

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

October 12, 1995

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

Serial No.	95-373
NAPS/JHL/MAE	R4
Docket Nos.	50-338
	50-339
License Nos.	NPF-4
	NPF-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
INSPECTION REPORT NOS. 50-338/95-15 AND 50-339/95-15
REPLY TO A NOTICE OF VIOLATION

We have reviewed your letter of September 14, 1995, which referred to the inspection conducted at North Anna Power Station from July 16, 1995 to August 19, 1995, and the associated Notices of Violation which were reported in Inspection Report Nos. 50-338/95-15 and 50-339/95-15. Our reply to the Notices of Violation is attached.

A conference call was held with NRC Region II management on August 10, 1995 to discuss the motor operated valve overthrust event, other human performance issues, and associated corrective actions. Based on our self assessment program, we identified a potential adverse trend in the human performance area. As a result of the identified trend, the level of management attention has been increased in this area and an action plan has been implemented to address the issue. We will continue to monitor this trend to ensure improved performance in this area.

If you have any further questions, please contact us.

Very truly yours,



James P. O'Hanlon
Senior Vice President - Nuclear

Attachment

170013



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

Mr. R. D. McWhorter
NRC Senior Resident Inspector
North Anna Power Station

REPLY TO A NOTICE OF VIOLATION
INSPECTION REPORT NOS. 50-338/95-15 AND 50-339/95-15

NRC COMMENT

During an NRC inspection conducted on July 16 through August 19, 1995, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 60 FR 34381, June 30, 1995, the violations are listed below:

- A. Unit 1 Technical Specification 6.8.1 requires that written procedures be established, implemented and maintained including, by reference to Regulatory Guide 1.33, procedures to ensure that maintenance that can affect performance of safety-related equipment be properly pre-planned and performed. This requirement is implemented, in part, by licensee procedure OPAP-0010, Tag-Outs, revision PN-1, section 6.3.3.c, which states that senior operators reviewing tagging records shall verify that the tagging will maintain compliance with Technical Specification requirements including maintaining redundant equipment operable.

Contrary to these requirements, on Unit 1 at approximately 8:15 a.m. on July 16, procedure OPAP-0010 was not properly implemented in that tagging was performed and maintenance was begun on one Safeguards Area Ventilation System train without ensuring that the maintenance would not affect the redundant equipment train.

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

- B. 10 CFR 50, Appendix B, Criterion III, as implemented by Operational Quality Assurance Program Topical Report VEP-1-5A, Updated Final Safety Analysis Report section 17.2.3, Design Control, requires that all design changes and/or modifications to safety-related components described in the Updated Final Safety Analysis Report be reviewed, approved, and acted upon by the Station Nuclear Safety and Operating Committee.

Contrary to these requirements, on August 8, field technicians made modifications to Unit 2 safety-related valves 2-CH-MOV-2286B and 2-CH-MOV-2287B, without review or approval by the Station Nuclear Safety and Operating Committee.

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

REPLY TO NOTICE OF VIOLATION A

1. REASON FOR THE VIOLATION

The reason for the violation was failure to follow the requirements of Operations Administrative Procedure (OPAP) 0010, Tag-Outs.

OPAP-0010 requires that a senior reactor operator verify that the proposed Tag-Out will maintain compliance with Technical Specification requirements including maintaining redundant equipment operable. In addition, the procedure requires that the Operations Maintenance Coordinator review and approve Tag-Out Requests and verify that the requested equipment can be removed from service. The procedure also requires that the Shift Supervisor determine if the Unit condition will support removal of the affected system from service and if it is in accordance with Technical Specification requirements.

On July 16, 1995, corrective maintenance had been planned, scheduled and approved to replace the expansion boot on the discharge of safeguards area ventilation system (SAVS) fan 1-HV-F-40A. Maintenance personnel subsequently removed the inspection port on the ventilation duct in order to replace the expansion boot. Removing the inspection port on the ventilation duct allowed air to be drawn from the inspection port and back through 1-HV-F-40A. This prevented the redundant fan, 1-HV-F-40B, from taking full suction from the safeguards area. Therefore, the status of both trains of the SAVS was indeterminate and could have been rendered inoperable because the air flow from the safeguards area was potentially reduced below Technical Specification requirements. Adequate reviews and walkdowns had not been performed by operations personnel, in accordance with OPAP-0010, to ensure the redundant train of the SAVS would be unaffected prior to performing maintenance on fan 1-HV-F-40A.

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

Disassembly of the SAVS was stopped and the inspection port on the ventilation duct was re-installed.

