



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

June 20, 2012

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 UNIT 1 – NRC POST-APPROVAL SITE INSPECTION FOR LICENSE
 RENEWAL, INSPECTION REPORT 05000280/2012009**

Dear Mr. Heacock:

On May 18, 2012, the U.S. Nuclear Regulatory Commission (NRC) completed a Post-Approval Site Inspection for License Renewal at your Surry Nuclear Station, Unit 1. The enclosed report documents the inspection results, which were discussed on May 18, 2012, with 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/

Steven J. Vias, Chief
Engineering Branch 3
Division of Reactor Safety

Docket Nos. 50-280
License Nos. DPR-32

Enclosure:
NRC Inspection Report 05000280/2012009
w/Attachment: Supplemental Information

cc w/encl: (See Page 3)

D. Heacock

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OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:DRP			
SIGNATURE	LFL	SJV	MAR1	GJM1			
NAME	L. Lake	S. Vias	M. Riley	G. McCoy			
DATE	6/ 13 /2012	6/ 18 /2012	6/ 13 /2012	6/ 13 /2012			
E-MAIL COPY	YES NO	YES NO	YES NO	YES NO			

OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRS\ENG BRANCH 3\INSPECTIONS\INSPECTION AREAS\LICENSE RENEWAL\SURRY AND NORTH ANNA\SURRY U1 IR 2012009 LR 71003 PHASE 1.DOCX

D. Heacock

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-280

License Nos: DPR-32

Report No: 05000280/2012009

Licensee: Virginia Electrical and Power Company

Facility: Surry Nuclear Station, Unit 1

Location: Surry, Virginia 23883

Dates: May 14 – 18, 2012

Inspectors: Louis Lake, Senior Reactor Inspector
Marcus Riley, Reactor Inspector

Approved by: Steven J. Vias, Branch Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000280/2012009; May 14 – 18, 2012; Surry Nuclear Station Unit 1; Post-Approval Site Inspection for License Renewal.

The report covers an inspection conducted by regional inspectors in accordance with Nuclear Regulatory Commission (NRC) Manual Chapter 2516 and NRC Inspection Procedure 71003, Post-Approval Site Inspection for License Renewal.

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 either being met, or where commitment actions had not been completed, that the licensee had administrative controls in place to ensure completion before 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 spring 2012 refueling outage, which is the last outage prior to the period of extended operation (PEO). The inspectors conducted this inspection in order to maximize observations of the actual implementation of license conditions, commitments, and Aging Management Programs (AMPs) before the PEO (June 25, 2012) that is associated with infrequently accessed areas. 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 NUREG 1766 – SER Related to the License Renewal of 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). A summary of the license renewal commitments for Surry Nuclear Station is also available in an NRC Memorandum dated March 6, 2007 (ML070640041).

Specifically, the inspectors verified that the licensee met the commitments associated with the one-time Reactor Pressure Vessel (RPV) Internal Inspections examinations described in NUREG-1766 and the UFSAR supplement. For those items that were not observed at the time of this inspection, the inspectors verified that the commitments either had been completed or in the case of internal inspections on the Surry Unit 2 Control Rod Guide Tubes (CRGTs), there was reasonable assurance that the examination would be completed prior to the Unit 2 PEO.

The inspection sample for the selected commitment item is described below. Specific documents reviewed are listed in the report attachment.

Commitment item 9 – Develop and Implement Inspection Program for Infrequently Accessed Areas

Commitment Item 9 specified that the licensee will develop and implement an inspection program for infrequently accessed areas. Implementation of the developed inspection program was to be performed one time between years 30 and 40 of the current operating license. The results of the inspections from the developed program were to be evaluated and form the basis for performing additional inspections, if needed.

The inspectors reviewed the licensing basis, program basis documents, implementing procedures and relevant condition reports. The inspectors verified that all of the infrequently accessed areas listed in the licensee's technical report LR-1768/2768 were

included in the newly developed program documents and that these documents reflected their applicability to the license renewal program. The inspectors also verified that these requirements were adequately translated into the UFSAR. Additionally, the inspectors interviewed the responsible plant personnel regarding this program and its implementation.

The inspectors conducted a containment walkdown to assess the material condition of the containment metal liner and the general condition of safety related system components located inside the containment. This walkdown was limited to those areas that were accessible during fuel movement and other significant maintenance activities. During this inspection an observation of general corrosion was identified on the external surfaces of the Component Cooling system piping. This condition had previously been identified and the licensee has developed a component cooling monitoring program that includes periodic visual examinations and ultrasonic thickness checks to maintain the wall thickness of the piping within acceptable values.

