.6.4.2.a.

Subsequent to this issue being addressed by the Resident Inspectors, the purge blowers located in the Auxiliary Building were operated for fifteen minutes to ensure their availability until final resolution was achieved. The test required disassembly of isolation valves associated with the purge blowers to provide a flow path since the piping from containment can not be used when the units are operating.

## **2. CORRECTIVE STEPS WHICH HAVE BEEN TAKEN AND THE RESULTS ACHIEVED**

The hydrogen recombiner blowers have been tested in accordance with TS surveillance requirement 4.6.4.2.a. every six months by periodic test procedures 0-PT-68.1.1 and 0-PT-68.1.2.

The purge blowers located in the Auxiliary Building will continue to be tested until this problem is resolved.

**3. CORRECTIVE STEPS WHICH WILL BE TAKEN TO AVOID FURTHER VIOLATIONS**

No further corrective actions are required.

**4. THE DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED**

Full compliance has been achieved.