UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

March 24, 2006

Virginia Electric and Power Company
ATTN: Mr. David A. Christian
Senior Vice President and
Chief Nuclear Officer
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

SUBJECT: NORTH ANNA POWER STATION - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000338/2005008 AND 05000339/2005008

Dear Mr. Christian:

On February 10, 2006, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the North Anna Power Station. The enclosed report documents the inspection results, which were discussed on February 10, 2006, with Mr. J. Bishof and other members of your staff.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

The report documents an NRC-identified finding of very low safety significance (Green). The finding was determined to involve a violation of NRC requirements. However, because of the very low safety significance and because it was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest the NCV in this report, you should provide a response with the basis for your denial, within 30 days of the date of this report, to the United States Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D. C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D. C. 20555-0001; and the NRC Resident Inspector at the North Anna Power Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

D. Charles Payne, Chief
Engineering Branch 2
Division of Reactor Safety

Docket Nos. 50-338, 50-339
License Nos. NPF-4, NPF-7

Enclosure: NRC Inspection Report 05000338/2005008 and 05000339/2005008
w/Attachment: Supplemental Information

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-338, 50-339
License Nos.:	NPF-4, NPF-7
Report No.:	05000338/2005008 and 05000339/2005008
Licensee:	Virginia Electric and Power Company (VEPCO)
Facilities:	North Anna Power Station, Units 1 & 2
Location:	1022 Haley Drive Mineral, Virginia 23117
Dates:	January 23 through 27, 2006 and February 6 through 10, 2006
Inspectors:	P. Fillion, Senior Reactor Inspector (Lead Inspector) G. Hopper, Senior Operations Engineer N. Staples, Reactor Inspector F. McCreesh, Fire Protection Engineer (Consultant)
Approved by:	D. Charles Payne, Chief Engineering Branch 2 Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000338/2005-008 and 05000339/2005-008; 01/23 - 27/2006 and 02/06 - 10/2006; North Anna Power Station, Units 1 and 2; Triennial Fire Protection Inspection.

This report covers an announced two-week period of inspection by three regional inspectors and one contractor. One Green non-cited violation (NCV) was identified. The significance of most findings is identified by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG 1649, "Reactor Oversight Process" Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. NRC inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.48, Fire Protection, for a degraded carbon dioxide suppression system in the Unit 2 cable vault and tunnel fire area. The system was degraded in that the manual mode of operation would not achieve the desired gas concentration. The licensee took prompt corrective action for the gas concentration problem by placing temporary instructions at the manual discharge stations. The licensee entered the problem into their corrective action program.

  The finding is associated with the reactor safety, mitigating system, cornerstone attribute of protection against external factors, i.e. fire. It is more than minor because the actual system capability or capacity was affected in a substantive way. The safety significance of the shortfall in concentration in the mechanical manual mode of operation screens as very low in the SDP Phase 1 evaluation because only one feature of the system was affected; the automatic mode and pushbutton mode were unaffected by the problem. In addition, the carbon dioxide system was backed up by a manual sprinkler system and a manual deluge system. (Section 1R05.3.b.1)

B. Licensee-Identified Violations

None

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection

The purpose of this inspection was to review the North Anna Power Station fire protection program (FPP). Emphasis was placed on verification that the post-fire safe shutdown (SSD) capability was free of fire damage. The requirements for SSD are contained in Title 10 of the Code of Federal Regulations, Part 50 (10 CFR 50), Appendix R (hereafter referred to as Appendix R).

The inspection was performed in accordance with Inspection Procedure (IP) 71111.05T, Fire Protection (Triennial), dated 02/18/05, and the U. S. Nuclear Regulatory Commission's (NRC) Reactor Oversight Process, using a risk-informed approach for selecting the fire areas and attributes to be inspected. The selection of risk-significant fire areas to be evaluated during this inspection considered information contained in licensee FPP documents, results of prior NRC triennial inspections, and observations noted during in-plant tours. The fire areas chosen for review during this inspection are listed below and inspection activities described in the following sections were, in general, restricted to these fire areas:

- Unit 2 turbine building / Fire Area 8. For this area shutdown would be controlled from the main control room. The licensee's analysis states that at least one train of each system required for SSD is outside this fire area, except for the ventilation system. The ventilation system should meet the requirements of Appendix R, Section III.G.2.b, and there is a related approved exemption.

