UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

May 24, 2011

Mr. David A. Heacock
President and Chief Nuclear Officer
Virginia Electric and Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION UNITS 1 AND 2 – NRC POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL, INSPECTION REPORT 05000280/2011009, 05000281/2011009

Dear Mr. Heacock:

On April 29, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your Surry Power Station, Units 1 and 2. The enclosed report documents the inspection results, which were discussed on April 29, 2011, with Mr. Bischof and other members of your staff.

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

Based on the results of this inspection, no findings were identified.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) 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).

Sincerely,

/RA/

Timothy L. Hoeg, Acting Chief
Engineering Branch 3
Division of Reactor Safety

Docket Nos. 50-280, 50-281
License Nos. DPR-32, DPR-37

Enclosure: NRC Inspection Report 05000280/2011009, 05000281/2011009
w/Attachment: Supplemental Information

cc w/encl: See page 2

cc w/encl:
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ADAMS: X☐ YesACCESSION NUMBER:____ML11460331_____ ☐ SUNSI REVIEW COMPLETE ☐ FORM 665 ATTACHED

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NAME	JRIVERA-ORTIZ	LLAKE	MCOURSEY	MCCOY	THOEG		
DATE	5/23/2011	5/24/2011	5/23/2011	5/24/2011	5/24/2011		
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OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRS\ENG BRANCH 3\INSPECTIONS\WORKING DOCUMENTS\INPUTS\INPUTS 2011\SURRY U2 IR 2011009 – LR 71003 PHASE 1.DOCX

Letter to David A. Heacock from Timothy L. Hoeg dated May 24, 2011

SUBJECT: SURRY POWER STATION UNIT 2 – NRC POST-APPROVAL SITE INSPECTION FOR LICENSE RENEWAL, INSPECTION REPORT 05000280/2011009, 05000281/2011009

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-280, 50-281
License Nos:	DPR-32, DPR-37
Report No:	05000280/2011009, 05000281/2011009
Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	Surry Power Station Units 1 and 2
Location:	5850 Hog Island Road Surry, VA 23883
Dates:	April 25 – 29, 2011
Inspectors:	Joel Rivera-Ortiz, Senior Reactor Inspector (Lead) Louis Lake, Senior Reactor Inspector Michael Coursey, Reactor Inspector
Approved by:	Timothy L. Hoeg, Acting Chief Engineering Branch 3 Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2011009, 05000281/2011009; April 25 – 29, 2011; Surry Power Station Units 1 and 2; Post Approval Site Inspection for License Renewal

The report covers an inspection conducted by regional inspectors in accordance with NRC Manual Chapter 2516 and NRC Inspection Procedure 71003.

Based on the sample selected for review, the inspectors determined that commitments, license conditions, and regulatory requirements associated with the renewed facility operating license were being met. The inspectors also determined that the licensee had administrative controls in place to ensure completion of pending actions scheduled both prior and subsequent to the beginning of the period of extended operation.

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.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Other Activities

.1 Post-Approval Site Inspection for License Renewal – IP 71003 (Phase 1)

a. Inspection Scope

(1) Implementation of License Conditions and Commitments, including Aging Management Programs

The inspectors reviewed a sample of license renewal activities scheduled for the Unit 2 spring 2011 refueling outage, which was the second to last outage scheduled prior to the period of extended operation (PEO). The initial operating license for Surry Power Station Unit 2 expires on January 29, 2013. This inspection was conducted in order to maximize observations of the actual implementation of license conditions, commitments, and Aging Management Programs (AMPs) before the Unit 2's PEO. The inspectors also took advantage of infrequent inspection opportunities in Unit 1, which begins its PEO on May 26, 2012. The inspection's objective was to verify that the licensee completed the necessary actions to: (a) comply with the conditions stipulated in the renewed facility operating license; (b) meet the license renewal commitments described in Appendix D of NUREG-1766, "Safety Evaluation Report (SER) Related to the License Renewal of North Anna Power Station, Units 1 and 2, and Surry Power Station, Units 1 and 2; and (c) meet the future activities, including AMPs, described in the Updated Final Safety Analysis Report (UFSAR) supplement submitted pursuant to 10 CFR 54.21(d).