Entry was made into Technical Specification 3.0.3 for potentially having two inoperable trains of the SAVS. A four hour report was made to the NRC Operations Center on July 16, 1995 pursuant to the requirements of 10 CFR 50.72(b)(2)(iii)(C).

On July 24, 1995, Engineering personnel performed a test to measure the actual air flow of 1-HV-F-40B from the safeguards area with the inspection port removed from 1-HV-F-40A. The test determined that the fan discharge was capable of: 1) providing adequate flow as required by Technical Specifications and 2) performing its safety function of maintaining a negative atmosphere

within the safeguards area. The NRC Operations Center was notified on July 27, 1995 that the four hour report made on July 16, 1995 was being retracted.

Operations management met with operations personnel to discuss this event and reinforce management expectations with respect to procedure compliance. Personnel involved in the event were appropriately disciplined and specifically coached on the importance of following procedures.

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

This event will be discussed during Licensed Operator Requalification Program (LORP) training. In addition, a case study on this event will be presented during annual tagging training. Training will be completed by December 29, 1995.

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 reason for the violation was a failure of the work management process in that administrative controls were not properly implemented to ensure that changes to the plant were not performed without first being properly reviewed and authorized. A contributing cause was inadequacies in the drawing control program which led to personnel error.

On August 8, 1995, electricians were performing routine preventive maintenance (PM) on Unit 2 "B" charging pump discharge MOVs 2-CH-MOV-2286B and 2-CH-MOV-2287B. The PM procedure included a specific step to "Ensure all jumpers and other wiring terminations are landed on the correct terminals in accordance with the latest applicable control wiring drawings. Record print number below: Drawing _____." The electrician referenced the Document Management Information System (DMIS) to obtain the current drawing revision. The drawing that was required was FE-13Q, Sheet 1, Revision 23. However, the electrician only had drawing FE-13Q, Sheet 1, Revision 22 on the electric shop aperture card. The electrician ultimately went to the Records Log Room and obtained Revision 23 of the drawing. The electrician was not familiar with DMIS and did not note that a screen flag was set ("+" indicator) indicating that there was still a pending revision to drawing FE-13Q, Sheet 1, Revision 23.

While performing the PM, the electrician identified that the MOV wiring was not exactly as specified in drawing FE-13Q, Sheet 1, Revision 23. The electrician was not aware that Design Change (DC) 93-260 had been implemented to change several motor operated valves (MOVs) from torque closed to limit closed operation during the recently completed Unit 2 refueling outage. It should be noted that DC 93-260 was not closed until July 19, 1995. Administrative requirements state that non-priority drawings are required to be revised within 90 day of design change completion. Drawing FE-13Q was classified as a non-priority drawing and had not yet been updated to reflect DC 93-260. However, the logic diagram had been updated because it is classified as a priority drawing.

The electrician contacted his supervisor and informed him that a wire was on the wrong terminal on the two valves. After discussing the discrepancy and incorrectly deciding the change in wiring would not functionally change the valve operation, the supervisor directed the electrician to correct the wiring discrepancy. The electrician thought that he would only be changing the terminals that the wire was on and not the continuity path for the circuit. At this time, a new corrective maintenance work order should have been established to perform the MOV re-wiring instead of performing the work under the PM procedure.

2-CH-MOV-2286B was stroke tested following the completion of the rewiring and the thermal overload device actuated. At this point, the electrician should have stopped and assessed whether something done during the PM caused the valve to thermal out. However, 2-CH-MOV-2287B was stroked and the electrician, upon noticing that the current was excessive, manually tripped the breaker before the thermal overload could actuate. In both cases, the valves were overthrust in the closed direction.

The electrician had unintentionally changed the valve from a limit closed to a torque closed valve. In the previous configuration, the valves were wired for limit closed operation and the torque switches were set to the maximum value which essentially bypasses the torque switches. The electrician again conferred with his supervisor and by reviewing the logic diagram determined that the limit switch had been inadvertently bypassed. Since both the torque switches and limit switches were defeated, no means was in place to turn off the motors.

A similar discrepancy was noted on July 11, 1995 while performing a PM on 2-CH-MOV-2287A. Electricians noted a wiring discrepancy in the field as compared to the FE drawing. This valve was not rewired because a review of the logic diagram determined that the wiring configuration was correct. A deviation report was initiated. Corrective action was to initiate training for maintenance personnel on identifying pending changes to documents within DMIS. Three of five electrical crews had received this training prior to August 8, 1995. The crew that performed the PM on 2-CH-MOV-2286B and 2-CH-MOV-2287B on August 8, 1995 had not received this training yet.

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

The MOVs were quarantined. The valve manufacturer was contacted to evaluate possible damage to the valve bodies. Discussions determined that the valve bodies were not damaged and that the pressure boundary was intact. The valve bodies were also visually inspected and no problems were identified.

