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

April 1, 2008

Virginia Electric and Power Company
ATTN: Mr. David A. Christian
Sr. Vice President and
Chief Nuclear Officer
Innsbrook Technical Center - 2SW
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: NORTH ANNA POWER STATION - INSPECTION REPORT NOS. 050-00338/08-007; 050-00339/08-007; AND 072-00056/08-001

Dear Mr. Christian:

This inspection report covers an inspection made by the United States Nuclear Regulatory Commission (NRC) at your North Anna Power Station Independent Spent Fuel Storage Installation (ISFSI) on February 18-21, 2008. The purpose of the inspection was to evaluate the North Anna Power Station readiness to load spent fuel from wet storage in the spent fuel pool to dry storage at the ISFSI. The enclosed inspection report documents the results of the inspection, which were discussed on February 21, 2008 with Mr. Dan Stoddard and other members of your staff. There were no violations or findings of significance.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its attachments, and your response, if any, will be available electronically for public inspection in the NRC Public Document Room or from the Publically 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).

Sincerely,

/RA/

Steven J. Vias, Chief
Technical Support Branch
Division of Reactor Projects

Docket Nos.: 50-338; 50-339; 72-056
License Nos.: NPF-4; NPF-7
Enclosure: North Anna Power Station - Independent Spent Fuel Storage Installation (ISFSI) Pre-Operational Inspection Report
w/Attachments: 1. Supplemental Information
2. Inspector Notes

April 1, 2008

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SUNSI Review Completed: SPA ADAMS: ■ Yes □ No Initials: SPA
■ Publicly Available □ Non-Publicly Available □ Sensitive ■ Non-Sensitive

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DATE	03/31/2008	03/27/2008	03/24/2008	03/24/2008	04/01/2008		
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cc w/encl:
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Letter to David A. Christian from Steven J. Vias dated April 1, 2008

SUBJECT: NORTH ANNA POWER STATION - INSPECTION REPORT NOS. 050-00338/08-007; 050-00339/08-007; AND 072-00056/08-001

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.:	50-338, 50-339, 72-056	
License:	NPF-4, NPF-7	
Report No:	050-00338/08-007; 050-00339/08-007; and 072-00056/08-001	
Licensee:	Virginia Electric and Power Company (VEPCO)	
Facility:	North Anna Power Station, Units 1 & 2	
Location:	1024 Haley Drive Mineral, VA 23117	
Dates:	February 18 through 21, 2008	
Inspectors:	Scott Atwater James Pearson Earl Love Michelle Sampson	Region IV DNMS Inspector - Team Leader SFST Senior Safety Inspector SFST Safety Inspector SFST Safety Inspector
Approved By:	Steven Vias, Chief Technical Support Branch 7 Division of Reactor Projects	
Attachments:	1. Supplemental Information 2. Inspector Notes	

EXECUTIVE SUMMARY

North Anna Power Station
NRC Inspection Report 050-00338/08-007; 050-00339/08-007; and 072-00056/08-001

Virginia Electric and Power Company (VEPCO) had selected the NUHOMS-HD Horizontal Modular Storage System for dry storage of spent nuclear fuel at the North Anna Power Station. The Nuclear Regulatory Commission (NRC) had certified the NUHOMS-HD cask system for storage of irradiated fuel under Certificate of Compliance No. 72-1030 on January 10, 2007.

On February 18-21, 2008, a team of four inspectors performed two evaluations. The first evaluation was to determine if the ISFSI personnel had been trained, the equipment had been tested, and the procedures had been developed to the extent necessary to safely load spent fuel into dry storage at the ISFSI. The second evaluation was to determine if the North Anna Power Station programs were adequate for continued maintenance and operation of the ISFSI once it was loaded. The results of these two evaluations were discussed during an exit meeting on February 21, 2008 with Mr. Dan Stoddard and other members of the staff.

The following provides a summary of the results of the inspection. Details are provided in the Inspector Notes contained in Attachment 2 to this report.

Spent Fuel Cask Crane

- The crane design features for load control were intact, operable, and properly rated for the application. The design features evaluated included the hoist brakes, trolley brakes, and hoist wire rope rating (Attachment 2, Crane Design, Pages 1-2).

- The crane bridge and trolley, hoists, hooks, and wire ropes were inspected and maintained in accordance with the American Society of Mechanical Engineers (ASME) Code and the crane manufacturer's instructions (Attachment 2, Crane Inspection/Maintenance, Pages 2-5).

- The crane was operated, and the crane operators were qualified, in accordance with the requirements of the ASME code (Attachment 2, Crane Operation, Pages 6-7).

Canister Drying and Helium Backfill Operations

- The canister was vacuum dried and backfilled with helium to the pressures specified by technical specifications. The technical specification time limits for drying and backfilling operations were accurately incorporated into the procedures (Attachment 2, Drying/Helium Backfill, Pages 7-9).

Emergency Planning

- The Emergency Plan had been expanded to include the ISFSI. Emergency Action Levels (EALs) had been developed for accidents involving the ISFSI (Attachment 2, Emergency Planning, Pages 9-10).