Specifically, the inspectors reviewed supporting documents; conducted interviews with licensee staff; observed in-process outage activities; and performed visual inspection of structures, systems, and components (SSCs) including those not accessible during power operation. For those license renewal action items associated with the selected commitments that were not completed at the time of this inspection, the inspectors verified that there was reasonable assurance that such action items would be completed prior to the PEO or in accordance with an established implementation schedule. The commitment items selected for the inspection sample are described below. Specific documents reviewed are listed in the report attachment.

NUREG-1766, Appendix D, Commitment Item 14 – Reactor Vessel Internals: This commitment specified that a one-time focused inspection of the reactor vessel internals would be performed between years 30 and 40. The one-time inspection would look for indications of the presence of aging effects identified in the aging management review for the reactor vessel internals. The inspection would be performed on one reactor (at either Surry or North Anna) and an engineering evaluation of results would determine the need for inspections of the other units. The commitment also specified that Dominion would remain active in industry groups, including the Electric Power Research Institute (EPRI)-sponsored Materials Reliability Program (MRP) Industry Task Group, to stay aware of any new industry recommendations regarding such aging management issues as neutron embrittlement, void swelling, and the synergistic effect of thermal and neutron embrittlement of internals sub-components.

The inspectors reviewed the licensing basis, implementing procedures, engineering evaluations, and non-destructive examination plans for the ultrasonic examination of the Unit 2 reactor vessel baffle bolts to verify that this examination was performed in accordance with the industry recommendations in MRP-227, "Pressurized Water Reactor Internals Inspection and Evaluation Guidelines." Additionally, the inspectors directly observed data acquisition and analysis for a sample of baffle bolts (bolts 19H through 19A and bolt 18A).

NUREG-1766, Appendix D, Commitment Items 15, 21, and 29 – Work Control Process: Chapter 18 of the UFSAR supplement specified that the Work Control Process integrates and coordinates the combined efforts of Maintenance, Engineering, Operations, and other support organizations to manage maintenance and testing activities. The UFSAR supplement also specified that inspections, testing, and sampling performed under the Work Control Process provide reasonable assurance that the following aging effects would be detected: loss of material, cracking, heat transfer degradation, separation and cracking/delamination, and change in material properties.

Commitment Item 15 specified that changes to procedures would be implemented to reasonably assure that consistent inspections of components are completed during the process of performing work control process activities. The implementation of consistent inspections would be accomplished using automated inspection instructions for work orders involving components and structures that have been identified as requiring aging management. The instructions would consistently require inspections to identify a variety of aging mechanisms required for the renewed operating licenses. Commitment Item 21 specified that maintenance activities provide opportunities for inspectors who are Quality Maintenance Team (QMT) or Visual Test (VT) qualified to visually inspect the surfaces (internal and external) of plant components and adjacent piping. Commitment Item 29 specified that if the evaluation of an anomalous condition indicates that the occurrence was unexpected for the operational conditions involved, the Work Control Process would ensure that locations with similar material and environmental conditions are inspected as directed by a Station procedure.

The inspectors directly observed the visual examination of valves 02-MS-178-CKVAL and 2-MS-196 of the Unit 2 main steam system, which included examination of the valves' internals and adjacent piping, and reviewed the licensing basis, implementing procedures, work orders, and personnel qualifications to verify that these examinations were performed as stated in the commitment.

UFSAR Section 18.2.2, Battery Rack Inspections: This section of the UFSAR supplement specified that the battery rack inspections provide reasonable assurance of the integrity of the supports for various station batteries. The UFSAR described that loss of material due to corrosion of the support rack structural members is the aging effect of concern for the battery racks. The UFSAR supplement also specified that periodic checks of the rack integrity are performed, coincident with periodic battery inspections, to determine the physical condition and mechanical integrity of the battery support racks and provide reasonable assurance that their function to adequately support the batteries is maintained.

The inspectors directly observed the general condition of the Unit 2 battery racks, reviewed the associated licensing basis, and discussed the battery rack inspection program with the licensee staff to verify that these examinations were performed as described in the UFSAR.

UFSAR Section 18.2.12, In-Service Inspection (ISI) Program - Containment Inspection: Chapter 18 of the UFSAR supplement specified that the ISI Program for Containment Inspection of concrete containments and containment steel liners implements the requirements in 10 CFR 50.55a and Subsections IWE and IWL of the American Society of Mechanical Engineers (ASME) Code Section XI. The UFSAR supplement also specified that the aging effect for the containment steel liner is loss of material and the aging effects for the concrete are loss of material, cracking and change in material properties. Additionally, the scope and frequency of examination would be in accordance with 10 CFR 50.55a, and Subsections IWE and IWL. These inspections would provide reasonable assurance that aging effects associated with the containment liner and concrete are detected prior to compromising design basis requirements.

