UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-1257

May 13, 2011

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

SUBJECT: NORTH ANNA POWER STATION – NRC TEMPORARY INSTRUCTION 2515/183 INSPECTION REPORT 05000338/2011010 AND 05000339/2011010

Dear Mr. Heacock:

On April 29, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your North Anna Power Station (NAPS), using Temporary Instruction 2515/183, "Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event." The enclosed inspection report documents the inspection results which were discussed on May 09, 2011, with Mr. Larry Lane and other members of your staff.

The objective of this inspection was to promptly assess the capabilities of NAPS to respond to extraordinary consequences similar to those that have recently occurred at the Japanese Fukushima Daiichi Nuclear Station. The results from this inspection, along with the results from this inspection performed at other operating commercial nuclear plants in the United States, will be used to evaluate the U.S. nuclear industry's readiness to safely respond to similar events. These results will also help the NRC to determine if additional regulatory actions are warranted.

All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC in a separate report. You are not required to respond to this letter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made 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), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Gerald J. McCoy
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosure: Inspection Report 05000338/2011010 and 05000339/2011010
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Letter to David A. Heacock from Gerald J. McCoy dated May 13, 2011

SUBJECT: NORTH ANNA POWER STATION – NRC TEMPORARY INSTRUCTION 2515/183 INSPECTION REPORT 05000338/2011010 AND 05000339/2011010

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-338, 50-339
License Nos.:	NPF-4, NPF-7
Report Nos.:	05000338/2011010, 05000339/2011010
Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	North Anna Power Station, Units 1 & 2
Location:	1022 Haley Drive Mineral, Virginia 23117
Dates:	March 23, 2011 through April 29, 2011
Inspectors:	J. Reece, Senior Resident Inspector
Approved by:	Gerald J. McCoy, Chief Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000338/2011010, 03/23/2011 – 04/29/2011; North Anna Power Station; Temporary Instruction 2515/183 - Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event

This report covers an announced Temporary Instruction (TI) inspection. The inspection was conducted by a senior resident iInspector. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006."

INSPECTION SCOPE

The intent of the TI is to provide a broad overview of the industry's preparedness for events that may exceed the current design basis for a plant. The focus of the TI was on (1) assessing the licensee's capability to mitigate consequences from large fires or explosions on site, (2) assessing the licensee's capability to mitigate station blackout (SBO) conditions, (3) assessing the licensee's capability to mitigate internal and external flooding events accounted for by the station's design, and (4) assessing the thoroughness of the licensee's walk downs and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. If necessary, a more specific follow-up inspection will be performed at a later date.

INSPECTION RESULTS

All of the potential issues and observations identified by this inspection are contained in this report. The NRC's Reactor Oversight Process will further evaluate any issues to determine if they are regulatory findings or violations. Any resulting findings or violations will be documented by the NRC in a separate report.

03.01 Assess the licensee's capability to mitigate conditions that result from beyond design basis events, typically bounded by security threats, committed to as part of NRC Security Order Section B.5.b issued February 25, 2002, and severe accident management guidelines and as required by Title 10 of the Code of Federal Regulations (10 CFR) 50.54(hh). Use Inspection Procedure (IP) 71111.05T, "Fire Protection (Triennial)," Section 02.03 and 03.03 as a guideline. If IP 71111.05T was recently performed at the facility the inspector should review the inspection results and findings to identify any other potential areas of inspection. Particular emphasis should be placed on strategies related to the spent fuel pool. The inspection should include, but not be limited to, an assessment of any licensee actions to:

Licensee Action	Describe what the licensee did to test or inspect equipment.
a. Verify through test or inspection that equipment is available and functional. Active equipment shall be tested and passive equipment shall be walked down and inspected. It is not expected that permanently installed equipment that is tested under an existing regulatory testing program be retested. This review should be done for a reasonable sample of mitigating strategies/equipment.	Licensee actions included the location and testing of active equipment, e.g. a portable diesel driven fire pump, and walk downs of passive equipment utilized for implementation of B.5.b actions and any additional equipment used in Severe Accident Management Guidelines (SAMGs). The equipment evaluated was designated in those procedures associated with B.5.b or SAMG mitigation (i.e., special hoses, fittings, prefabricated cables, etc.). Permanent or in situ plant equipment was not considered in the scope, since it is normally in service, subjected to planned maintenance and/or surveillance testing and checked on operator rounds.
	Describe inspector actions taken to confirm equipment readiness (e.g., observed a test, reviewed test results, discussed actions, reviewed records, etc.).
	The licensee's actions as discussed above were completed prior to the issuance of TI 2515/183. The inspector assessed the licensee's capabilities by conducting a review of the licensee's testing and walkdown activities. Additionally, the inspectors independently walked down and inspected a sample of major B.5.b response equipment and discussed test results with the licensee to confirm the results of the licensee's evaluations. The walk downs and inspections included: • B.5.b equipment stored in a warehouse • Fire pumper located in the Emergency Response Building
	Discuss general results including corrective actions by licensee.