Fire Protection

- The Fire Protection Plan had been expanded to include the ISFSI. Emergency response training had been provided for off-site responders (Attachment 2, Fire Protection, Pages 10-11).

Fuel Selection and Verification

- The spent fuel assemblies selected for loading met the technical specification requirements for assembly type, decay heat load, and physical design characteristics (Attachment 2, Fuel Selection/Verification, Pages 11-14).

- A canister loading plan had been developed based on the combination of spent fuel assembly enrichment, burnup, cooling time and decay heat. The loading plan met technical specification requirements (Attachment 2, Fuel Selection/Verification, Pages 11-14).

- The non-fuel assembly hardware (NFAH) selected for loading met the technical specification requirements for burnup and cooling times (Attachment 2, Fuel Selection/Verification, Pages 11-14).

- The technical specification actions required for spent fuel mis-loading had been incorporated into the loading procedure (Attachment 2, Fuel Selection/Verification, Pages 11-14).

General License Conditions

- The NUHOMS-HD cask design was compatible with the North Anna Power Station 10 CFR Part 50 requirements. There were no items identified that required NRC review or approval prior to use of the cask system (Attachment 2, General License, Pages 14-20).

- The licensee had calculated the dose to the public at the site boundary from a worst case accident during ISFSI operations. The dose was within the limits allowed by 10 CFR 72.106 (Attachment 2, General License, Pages 14-20).

- The licensee had calculated the dose to the public at the site boundary from normal ISFSI operations. The dose was within the limits allowed by 10 CFR 72.104 (Attachment 2, General License, Pages 14-20).

- The soil structure under the ISFSI pad was evaluated and was not subject to liquefaction during a Safe Shutdown Earthquake (Attachment 2, General License, Pages 14-20).

- The Horizontal Storage Modules (HSMs) were placed on the ISFSI pad in an array that was consistent with the technical specifications (Attachment 2, General License, Pages 14-20).

- The NUHOMS-HD cask system design parameters were bounded by the North Anna Power Station reactor site parameters (Attachment 2, General License, Pages 14-20).

Heavy Loads and Rigging

- A safe load path had been established for transfer cask movements, meeting the requirements of NUREG 0612 (Attachment 2, Heavy Loads and Rigging, Pages 20-21).

- The loading procedure required an engineering analysis of the transfer cask and canister following any cask drop greater than 15 inches. The analysis was required by technical specifications to ensure the canister and transfer cask were still capable of performing their design functions of confinement and shielding (Attachment 2, Heavy Loads and Rigging, Pages 20-21).

- Transfer cask lifting height restrictions had been established to ensure that a drop would not result in dose rates at the site boundary in excess of the 10 CFR Part 100 limits. These lifting heights were consistently monitored and adhered to during the inspection (Attachment 2, Heavy Loads and Rigging, Pages 20-21).

Procedures and Technical Specifications

- Procedures were established to ensure that the NUHOMS-HD cask storage system technical specification requirements for inspection, operation and surveillance were implemented (Attachment 2, Procedures and Tech Specs, Pages 22-24).

Quality Assurance

- The licensee had applied their 10 CFR Part 50 Quality Assurance Program to the ISFSI. Measures had been established to ensure that purchased material, equipment and services conformed to procurement documents (Attachment 2, Quality Assurance, Pages 24-25).

Radiation Protection

- The canister unloading procedure contained provisions to minimize radiation exposure to workers, and radiological releases to the environment, during canister gas sampling (Attachment 2, Radiation Protection, Pages 25-28).

- The canister unloading procedure minimized the potential for overpressurizing the canister during reflooding. During the inspection, the Vacuum Drying System (VDS) was operated to confirm it's capability to control the reflooding flow rate to less than 4.0 gpm, as described in the NUHOMS FSAR (Attachment 2, Radiation Protection, Pages 25-28).

- The canister loading procedure required a contamination survey of the area below the transfer cask annulus seal, in order to evaluate the seal's effectiveness. Radiation Protection personnel performed this survey during the inspection (Attachment 2, Radiation Protection, Pages 25-28).

- Criticality prevention and monitoring during cask loading was implemented. The minimum spent fuel pool boron concentration required by Technical Specifications was established. Criticality monitoring and alarm systems were installed in all areas where spent fuel was handled (Attachment 2, Radiation Protection, Pages 25-28).

Records

- The licensee was maintaining a current copy of the 10 CFR 72.212 Evaluation Report, Certificate of Compliance, and related documents as required by 10 CFR 72.212 (Attachment 2, Records, Page 28).

- The licensee had made the required 90 day notification to the NRC prior to loading their first cask, as required by 10 CFR 72.212 (Attachment 2, Records, Page 28).

Special Lifting Devices

- The licensee had incorporated all dry fuel storage special lifting devices into their 10-year In-Service Inspection (ISI) program in order to ensure continuing compliance with the ANSI standard and license commitments (Attachment 2, Special Lifting Devices, Pages 29-30).