The electrician involved in the event was disqualified from MOV work until remedial training was completed.

The scheduled training for identifying pending changes to documents within DMIS was completed with all electrical crews. An enhancement was made to DMIS which better highlights outstanding document updates.

Drawing FE-13Q, Sheet 1 has been revised to incorporate the implementation of Design Change 93-260.

As previously discussed during our August 10, 1995 conference call, Preventive Maintenance Procedure EPM-1503-01 was revised to eliminate the step that caused the electrician to ensure all jumpers and other wiring terminations are landed on the correct terminals in accordance with the latest applicable control

wiring drawings. This step was originally placed in the procedure in 1989 following several instances where MOVs were found not wired correctly. Since that time, each MOV has had maintenance several times and the wiring was verified to be correct. Therefore, it has been determined that this procedure step is no longer required.

A Human Performance (Stop Work) Focus Day was conducted to provide all station employees a quality discussion on this event and other human performance events, and to provide station management's expectations on personnel performance. Management stressed that it is not their intent for station personnel to perform corrective maintenance under a preventive maintenance procedure. Further, it was reiterated that discrepancies are to be resolved by stopping the job and initiating a new corrective maintenance work order. Also included was a review of the DMIS. Feedback from the Human Performance Day will be used to enhance station performance.

The Maintenance Department has instituted the use of the peer check. Peer check personnel are experienced technical individuals in the maintenance department that will provide their expertise and coach maintenance craft personnel.

Document Management issued a memorandum to remind personnel that documents used to perform work tasks are to be maintained properly and provided in a timely manner. Verification that the most current approved document is being used can be accomplished by using DMIS, obtaining the information directly from Document Control or by calling Document Control to verify the latest revision level.

The current listing of priority drawings was reviewed to determine if other types of drawings need to be considered as priority drawings. As a result of this review, the MOV wiring diagrams (FE) depicting changes to valve operator wiring details on safety related MOVs and NA-DW logic diagrams were added to the priority drawing listing. VPAP-0302, Station Drawing Annotation and Revision was revised to reflect the priority drawing listing.

The following actions were performed to return the valves to service:

- The valve actuators were removed and disassembled. All parts were cleaned and inspected, as required.
- The valve stems were partially inspected. No problems were identified.
- VOTES testing was performed on the valves.
- Coefficient of friction testing was performed on 2-CH-MOV-2286B. Coefficient of friction testing could not be performed on 2-CH-MOV-2287B because there are physical limitations on placing a sensor on the valve.
- A special test, 2-ST-98, was performed to collect flow and pressure data for the "B" charging pump's normal and alternate discharge header MOVs.
- The MOVs were re-wired for limit closed operation in accordance with the proper procedure and drawing.

A Justification for Continued Operation (JCO 95-02, Revision 0) was approved on September 8, 1995 to allow 2-CH-MOV-2286B and 2-CH-MOV-2287B to be returned to service since the valves can not be isolated at power to complete comprehensive inspections. Compensatory measures have been established to require VOTES testing the last time these valves are opened during normal, non-emergency conditions. This is to declare the valves operable and to evaluate the VOTES traces for any changes or abnormality.

A Category 1 root cause evaluation (RCE) has been completed on this event. Results and recommendations from the RCE were approved by management. Corrective actions include:

- Training personnel to use DMIS to determine if there are pending changes to the latest revision of a document or drawing.
- Revising O-EPM-1503-01 to eliminate the requirement to "Ensure all jumpers and other wiring terminations are landed on the correct terminals in accordance with the latest applicable control wiring drawings. Record print number below: Drawing _____." This action was completed as discussed earlier.
- Reviewing the current listing of priority drawings to determine if it requires revision.
- Clarifying management's expectation that wiring modifications are not to be performed as preventative maintenance. This action was completed as discussed earlier.
- Performing a word search of other procedures that contain the action verb "ensure all jumpers and other wiring terminations are landed on the correct terminals". This search identified one other procedure that contained this terminology (O-ECM-1505-01, VOTES MOV Testing). This procedure has since been revised.
- Enhancing the ease of use of DMIS.

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

Personnel will be provided more formal training on the use of DMIS by January 31, 1996.

DMIS will be assessed, by November 30, 1995, to determine if it can readily be modified to be more user friendly. Changes will be implemented as required.

As stipulated by JCO 95-02, Revision 0, 2-CH-MOV-2286B and 2-CH-MOV-2287B valve internals and bodies will be inspected and repaired / replaced as required during the next outage of suitable duration.

4. THE DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance has been achieved.