- Unit 2 cable vault and tunnel / Fire Area 3-2. From an analysis perspective, SSD would be accomplished using alternative shutdown capability as defined in Appendix R, Section III.G.3. Some key features of the alternative shutdown are cross-connection of Units 1 and 2 charging systems and specially located (and routed) instrumentation. In addition, the turbine driven auxiliary feedwater system is independent of this fire area. Command and control of SSD remains in the main control room.

- Service water pump house / Fire Area 12. A fire in this area could potentially affect four of the service water pumps which are important to SSD. However, two auxiliary service water pumps, located separate from this fire area, can be aligned from the main control room to support SSD.

For each of the selected fire areas, the inspection team evaluated the licensee's FPP against applicable NRC requirements. Applicable requirements documents and licensee documents reviewed by the team are listed in the attachment.

.1 Analysis of Functions and Systems Required for Safe Shutdown and Protection of Safe Shutdown Capability

a. Inspection Scope

The team evaluated whether the licensee's SSD analysis (SSA) properly evaluated systems and components in terms of functions to be performed for SSD of the units during a severe fire. Once the minimum set of equipment available for SSD was understood by the team, reactor coolant system (RCS) inventory control, RCS pressure control, core reactivity control, core decay heat removal and RCS cooldown rate were carefully evaluated. The RCS system analysis which modeled the particular configuration and scenario of interest was requested and reviewed. In addition, a plant simulator scenario was observed by the team to help confirm the analysis results.

The team reviewed the fire protection features in place to protect SSD capability as compared to the separation and design requirements of Appendix R, Section III.G.

The team reviewed the plant procedures that established and implemented controls and practices to prevent fires and to control the storage of permanent and transient combustible materials and ignition sources.

These reviews were performed to ensure that the defense-in-depth objectives established by the NRC-approved fire protection program were satisfied.

b. Findings

No findings of significance were identified.

.2 Passive Fire Protection

a. Inspection Scope

The team inspected the material condition of accessible passive fire barriers surrounding and within the fire areas selected for review. Barriers in use included walls, ceilings, floors, mechanical and electrical penetration seals, doors, and dampers. Construction details and fire endurance test data which established the ratings of fire barriers were reviewed by the team.

Engineering evaluations and relevant exemptions described in NRC Safety Evaluations related to fire barriers were reviewed. Where applicable, the team examined installed barriers to compare the configuration of the barrier to the rated configuration.

b. Findings

No findings of significance were identified.

.3 Active Fire Protection

a. Inspection Scope

Through in-plant observation of systems, design document review and reference to the applicable National Fire Protection Association (NFPA) codes and standards, the team evaluated the material condition and operational lineup of fire detection and suppression systems. The appropriateness of detection and suppression methods for the category of fire hazards in the various areas was evaluated. The wet pipe sprinkler and deluge systems and local application carbon dioxide systems (CO_2) in Fire Area 8 were inspected. The dry-type fusible link sprinkler and deluge systems and total flooding CO_2 system in Fire Area 3-2 were inspected. Fire suppression systems were evaluated from source to discharge device including hydraulic calculations performed by the licensee to demonstrate adequate flow, pressure and water distribution.

The team reviewed the fire brigade staging and dress-out areas to assess the operational readiness of fire fighting and smoke control equipment. The fire brigade personal protective equipment and the self-contained breathing apparatuses were reviewed for adequacy and functionality. The team also reviewed operator and fire brigade staffing, fire brigade response, fire fighting pre-plans, fire brigade qualification training, and the fire brigade drill program procedures. Four fire brigade response-to-drill scenarios that transpired over the last 6 months were reviewed.

b. Findings

1. Carbon Dioxide Suppression System Manual Mode

Introduction: NRC inspectors identified a Green non-cited violation (NCV) of 10 CFR 50.48, Fire Protection, for a degraded CO_2 suppression system in the Unit 2 cable vault and tunnel fire area (Fire Area 3-2).