- The transfer cask trunnions had been load tested by the fabricator to the minimum weight required by the American National Standards Institute (ANSI) standard. The load testing had been followed by non-destructive testing and no anomalies were identified (Attachment 2, Special Lifting Devices, Pages 29-30).

- The licensee had established procedures to ensure that all dry fuel storage special lifting devices were inspected prior to use (Attachment 2, Special Lifting Devices, Pages 29-30).

Training

- The training program for ISFSI certification was developed using the Systematic Approach To Training (SAT) process. The knowledge requirements for each task were identified and incorporated into the classroom training. The skill requirements for each task were identified and incorporated into Job Performance Measures (JPMs). The training program was approved by the North Anna Supervisor, Operations Support (Attachment 2, Training, Pages 30-33).

- The NUHOMS-HD vendor (AREVA) and the Vacuum Drying System vendor (EMS Solutions) provided training to the North Anna Power Station ISFSI personnel. North Anna had reviewed and accepted the vendor training under their NRC approved 10 CFR Part 50 Training Program. Only those personnel who had completed all phases of the training were certified to operate the ISFSI equipment and systems (Attachment 2, Training, Pages 30-33).

- The ISFSI field training was provided during the system checks and the dry run training exercises. The operations that were trained met the requirements of the Certificate of Compliance (Attachment 2, Training, Pages 30-33).

Attachment 1
Supplemental Information

LIST OF PERSONS CONTACTED

North Anna Power Station Personnel

M. Bradley	Supervisor, Health Physics
K. Breeden	Health Physics Technician
B. Campbell	Fuel Handler Operations Support (NLO)
B. Carlin	Fuel Handler Operations Support (NLO)
B. Carr	Fuel Handler Operations Support (NLO)
B. Carroll	Engineering Project Manager for ISFSI
S. Clements	Fuel Handler Operations Support (Licensed)
B. Copeland	System Engineer
D. Donovan	Health Physics Technician
R. Evans, Jr.	Manager, Radiation Protection and Chemistry
T. Huber	Director, Nuclear Engineering
P. Kemp	Supervisor, Licensing
N. Lane	Plant Manager
G. Lear	Manager, Organizational Effectiveness
J. Leberstien	Licensing Engineer
B. Miller	Health Physicist II, Radiation Protection
F. Mladen	Director Safety and Licensing
F. Motley	Senior Quality Specialist III
H. Myers	Training Specialist
R. Scanlan	Manager, Nuclear Oversight Department
J. Slattery	Supervisor, Operations Support
B. Speckine	Supervisor, Fuel Handling
D. Stoddard	Site Vice President

Corporate Personnel

T. Brookmire	Supervisor, Nuclear Spent Fuel
B. Wakeman	Engineer III, Nuclear Spent Fuel Engineer
K. Wietharn	Engineer III, Nuclear Spent Fuel Engineer
C. Zalesiak	Engineer III, Corporate Civil Engineering

Surry Power Station Personnel

A. Ewell	Supervisor, Fuel Handling
T. Xenakis	Fuel Handler Operations Support (Licensed)
J. Lyons	Fuel Handler Operations Support (NLO)
T. Keating	Fuel Handler Operations Support (Licensed)

Contractors

J. Sheffield	Transnuclear
R. Simonich	EMS Solutions
P. Gillespie	Health Physics Technician, Bartlett

INSPECTION PROCEDURES USED

60854.1 Pre-operational Testing of Independent Spent Fuel Storage Installations at Operating Plants

60855.1 Operation of an Independent Spent Fuel Storage Installation at Operating Plants

60856.1 Review of 10 CFR 72.212(b) Evaluations at Operating Plants

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None.

Closed

None.

Discussed

None.

LIST OF ACRONYMS USED

ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
BPRA	Burnable Poison Rod Assembly
CFR	Code of Federal Regulations
CoC	Certificate of Compliance
dpm	Disintegrations Per Minute
EAL	Emergency Action Level
EPIP	Emergency Plan Implementing Procedure
gpm	Gallons per minute
GWD/MTU	Gigawatt Days per Metric Ton Uranium
HSM	Horizontal Storage Module
ISFSI	Independent Spent Fuel Storage Installation
ISI	In-Service Inspection
JPM	Job Performance Measure
kW	Kilowatt
msl	Mean Sea Level
NFAH	Non Fuel Assembly Hardware
NRC	Nuclear Regulatory Commission
ppm	Parts Per Million
psf	Pounds Per Square Foot
psi	Pounds Per Square Inch
QA	Quality Assurance
SAR	Safety Analysis Report
SAT	Systematic Approach to Training
SER	Safety Evaluation Report
SNCR	Supplier Non-Conformance Report
SSE	Safe Shutdown Earthquake
SSI	Soil Structure Interaction
TEDE	Total Effective Dose Equivalent
TRB	Training Review Board
TPA	Thimble Plug Assembly
UFSAR	Updated Final Safety Analysis Report
VDS	Vacuum Drying System
VPI	Vibration Suppression Insert
wt. % U-235	Weight Percent Uranium 235