		The licensee identified the following discrepancies: • Procedurally required equipment consisting of a site dump truck specifically owned and controlled by the licensee was not available and a portable generator was not functional when tested. The licensee initiated condition report (CR)418115 for the following corrective actions: – Credit for onsite dump truck was resolved by an agreement with the site separation team and a long term action was initiated to procure a dump truck – The generator was sent off site for repair and a substitute generator was rented for the interim period. • A manual chain for the access door in the warehouse for B.5.b equipment was off track and needed repair. The licensee initiated CR418290 for corrective action completed on March 24, 2011. The inspector determined that during a loss of power scenario there was no procedural guidance to obtain on-site diesel fuel from an underground tank located away from the plant protected area.

Licensee Action		Describe the licensee's actions to verify that procedures are in place and can be executed (e.g. walkdowns, demonstrations, tests, etc.)
b. Verify through walkdowns or demonstration that procedures to implement the strategies associated with B.5.b and 10 CFR 50.54(hh) are in place and are executable. Licensees may choose not to connect or operate permanently installed equipment during this verification.		The licensee performed a walk down of each B.5.b and SAMG guideline to verify the strategies as stipulated could be implemented. Deficiencies were captured in the licensee's corrective action program (CAP), and improvements were identified for additional actions.

This review should be done for a reasonable sample of mitigating strategies/equipment.		Describe inspector actions and the sample strategies reviewed. Assess whether procedures were in place and could be used as intended.
		The inspector reviewed a sample of the B.5.b and SAMG guidelines to independently verify the adequacy of the associated steps for strategies. This also included a discussion with the licensee regarding the results of their evaluation. Walk downs included the following procedures: SEGOPS, "Operations Response – Security Event Severe Accident Mitigation" SAG-6, "Control Containment Conditions" CA-6, "Casing Cooling Tank / RWST Gravity Drain"
		Discuss general results including corrective actions by licensee.
		The licensee identified an additional piece of procedurally required equipment which could not be located within the area of stored B.5.b equipment and which consisted of prefabricated instrument cable. The licensee took immediate actions to correct as implemented by CR418458.

Licensee Action		Describe the licensee's actions and conclusions regarding training and qualifications of operators and support staff.

c. Verify the training and qualifications of operators and the support staff needed to implement the procedures and work instructions are current for activities related to Security Order Section B.5.b and severe accident management guidelines as required by 10 CFR 50.54 (hh).		The licensee performed a verification of the qualifications required for B.5.b and SAMG activities and reviewed their qualification database to ensure accountable personnel were current with qualification requirements. The licensee's conclusions identified several training and qualification issues which were entered into their CAP.
		Describe inspector actions and the sample strategies reviewed to assess training and qualifications of operators and support staff
		The inspector reviewed administrative procedure VPAP-2604, "Severe Accident Mitigation Guideline (SAMG) Program Administration," and B.5.b qualification requirements to independently verify the licensee's conclusions.
		Discuss general results including corrective actions by licensee.
		The licensee initiated CR418070 and updated their qualification database to reflect recent training of three personnel. Additionally, training was provided to an individual who was recently added to the emergency response organization, an individual who was still within their grace period, and a new senior reactor operator.