The system was degraded in that the manual mode of operation would not achieve the desired gas concentration.

Description: The CO_2 system was equipped with an emergency manual discharge station which was a mechanical means of releasing CO_2 by means of pilot valves and an operator controlled lever. This feature will hereafter be referred to as the manual station. The team observed that the instructions on an engraved nameplate provided by the manufacturer in manual station 2-FP-CP-29 for the Unit 2 cable vault and tunnel, Zone 2, CO_2 system directed the operator to manually release CO_2 for 3 minutes (180 seconds) for extinguishment of a fire. The original design calculations for this system calculated a discharge time of 178 seconds for proper extinguishment.

However, the automatic discharge timer in panel 2-EP-CB-61A was calibrated and tested to discharge CO_2 for 247 seconds (with a tolerance of +/- 15 seconds). The difference between the 180 seconds manual discharge time and the 247 seconds automatic discharge time is significant with regard to the amount of CO_2 that is released into the hazard area. Because no pre-operational test records of the CO_2 system could

be provided by the licensee, the inspectors conservatively assumed that the 247 seconds discharge time was the correct time needed to achieve the desired gas concentration. Consequently, performing the manual station instructions, as written, would lead to insufficient gas concentration. The mechanical manual mode of operation is required by the code of record, NFPA 12 (1973), Section 14. The electrical manual mode of operation, which is a push button method of discharging the system, was unaffected.

Similarly, the team observed that the instructions on manual station 2-FP-CP-17 for the Unit 2 cable vault and tunnel, Zone 4, CO_2 system directed the operator to manually release CO_2 for 4¼ minutes (255 seconds) for extinguishment of a fire. The original design calculations for this system calculated a discharge time of 246 seconds for proper extinguishment. However, the automatic discharge timer in panel 2-EP-CB-61B was calibrated and tested to discharge CO_2 for 303 seconds (with a tolerance of +/- 15 seconds). The difference between the 255-seconds manual discharge time and the 303-seconds automatic discharge time is significant with regard to the amount of CO_2 that is released into the hazard area.

The licensee generated a Plant Issue (PI) report and a Special Order Tag was hung on each of the emergency manual release components. The tags instructed the operator to manually operate 2-FP-CP-29 for 4¼ minutes (255 seconds) and to manually operate 2-FP-CP-17 for 5¼ minutes (315 seconds). These times were consistent with the automatic discharge times for each system. The licensee also self-identified two additional areas where the manual station discharge time did not match the automatic discharge timer. These areas were the Unit 2 Cable Spreading Room and the Unit 2 Normal Switchgear Room. Field tags were also hung on the manual stations that operate these two CO_2 systems.

Analysis: The finding described above is a performance deficiency. The licensee should have realized that the manual mode of system operation did not meet the discharge time requirement. The finding was associated with the reactor safety, mitigating system, cornerstone attribute of protection against external factors, i.e. fire. The performance deficiency is more than minor because the actual system capability or capacity was affected in a substantive way. The safety significance of the shortfall in concentration in the mechanical manual mode of operation screened as very low in the SDP Phase 1 evaluation because only that one feature of the system was affected; the automatic mode and pushbutton mode were unaffected by the problem. In addition, the CO_2 system was backed up by a manual sprinkler system and a manual deluge system.