The inspectors directly observed the visual examination of the Unit 1 containment exterior wall in the safeguards valve pit as part of the IWL inspection program, and reviewed the licensing basis, implementing procedures, and personnel qualifications to verify that this examination was performed as described in the UFSAR. Additionally, the inspectors conducted a walk-down of all accessible elevations of the Unit 2 containment building with emphasis on passive SSCs such as the containment liner, moisture barriers, piping supports, containment penetrations, concrete structures, and protective coatings. This walk-down was performed to assess the material condition and the effectiveness of the existing AMPs to manage aging effects.

UFSAR Section 18.2.16, Secondary Piping and Component Inspection: This section of the UFSAR supplement specified that the purpose of the Secondary Piping and Component Inspection program is to identify, inspect, and trend components that are susceptible to the aging effect of loss of material as a result of Flow Accelerated Corrosion (FAC) in either single or two-phase flow conditions. According to the UFSAR description, this program has been implemented in accordance with NRC Generic Letter 89-08, “Erosion/Corrosion-Induced Pipe Wall Thinning,” and NUREG-1344, “Erosion/Corrosion-Induced Pipe Wall Thinning in U.S. Nuclear Power Plants,” and EPRI Guideline NSAC-202L, “Recommendations for an Effective Flow Accelerated Corrosion Program.” The scope of the Secondary Piping and Component Inspection program included portions of the feedwater systems, the main and auxiliary steam systems, and the steam generator blowdown lines.

The inspectors directly observed the ultrasonic examination thickness check of a portion of a feedwater line (Mark Number: 2-CN-PSFT-22) and reviewed the licensing basis, implementing procedures, equipment calibration, and personnel qualifications to verify that the examination was performed as described in the UFSAR.

UFSAR Section 18.2.17, Service Water Inspections: This section of the UFSAR supplement specified that the Service Water System Inspections program provides reasonable assurance that corrosion (including microbiologically-influenced corrosion) erosion, protective coating failure, silting, and biofouling of service water piping and components would not cause a loss of intended function. According to the UFSAR description, the primary objectives of this program were to (1) remove excessive

accumulations of biofouling agents, corrosion products, and silt; and (2) repair defective protective coatings and degraded service water system piping and components that could adversely affect performance.

The inspectors directly observed the inspection of portions of the "A" Service Water 96-inch inlet piping (96"-WC-101-10) and reviewed the licensing basis, implementing procedures, and inspection results to verify that these examinations were performed as described in the UFSAR. This walk-down was performed to assess the material condition of the service water inlet piping and the effectiveness of the existing AMPs to manage aging effects.

(2) Review of License Renewal Commitment Changes

The inspectors discussed with the licensee's staff any changes made to the license renewal commitments listed in Appendix D of NUREG-1766 after the issuance of the renewed facility operating license to verify that the licensee followed the guidance in Nuclear Energy Institute (NEI) 99-04, "Guidelines for Managing NRC Commitment Changes." The licensee stated that no commitment changes were implemented at the time of this inspection. An additional NRC review of license renewal commitment changes is scheduled to be completed during the Phase 2 implementation of inspection procedure 71003 scheduled for July 2011.

(3) Review of Newly Identified SSCs

This inspection requirement is scheduled to be completed during the Phase 2 implementation of inspection procedure 71003.

(4) Review of the Description of AMPs and Time-Limited Aging Analysis (TLAA) in the UFSAR Supplement

For the commitment items and AMPs selected for review, the inspectors reviewed the program descriptions in the UFSAR supplement added pursuant 10 CFR 54.21(d) to verify that each program description was consistent with the License Renewal Application and the NRC SER. The NRC review of the remaining AMPs and TLAA descriptions in the UFSAR supplement is scheduled to be completed during the Phase 2 implementation of inspection procedure 71003 scheduled for July 2011.

b. Findings and Observations

No findings were identified. Based on the sample selected for review, the inspectors determined that commitments, license conditions, and regulatory requirements associated with the renewed facility operating license were being met. The inspectors also determined that the licensee had administrative controls in place to ensure completion of pending actions scheduled both prior and subsequent to the beginning of the period of extended operation.