Licensee Action		Describe the licensee's actions and conclusions regarding applicable agreements and contracts are in place.

d. Verify that any applicable agreements and contracts are in place and are capable of meeting the conditions needed to mitigate the consequences of these events. This review should be done for a reasonable sample of mitigating strategies/equipment.		The licensee reviewed all of the required contracts and letters of agreements needed to accomplish B.5.b activities. The review consisted of verbal contact with the affected entities to verify they could still meet the terms of the agreements.
		For a sample of mitigating strategies involving contracts or agreements with offsite entities, describe inspector actions to confirm agreements and contracts are in place and current (e.g., confirm that offsite fire assistance agreement is in place and current).
		The inspector noted the following entities with which the licensee had letters of agreements or contracts: • Commonwealth of Virginia Department of Emergency Management • Commonwealth of Virginia Department of Health • Commonwealth of Virginia Department of State Police • Commonwealth of Virginia Department of Game and Inland Fisheries • Virginia Commonwealth University Medical Center • Louisa County Administrator • Louisa County Volunteer Firefighter's Association • Louisa County Sheriff • Emergency Medical Services Association of Louisa County • Spotsylvania County Sheriff • Spotsylvania Department of Fire, Rescue, and Emergency Management • Orange County Sheriff • Orange County Administrator • Caroline County Department of Fire & Rescue • Caroline County Sheriff • Hanover County Administrator • Hanover County Sheriff • ARCOS Inc.

		• Godwin Pumps of America • GMPCS (IRIDIUM Satellite Phone Service) • United Rentals • IMTT - Richmond • First Energy Corporation • Carter Rental
		Discuss general results including corrective actions by licensee.
		Neither the licensee nor the inspector identified any deficiencies with the licensee's contracts and letters of agreements.

Licensee Action		Document the corrective action report number and briefly summarize problems noted by the licensee that have significant potential to prevent the success of any existing mitigating strategy.

e. Review any open corrective action documents to assess problems with mitigating strategy implementation identified by the licensee. Assess the impact of the problem on the mitigating capability and the remaining capability that is not impacted.		The following CR's were initiated during the first phase of the assessment: • CR417940, IER L1-11-1, Fukushima Daiichi Nuclear Station Fuel Damage Caused by Earthquake • CR418070, SAMG Refresher Training Not Complete • CR418115, Equipment required for B-5-B not available on site (88kW portable generator failed) • CR418290, Manual chain to open roll up door for warehouse does not work • CR418339, Unit 2 penetration junction boxes not labeled • CR418458, Identified during the B.5.b the following requirements for SEGTSC, "TSC Response - Security Event Severe Accident Mitigation," attachment 3, "Alternate Instrumentation Methods" • CR418515, Update procedures 0-PT-171.5 and SEGTSC • CR418528, Deficiencies discovered during I&C B.5.b Walkdown of 0-PT-171.5, "SEGOPS/SEGTSC Equipment Inspection," Attachment 2, "Instrument and Controls Equipment,"

03.02 Assess the licensee's capability to mitigate station blackout (SBO) conditions, as required by 10 CFR 50.63, "Loss of All Alternating Current Power," and station design, is functional and valid. Refer to TI 2515/120, "Inspection of Implementation of Station Blackout Rule Multi-Plant Action Item A-22" as a guideline. It is not intended that TI 2515/120 be completely reinspected. The

inspection should include, but not be limited to, an assessment of any licensee actions to:		
Licensee Action		Describe the licensee's actions to verify the adequacy of equipment needed to mitigate an SBO event.
a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.		The licensee performed a review consisting of walk downs and inspections of their responses to: • A loss of the switchyard, • A loss of electrical power and related diagnostics, • A failure of an emergency diesel generator (EDG) or a SBO diesel generator, and • Any fire contingency actions that direct power recovery or reference procedures for the above actions. Additionally, the licensee verified that required equipment and materials used to support the above actions are readily available for short term actions and are in functional condition.
		Describe inspector actions to verify equipment is available and useable.
		The inspector performed a walk down and inspection of selected samples of the licensee's actions to mitigate a SBO condition including the following areas: • SBO diesel generator room and related equipment • 1H EDG room and related support equipment including the Appendix R control panel and backup Lister diesel engines for the starting air compressors
		Discuss general results including corrective actions by licensee.
		Neither the licensee nor the inspector identified any significant issues.

Licensee Action		Describe the licensee's actions to verify the capability to mitigate an SBO event.

b. Demonstrate through walkdowns that procedures for response to an SBO are executable.		The licensee performed a review involving walk downs of the related procedures for events involving a SBO. Each procedure was reviewed on a step-by-step basis to not only identify any deficiencies but to also identify any procedural improvements.
		Describe inspector actions to assess whether procedures were in place and could be used as intended.
		The inspector reviewed a sample of the affected procedures including the following: • 0-AP-10, “Loss of Electrical Power,” • 0-AP-27, “Malfunction of Spent Fuel Pit System,” • 1-MOP-26.78, “”B” RSS Transformer and “E” Transfer Bus,” • 0-OP-6.4, “Operation of the SBO Diesel (SBO Event),” • 0-GOP-7.4, “Spent Fuel Pit Cooling Pump Alternate Power Supply Installation and Removal”
		Discuss general results including corrective actions by licensee.
		Neither the licensee nor the inspector identified any significant issues.