Enforcement: 10 CFR 50.48 states, in part, “Each operating nuclear power plant must have a fire protection program that satisfies Criterion 3 of Appendix A to this part.” The North Anna Unit 2 Operating License NPF-7, specifies, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR and as approved in the SER dated February 1979. These documents invoke the requirements of 10 CFR 50, Appendix R, Section III.G, which requires a fixed fire suppression system in the fire area related to the above described finding. What is considered an acceptable fixed fire suppression system is contained in National Fire Protection Association standard 12, “Standard on Carbon Dioxide

Extinguishing Systems" 1973 version. Section 14 of that standard requires an emergency mechanical mode of operation which would deliver the design concentration. Contrary to the above, the mechanical manual mode of operation for the CO_2 system in the Unit 2 cable vault and tunnel area would not achieve the design concentration due to incorrect operating instructions. The violation applied to Unit 2 only, and has existed since initial plant start-up.

Because the violation is of very low safety significance and has been entered into the licensee's corrective action program as PI-2006-0497, it is being treated as a NCV consistent with Section VI.A.1 of the NRC's Enforcement Policy: NCV 05000339/2005008-01, Carbon Dioxide System for Unit 2 Cable Vault and Tunnel Area Has Degraded Manual Mode.

2. Potential for Over-pressurization Upon Carbon Dioxide System Actuation

Introduction: The team identified an unresolved item (URI) involving the potential to over-pressurize the Unit 2 cable vault and tunnel upon actuation of the CO_2 system. This concern results from the fact that the automatic discharge timers were set for a longer time than given in the system design calculation, together with the fact that test data for the system was not available.

Description: The Unit 2 cable vault and tunnel (Fire Area 3-2), is divided into two separate CO_2 system discharge zones. Zone 2 is primarily a cable spreading/routing area. Zone 4 has two levels. The upper level houses the rod control system. The lower level is the continuation of cable routing area, but it also contains motor control centers, miscellaneous panels and containment electrical penetrations. In Zone 4, the CO_2 system has discharge nozzles at the lower level only, although a large unobstructed opening between the two levels allows air to flow between them. There is a wall fabricated of wall board between Zones 2 and 4. This wall is penetrated by many cable trays and conduits, and also has two doors. Part of the boundary of Zone 2 is a wall common to the control room and the cable vault and tunnel.

The design calculations by Chemetron Company, who supplied and designed the CO_2 system, incorporated discharge times of 178 seconds and 246 seconds for the Zone 2 and Zone 4 areas, respectively. However, the automatic controls were set for discharge times different than given in the calculation: Zone 2 was set for 247 seconds and Zone 4 was set for 303 seconds. The design calculations did not calculate pressures in the protected area. Reliance was placed on pre-operational testing of the system to demonstrate that the correct concentrations could be achieved and that pressures would not breach the volume boundary. Records indicate that pre-operational testing was conducted, but the test data was lost. Because the inspectors found that the as-built discharge times were substantially longer than the times given in the calculation, and because records of the testing were lost, they postulated the following scenario. The initial test did not achieve the desired concentration with discharge times given in the calculation, and therefore the times were increased. It is not known whether a retest using the new times was made to demonstrate pressures were acceptable.

The inspectors contacted a Chemetron technical representative who is recognized as knowledgeable and experienced in CO_2 systems. He stated that, in general, there is a potential for pressure increase with an increase in discharge time from 180 seconds to 247 seconds because pressure may not reach steady state conditions within 180 seconds. Therefore, even though a 180-second-discharge test may have demonstrated that pressures were acceptable, it cannot be inferred they would be acceptable in a 247-second discharge.

The licensee initiated PI-N–2006-0547 to address this issue. The PI states that the licensee considers the system operable based on the premise that there is reasonable expectation that sufficient venting area exists in both zones to prevent over-pressurization. In Zone 2, venting would be provided by leakage past a damper and the doors between the zones. In Zone 4, because CO_2 is released in the lower level only, the risk of over-pressurization is inherently less than in Zone 2, plus the percentage increase in discharge time over the original design value is less (23 percent versus 39 percent).

The team determined that the weak point of the Zone 2 envelope in terms of over-pressure would be the doors between Zones 2 and 4, which open into Zone 4. One of the reasons for this conclusion was that the latch on both doors appeared to have minimal engagement. Should these doors be forced open during a CO_2 release, the fire extinguishing effectiveness of the system would be reduced. However, the SSD analysis already assumes that any cable in the cable vault and tunnel is damaged, therefore the problem would affect the fire suppression component of defense-in-depth only and not the capability to safely shutdown.