The inspectors also reviewed documentation of previous licensee inspections of the area in the containment known as the NI Sump Pump room. The documentation included photographs that showed significant boric acid buildup on piping, electrical conduits and electrical panels. The documentation also indicated that this boric acid buildup has been accumulating since 2007. This condition was entered into the licensee's corrective action program with corrective actions to remove the boric acid and conduct an evaluation of the effects the boric acid prior to plant startup at the end of the current refueling outage.

Item 14 – Follow Industry Activities Related to RPV Internals Issues Such as Void Swelling, Thermal and Neutron embrittlement, etc. Evaluate Industry Recommendations. Inspect Accordingly

Commitment Item 14 specified that the licensee would follow industry activities related to Reactor Vessel Internals such as void swelling, thermal and neutron embrittlement, etc., and to evaluate industry recommendations for these components.

In a response to a Request for Additional Information (RAI), the licensee stated that in order to meet the Commitment related to Reactor Vessel Internals, they would perform an evaluation to determine the reactor most susceptible to failure from an environmental fatigue aspect. The licensee also stated that they would subsequently perform a "one-time, focused inspection" on that most susceptible reactor. The evaluation performed by the licensee was documented in Engineering Transmittal (ET) ET-S-10-0067 and determined that for all but one of the aging issues, Surry Unit 1 was the most susceptible reactor. The lone exception was the Surry Unit 2 Control Rod Guide Tubes (CRGTs), which was determined to be the most susceptible component for one of the aging issues. The inspectors observed the one-time, focused inspection on the Surry Unit 1 reactor vessel components performed by the licensee which were based on the industry guideline MRP-228.

The inspectors also reviewed the licensee's actions to verify that they have followed industry activities related to issues with Reactor Vessel internals and that they have implemented activities for inspection of these components, and that they are based on industry guidelines. The inspectors also reviewed the current version of the UFSAR to

verify the commitment had been implemented in accordance with the LRA, the corresponding SER, and the licensee's response to the RAI.

Based on Surry Unit 2 CRGTs determined to be the most susceptible component for one of the aging issues, this commitment will not be completed until the RPV internals are inspected during the Unit 2 refueling outage scheduled this fall.

Commitment Item 19 – Develop and implement an inspection program for Non-EQ cables

Commitment Item 19 states that the licensee will develop and implement an inspection program for non-environmental qualification (EQ) cables one time between years 30 – 40 of the operating license and additional inspections every 10 years thereafter. As described in the updated final safety analysis report (UFSAR), the purpose of the Non-EQ Cable Monitoring activities is to perform inspections on a limited, but representative, number of accessible cable jackets and connector coverings that are utilized in non-EQ applications. In order to confirm that ambient conditions are not changing sufficiently to lead to age-related degradation of the in-scope cable jackets and connector coverings, initial visual inspections for the non-EQ application insulated power cables, instrumentation cables, and control cables (including low-voltage instrumentation and control cables that are sensitive to a reduction in insulation resistance) are performed in accordance with a station procedure.

The implementation of an inspection program for non-EQ cables includes the cables for nuclear instrumentation. Station procedures for nuclear instrumentation include testing cable resistance to obtain information to allow system engineers to analyze the health of the cables including indications of degraded cable insulation.

The inspectors reviewed the licensing basis, implementing procedures, and the updated final safety analysis report in accordance with inspection procedure (IP) 71003, "Post-Approval Site Inspection For License Renewal," to verify that the testing of the nuclear instrumentation equipment performed during the spring 2012 outage was implemented as stated in the commitment and that changes made to the implementation of the commitment were updated in the appropriate documents. Additionally, the inspectors directly observed the testing of power range NI-42 cables to verify that the cables showed no signs of deterioration or age related degradation in accordance with the license renewal commitment.