03.03 Assess the licensee’s capability to mitigate internal and external flooding events required by station design. Refer to IP 71111.01, “Adverse Weather Protection,” Section 02.04, “Evaluate Readiness to Cope with External Flooding” as a guideline. The inspection should include, but not be limited to, an assessment of any licensee actions to verify through walkdowns and inspections that all required materials and equipment are adequate and properly staged. These walkdowns and inspections shall include verification that accessible doors, barriers, and penetration seals are functional.		
Licensee Action		Describe the licensee’s actions to verify the capability to mitigate existing design basis flooding events.

a. Verify through walkdowns and inspection that all required materials are adequate and properly staged, tested, and maintained.		The licensee reviewed licensing basis documents including the UFSAR and IPEEE to determine critical design criteria; reviewed flood mitigation procedures to identify equipment necessary to mitigate flooding; performed walk downs testing, where possible, of accessible equipment, barriers and structures; reviewed preventative maintenance procedures for adequacy; and entered any issues into their CAP.
		Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.
		The inspector reviewed the licensee's conclusions and corrective actions. Additionally, the inspector performed walk downs of plant areas vulnerable to flooding to ascertain flood mitigation equipment and barriers. This included safeguards buildings, auxiliary building, emergency switchgear rooms, chiller rooms, turbine building, and quench spray pump house basements.
		Discuss general results including corrective actions by licensee.
		The licensee identified three yard drains partially blocked with debris and entered this issue into their CAP as CR419895. Additionally, the licensee was unable to locate five storm drains/manholes and initiated CR419972. All of the issues were corrected by April 5, 2011.

03.04 Assess the thoroughness of the licensee's walkdowns and inspections of important equipment needed to mitigate fire and flood events to identify the potential that the equipment's function could be lost during seismic events possible for the site. Assess the licensee's development of any new mitigating strategies for identified vulnerabilities (e.g., entered it in to the corrective action program and any immediate actions taken). As a minimum, the licensee should have performed walkdowns and inspections of important equipment (permanent and temporary) such as storage tanks, plant water intake structures, and fire and flood response equipment; and developed mitigating strategies to cope with the loss of that important function. Use IP 71111.21, "Component Design Basis Inspection," Appendix 3, "Component Walkdown Considerations," as a guideline to assess the thoroughness of the licensee's walkdowns and inspections.		
Licensee Action		Describe the licensee's actions to assess the potential impact of seismic events on the availability of equipment used in fire and flooding mitigation strategies.

a. Verify through walkdowns that all required materials are adequate and properly staged, tested, and maintained.		The licensee established a methodology to review fire and flood protection structures, systems and components (SSCs) to assess the potential impact of seismic events on SSC availability. This included walk downs of fire and flood protection SSCs to identify vulnerabilities which could degrade the functionality following a seismic event.
		Describe inspector actions to verify equipment is available and useable. Assess whether procedures were in place and could be used as intended.
		The inspector performed walk downs of the affected B.5.b storage areas, reviewed flood mitigation procedures, and reviewed the licensee's conclusions to verify the thoroughness of their evaluations. Areas reviewed included warehouse, emergency response building, emergency switchgear rooms, chiller rooms, turbine building, auxiliary building, and fuel building. The inspector's conclusions aligned with the licensee's inspection results for the samples reviewed.
		Discuss general results including corrective actions by licensee. Briefly summarize any new mitigating strategies identified by the licensee as a result of their reviews.
		The licensee identified the following vulnerabilities: • Portions of the water and gaseous suppression systems and hose stations are not seismically designed. • B.5.b fire pump storage area is non-seismic. • Potential leakage can occur through penetrations following seismic event. • Seismically designed floodwalls are located in the non-seismic Turbine Building. • Various isolation valves which would be used to isolate a flood source are located in potentially flooded areas. The licensee will evaluate the issues above in order to determine if additional mitigation strategies are required.

Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. Larry Lane and other members of licensee management at the conclusion of the inspection on May 09, 2011. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

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Attachment