The licensee stated it would explore various avenues to resolve this issue in a rigorous technical manner. This issue is unresolved pending review and evaluation of additional information to be supplied by the licensee. It is identified as URI 05000339/2005008-02, Potential for Over-pressurization of the Unit 2 Cable Vault and Tunnel Upon Discharge of the Carbon Dioxide System.

.4 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team walked down the selected fire areas to verify that redundant trains of systems required for hot shutdown, where located in the same fire area, were not subject to damage from fire suppression activities or from the rupture, or inadvertent operation of, fire suppression systems. The team considered the effects of water, drainage, heat, hot gasses, and smoke that could potentially damage all redundant trains. The team also reviewed engineering evaluations that addressed the inadvertent operation of fire protection systems and their effect on SSD capabilities.

b. Findings

No findings of significance were identified.

.5 Operational Procedures Controlling Post-Fire Safe Shutdown

a. Inspection Scope

The team reviewed the operational implementation of the SSD strategy that would be used during a significant fire in any of the selected fire areas. The team interviewed operators and reviewed lesson plans, job performance measures, plant procedures, and training records for licensed and non-licensed operators. These reviews were performed to verify that: 1) the procedures were available for immediate use; 2) the operators could reasonably be expected to perform the procedures, including local manual operator actions, within applicable shutdown time requirements; 3) the local manual operator actions in place for fire areas requiring SSD from outside the MCR could be successfully accomplished taking into consideration emergency lighting, communications equipment available, and the human factors adequacy of the procedures and expected environmental conditions; 4) the training program for operators included operator actions relied on for SSD from the main control room or from the alternate shutdown locations; and 5) personnel required to achieve and maintain the plant in hot standby following a fire could be provided from the minimum allowable onsite staff, exclusive of the fire brigade.

The team reviewed and walked down applicable sections of the following fire response Fire Contingency Actions (FCA) Procedures:

- 0-FCA-0, Fire Protection Operations Response , Revision 9
- 2-FCA-3, Cable Vault and Tunnel Fire, Revision 17
- 0-FCA-9, Service Water Pump House Fire, Revision 4

b. Findings

No findings of significance were identified.

.6 Circuit Analysis

a. Inspection Scope

The team reviewed those plant systems that would be used to achieve inventory control, core heat removal and reactor coolant system pressure control during and following a postulated fire in the fire areas selected for review. System flow diagrams were reviewed. Control circuit schematics were analyzed to identify and evaluate cables important to SSD. The team traced the routing of cables through fire areas selected for review by using cable schedule, and conduit and tray drawings. The team walked down these fire areas to compare the actual plant configuration to the layout indicated on the drawings. The team evaluated the above information to determine if the requirements for protection of control and power cables were met. The motor operated valves (MOVs) and other components reviewed are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

7 Communications and Lighting

a. Inspection Scope

The team inspected communications equipment and emergency lighting in relation to plant operator and fire brigade needs in accordance with the guidance in IP 71111.05T. Some plant specific attributes and data addressed by the team included but were not limited to the following:

- Availability and readiness of portable radios that were the primary means of communication for the fire brigade.
- The availability of fixed communication equipment at the auxiliary monitoring panel and at locations where operators performing local manual actions would need to communicate with the main control room.
- Availability of the radio repeater and antenna systems during a fire.
- Manufacturers' data sheets and periodic testing results for the direct current, self-contained, battery-powered emergency lighting units to check if they had at least an 8-hour capacity.

b. Findings

No findings of significance were identified.

.8 Cold Shutdown Repairs

a. Inspection Scope

The team performed inspection activities to determine whether the time and power supply requirements in 10 CFR 50, Appendix R, related to achieving cold shutdown following a fire were met. Specifically, for the Unit 2 cable vault and tunnel fire, the team determined what equipment would be available for long term reactivity control, long term heat removal and environmental control to support placing the plant in cold shutdown condition. Inspection activities included reviewing a repair procedure for re-energizing a residual heat removal pump in case the feeder cable to the pump is damaged by fire.

b. Findings

No findings of significance were identified.