Commitment Item 27 – Develop and implement a program to control water intrusion into manholes at Surry

Commitment Item 27 states that the licensee will develop and implement a program to control water intrusion into manholes at Surry prior to the period of extended operation. NUREG 1766 and the UFSAR supplement describes this program as utilizing periodic inspections and design features such as drains or sump pumps to control the localized cable environment. Cables found to be wetted for any significant period of time will be tested using an appropriate test method that has been proven to accurately assess the cable condition. Maintenance procedure 0-MCM-1207-01, "Pumping of Security and Electrical Cable Vaults," is conducted annually to determine the extent of water in

manholes of interest for license renewal so that corrective action can be taken to avoid having the cable remain wetted. The manhole of interest for water intrusion at Surry is the electrical manhole #2, which contains the 34.5 kV power cables from the switchyard to the reserve station service transformer (RSST) "C".

The inspection of the manhole consists of a visual inspection conducted by civil engineers to determine the structural integrity of the cables, cable supports, and the walls of the manhole. The inspection also includes the use of a boroscope to examine if standing water is in long term contact with the equipment and supports.

The inspectors reviewed the licensing basis, implementing procedures, engineering evaluations, and work orders in accordance with inspection procedure (IP) 71003, "Post-Approval Site Inspection For License Renewal," to verify that the inspection of the manhole performed during the spring 2012 outage was implemented as stated in the commitment.

(2) Review of License Renewal Commitment Changes

The inspectors reviewed license renewal commitment change documents to verify the licensee followed the guidance in Nuclear Energy Institute (NEI) 99-04, "Guidelines for Managing NRC Commitment Changes," for change to Commitment Item 14. The inspectors verified that the licensee properly evaluated, reported, and approved where necessary, changes to license renewal commitments listed in the UFSAR in accordance with 10 CFR 50.59. Specifically, the inspectors reviewed the change to the commitment to perform the Reactor Vessel Internal Inspections in accordance with MRP-227, Pressurized Water Reactor Internals Inspection and Evaluation Guidelines.

(3) Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On May 18, 2012, the inspectors presented the inspection results to 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

B. Garber, Licensing
J. Rosenberger, Engineering Programs Manager
H. Warren, Supervisor Engineering Programs
M. Groshner, License Renewal Fleet Program Owner

LIST OF REPORT ITEMS

None

LIST OF DOCUMENTS REVIEWED

Procedures

0-MCM-1207-01, Pumping of Security & Electrical Cable Vaults, Rev. 6
0-USP-K4, Intake Canal Ductline Sump Hi Lvl, Rev. 000
1-IPM-NI-IR-001, Nuclear Instrumentation Immediate Range N-35 & N-36 Cable Testing, Rev. 0
1-IPM-NI-N-42, Nuclear Instrumentation Power Range N-42 Cable Testing, Rev. 0
03-9178681.002, Procedure for Hold Down Spring Height Measurement Tool, Rev. 0
54-ISI-370-002, Nondestructive Examination Procedure for Remote Underwater Visual Inspection of Westinghouse Reactor Pressure Vessel Internals for Pressurized Water Reactors in Accordance with MRP-228 (Inspection Standard for PWR Internals), Rev. 0
51-9173320-001, Engineering Information Record Technical Justification for Examination of Westinghouse CRGT Guide Cards

Corrective Actions

CR474321 – Boric Acid buildup found in Incore Sump Room RP to Clean
CR234722 – Boric Acid Buildup in Incore Sump Room
CR234721 – Engineering to Evaluate BA in Incore Sump Room
CR208747 – Engineering to determine required action on BA in Incore Sump Room
CR221909 – Document and inspect for neutron shield tank leakage
CR 457229 – Oil on floor behind the RCP oil collection tank
CR4475239 – NRC inspector identified issue during containment walkdown with general corrosion on CC piping

Drawings

11448-LRE-1A2, License Renewal Electrical Power Distribution One Line Integrated Schematic Surry Power Station – Unit 1, Rev. 0

Work Orders

38103129584, Inspect/Boroscope manhole as required, 3/8/12

Other Documents

ER-SU-5909, SPS program to inspect non-EQ Electrical Cables, Rev. 1

ETE-SU-2012-1013, Evaluation of Inspection Results for Manhole 00-EP-MH-DL2

IAW License Renewal Commitment 27

NUREG 1766, "Safety Evaluation Report Related to the License Renewal of North Anna Power Station, Units 1 and 2, and Surry Power Station, Units 1 and 2"

Surry Power Station-Updated Final Safety Analysis Report, Chapter 18, "Aging Management Programs and Activities"

UFSAR/ISFSI/SAR Change Request FS-2006-025, Periodic Monitoring of Affected Manholes for Corrective Action

CM-AA-ETE-101, Component Cooling Pipe in Containment Technical Evaluation