4OA6 Management Meetings

.1 Exit Meeting Summary

On April 29, 2011, the inspectors presented the inspection results to Mr. Bischof, Site Vice-President, and other members of the licensee management staff. The licensee acknowledged the inspection results. The inspectors confirmed that all proprietary information reviewed during the inspection was returned to the licensee and that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Rosenberger, Manager – Engineering Programs
J.H. Warren, Supervisor – Engineering Programs
B. Garber, Licensing Supervisor
J. Ashley, Licensing Engineering
P. Torres-Jimenez, License Renewal Coordinator

LIST OF REPORT ITEMS

None

LIST OF DOCUMENTS REVIEWED

0-MPM-1901-01, High Level Intake Structure Screenwells and Associated Piping Inspection, Revision 18
0-NSP-RC-005, Reactor Baffle – Former Bolt Examination, Revision 1
51-9146907, Technical Justification for Baffle to Former Bolts Volumetric Examination at Surry Power Station, Rev 0
54-ISI-866-001, UT Inspection of Baffle Bolts With "SUSI," Revision 0
CA199871, CA to Engineering to Determine and Initiate Required Actions
CR 424522, Containment Liner Inspection on Sump Areas
CR 424523, Dominion Response for Generic Letter 89-13
CR 424719, General Corrosion on Main Feedwater Penetration Area Inside Containment
CR 424720, General Corrosion on Component Cooling Piping
CR 424949, Slotted Hole in SI Support Baseplate in Unit 1 Safeguards Valve Pit
Drawing 11548-IWL-C01-J, ISI Containment Exterior Wall Segment Between Azimuths 112° & 65° below elevation 28'-6" – Surry Power Station Unit 2, Revision 0
Drawing 11548-WFPD-007
ER-AA-FAC-10, Flow-Accelerated Corrosion Program, Revision 3
ER-AA-FAC-1002, Flow Accelerated Program Procedure, Revision 4
ER-AA-NDE-120, Dominion Written Practice for Certification of Nondestructive Examination Personnel, Revision 4
ER-AA-NDE-UT-701, Ultrasonic Examination Procedure, Revision 5
ER-AA-NDE-VT-606, IWL Visual Examination Procedure, Revision 0
Letter from VEPCO to NRC, Serial 89-572, Surry Power Station Units 1 and 2, North Anna Power Station Units 1 and 2, Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, January 29, 1990
Letter from VEPCO to NRC, Serial 89-572B, Surry Power Station Units 1, Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, January 18, 1991
Letter from VEPCO to NRC, Serial 89-572B, Surry Power Station Units 1 and 2, Supplemental Response to Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, April 30, 1991

Letter from VEPCO to NRC, Serial 89-572F, Surry Power Station Units 2, Response to Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, July 8, 1991
Letter from VEPCO to NRC, Serial 89-572G, Surry Power Station Units 1 and 2, Consolidated Response to Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, October 2, 1991
Letter from VEPCO to NRC, Serial 91-087, Surry Power Station Units 1 and 2, Reply to a Notice of Violation, NRC Inspection Report Nos 50-280/90-36 & 50-281/90-36, March 14, 1991
Letter from VEPCO to NRC, Serial 91-749, Surry Power Station Units 1 and 2, Updated Response to Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, December 27, 1991
Letter from VEPCO to NRC, Serial 91-749A, Surry Power Station Units 1 and 2, Updated Response to Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, April 9, 1992
Letter from VEPCO to NRC, Serial 93-187, Surry Power Station Units 1 and 2, Updated Response to Generic Letter 89-13: Service Water System Problems Affecting Safety-Related Equipment, May 13, 1993
O-MCM-04-0401-01, Valve Disassembly Procedure, Revision 17
Surry Power Station Engineering Department Log, Service Water “A” 96-inch Inlet Line, April 27, 2011
Surry Power Station Updated Final Safety Analysis Report, Chapter 18, Programs and Activities That Manage the Effects of Aging, Revision 42
VPAP-0811, Service Water System Inspection and Maintenance Program, Revision 6
WM-AA-10, Work Management, Revision 0
WO 38102148330, PM: Open/Inspect Check Valve 02-MS-176-CKVALV
WO 38102148352, PM: Open/Inspect Check Valve 02-MS-178-CKVALV
WO 38102793166