.9 Compensatory Measures

a. Inspection Scope

The team reviewed the process that the licensee used to put compensatory measures in place for out-of-service, degraded, or inoperable fire protection and post-fire SSD equipment and evaluated its adequacy. About 65 PIs were reviewed to verify that the compensatory actions were put in place in accordance with the requirements of the licensee's Technical Requirements Manual (TRM). The team also verified that short-term compensatory measures were adequate to compensate for a degraded function or feature until appropriate corrective actions were taken. The team reviewed numerous Limiting Condition for Operation status sheets for the TRM fire protection systems to determine whether adequate attention was given to fire protection plant features when they were taken out of service.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The team reviewed a summary of all PIs that fell into the categories of Appendix R requirements and fire protection requirements covering a period of time from January 1, 2004, to the start of the inspection. Based on what the team judged to be the most significant issues in the summary report, eight PIs were selected for further review. These PIs are listed in the Attachment. Further review typically involved interviews with cognizant engineers, review of additional documents and verification of corrective actions. In addition, PI N-2003-2539 was reviewed which dealt with an event where the CO_2 fire suppression system for the Unit 2 cable spreading room inadvertently actuated.

b. Findings

No findings of significance were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On February 10, 2006, the team presented the inspection results to Mr. J. Bischof and other members of his staff, who acknowledged the findings. The inspectors confirmed with the licensee that none of the material examined during the inspection should be considered proprietary.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel:

W. Anthes, Assistant Manager, Maintenance
J. Bischof, Director, Site Safety and Licensing
M. Bourdeau, System Engineer (Fire Protection Engineer)
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M. Walker, Manager Nuclear Oversight
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NRC Personnel:

H. Christensen, Deputy Director, Division of Reactor Safety, Region II
J. Reese, Senior Resident Inspector
G. Wilson, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000339/2005008-02	URI	Potential for Over-pressurization of the Unit 2 Cable Vault and Tunnel Upon Discharge of the Carbon Dioxide System (1R05.3.b.2)

Opened and Closed

05000339/2005008-01	NCV	Carbon Dioxide System for Unit 2 Cable Vault and Tunnel Area Has Degraded Manual Mode (1R05.3.b.1)

COMPONENTS REVIEWED

1R05.6 List of Equipment

2-RC-SOV-201A-1, Reactor Vessel Head Vent Valve
2-FW-LI-210A/B, Steam Generator Level A/B
2-RC-LT-2000, Pressurizer Level
2-FW-PC-FW259A, Auxiliary Feedwater Minimum Discharge Pressure Control
2-FW-MOV-200D, Turbine Driven Auxiliary Feedwater Pump Discharge to Steam Generator A Valve
2-CH-FCV-2122, Charging Flow Control Valve
2-CH-MOV-2289A, Charging Pump Discharge Header MOV
2-CH-HCV-2137, Excess Letdown Heat Exchanger 2-CH-E-4 Outlet Valve
2-CH-HCV-2311, Auxiliary Spray Valve
2-MS-TV-211A, Steam Supply to Turbine Auxiliary Feedwater Pump
2-MS-TV-201A, Main Steam Isolation Trip Valve
2-RC-RCV-2455C, Pressurizer Pressure Operated Relief Valve
1-CH-MOV-1286B, Charging Pump Discharge Valve

LIST OF DOCUMENTS REVIEWED

Requirements

Safety Evaluation Report by the Office of Nuclear Reactor Regulation US NRC in the matter of VEPCO Fire Protection Program for North Anna Power Station, Units 1 & 2, dated February 1979

Safety Evaluation Report by the Office of Nuclear Reactor Regulation Appendix R to 10 CFR Part 50, Items III.G.3 and III.L, VEPCO Fire Protection Program for North Anna Power Station, Units 1 & 2, docketed November 1982

Safety Evaluation Report by the Office of Nuclear Reactor Regulation Relative to Appendix R Exemptions Requested for VEPCO Fire Protection Program for North Anna Power Station, Units 1 & 2, docketed November 1986

Appendix A to Branch Technical Position APCSB 9.5-1, “Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976," dated February 24, 1977

Corrective Action Program Documents Initiated as a Result of the Inspection

Plant Issue N-2006-0292, Drawing in the pre-fire plan for the cable vault and tunnel indicates wrong fire zones
Plant Issue N-2006-0304, Appendix R Report and plant drawing both in error on power supply for Train A RCS ventilation valves
Plant Issue N-2006-0329, Emergency light not directed in correct direction
Plant Issue N-2006-0342, Inaccuracies in the Appendix R Report

Plant Issue N-2006-0352, FSAR not completely correct with regard to statement that all cables meet IEEE Std-383
Plant Issue N-2006-0497, Discharge times on engraved placard for manual release of carbon dioxide system is less than automatic release time and system does not have double-shot capacity
Plant Issue N-2006-0546, Appendix R report (Figure 5-2) not correct with regard to time to achieve cold shutdown
Plant Issue N-2006-0547, Potential over-pressure could result from discharge of carbon dioxide in Unit 2 cable vault and tunnel
Feedback Incorporation Process form for Procedure 2-FCA-3

Training Records

North Anna Training Center Simulator Exercise Guide SEG4B, "Loss of Offsite Power and All AC and Cable Vault Fire
Licensed Operator Requalification Program (LORP) 05-07 Training Lesson Plan, "Recent Changes to FCA Procedures and ECA-0.0"
Job Performance Measures Reviewed:
N152, "Align and Control the Aux FW Pump Locally", (LORP Session 05-2)
N914, "Place Residual Heat Removal System in Operation Locally", (LORP Session 05-5)
N921, "Align and Control Charging Flow through the Boron Injection Tank Locally" ,(LORP Session 05-6)
N963, "Transfer of the Remote Monitoring Excore Neutron Flux detector to its Dedicated Power Source", (LORP Session 05-6)
N1046, "Operate the Steam Generator Atmospheric Dump Valve Locally",(LORP Session 05-7)

Engineering Records

Calculation SM-529, "Reanalysis of North Anna Worst Case Appendix R Scenario of Loss of Feedwater Flow With a Complete Loss of AC Power," Rev. 0, dated October 1987
North Anna APP-R Simulator Scenario Run numbers 1 and 2 data graphs dated 2/6/2006
Calculation EE-0118, 10CFR50 Appdx R Electrical Distribution System Coordination Study, Rev.1
DCP-95-009-2, Resolve DC Separation Issue for SOV Panels, Rev.8
EE-O-10, Hydraulic Calculations: Roof Standpipe Turbine Building, Rev. 0
11715/12050-7.1-FP-8, CO_2 Storage (Low Pressure) Cable Vault and Tunnel Systems, Rev. 0
11715/12050-7.1-FP-7, CO_2 Storage (Low Pressure) Main Low Pressure System, Rev. 0
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LIST OF ACRONYMS

EF	degrees Farenheit
CFR	Code of Federal Regulations
CO_2	carbon dioxide
FCA	Fire Contingency Action (a class of operating procedures)
FPP	Fire Protection Program
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Inspection report
lbs	pounds of weight
MOV	motor operated valve
NCV	Non-Cited Violation
NFPA	National Fire Protection Association
NPF	Nuclear Power Facility
NRC	U.S. Nuclear Regulatory Commission
NUREG	Refers to a series of publications by the Nuclear Regulatory Commission
PI	Plant Issue
psi	pounds per square inch
RCS	reactor coolant system
SDP	Significance Determination Process
SSA	Safe shutdown analysis
SSD	Safe shutdown
TRM	Technical Requirements Manual
UFSAR	Updated Final Safety Evaluation Report