UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8931

March 25, 2002

Virginia Electric and Power Company
ATTN: Mr. David A. Christian
Senior Vice President and
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SUBJECT: NORTH ANNA AND SURRY POWER STATIONS - NRC INSPECTION REPORT 50-338/02-06, 50-339/02-06, 50-280/02-06 AND 50-281/02-06

Dear Mr. Christian:

On February 8, 2002, the NRC completed an inspection regarding your application for license renewal for the North Anna and Surry Power Stations. The enclosed inspection report presents the results of that inspection. The results of this inspection were discussed with members of your staff on February 8, 2002, in a public exit meeting at the Innsbrook Technical Center.

The purpose of this inspection was an examination of activities that support your application for a renewed license for the North Anna and Surry facilities. The inspection consisted of a selected examination of procedures and representative records, and interviews with personnel regarding the process of scoping and screening plant equipment to select equipment subject to an aging management review. For a sample of plant systems, inspectors performed visual examination of accessible portions of the systems to observe any effects of equipment aging.

The inspection concluded that the scoping and screening portion of your license renewal activities were conducted as described in your License Renewal Application and that documentation supporting your application is in an auditable and retrievable form. We concluded that your scoping and screening process was successful in identifying those systems, structures, and components required to be considered for aging management.

In accordance with 10 CFR 2.790 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/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Should you have any questions concerning this report, please contact Caudle Julian at (404) 562 - 4603.

Sincerely,

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Loren R. Plisco, Director
Division of Reactor Projects

Docket Nos. 50-338, 50-339 and 50-280, 50-281
License Nos. NPF-4, NPF-7 and DPR-32, DPR-37

Enclosure: NRC Inspection Report

cc w/encl: - See page 3

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.	50-338, 50-339 and 50-280, 50-281
License Nos.	NPF-4, NPF-7 and DPR-32, DPR-37
Report No:	50-338/02-06, 50-339/02-06, 50-280/02-06 AND 50-281/02-06
Licensee:	Virginia Electric and Power Company (VEPCO)
Facility:	North Anna Power Station, Units 1 & 2 and Surry Power Station, Units 1 & 2
Location:	1022 Haley Drive Mineral, Virginia 23117 5850 Hog Island Road Surry, VA 23883
Dates:	February 4 - 8, 2002
Inspectors:	B. Crowley, Reactor Inspector M. Farber, Reactor Inspector, RIII M. Scott, Reactor Inspector K. Van Doorn, Reactor Inspector H. Wang, Operations Engineer, NRR
Approved by:	Caudle Julian Team Leader Division of Reactor Safety

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SUMMARY OF FINDINGS

IR 05000338-02-06, IR 05000339-02-06, 05000280-02-06, 05000281-02-06; 02/4-8 /2002; Virginia Electric and Power Company North Anna Power Station, Units 1 & 2 and Surry Power Station, Units 1 & 2. License Renewal Inspection Program, Scoping and Screening.

This inspection of License Renewal activities was performed by four regional office engineering inspectors, and one staff member from the office of Nuclear Reactor Regulation. The inspection program followed was NRC Manual Chapter 2516 and NRC Inspection Procedure 71002. This inspection did not identify any "findings" as defined in NRC Manual Chapter 0610.

Documentation from the Scoping and Screening process was of good quality, detailed, thorough, and understandable. The inspection concluded that the scoping and screening portion of the applicant's license renewal activities were conducted as described in the License Renewal Application and that documentation supporting the application is in an auditable and retrievable form. The inspection concluded that the scoping and screening process was successful in identifying those systems, structures, and components required to be considered for aging management.

Report Details

I. Inspection Scope

This inspection was conducted by NRC Regional inspectors and members of the NRR staff to interview applicant personnel and to examine a sample of documentation which supports the license renewal application (LRA). This inspection team reviewed the results of the applicant's scoping of plant systems and screening of components within those systems to identify the list of components that need evaluation for aging management. The team selected a sample of systems, structures and components (SSCs) from the LRA scoping results to verify the adequacy of the applicant's scoping and screening documentation and implementation activities. For the selected in-scope systems/structures, the associated license renewal drawings, and the active/passive and short/long lived determinations of the selected SSCs were reviewed to confirm the accuracy of the applicant's results. In addition to the in-scope systems and structures, some systems that the applicant had determined not to be in scope for license renewal were selected for inspection. The inspectors reviewed supporting documentation and interviewed applicant personnel to confirm the accuracy of the LRA conclusions. For a sample of plant SSCs, inspectors performed visual examinations of accessible portions of the systems to observe any effects of equipment aging. The SSCs selected for review during this inspection are listed in Attachment 2 to this report.

II. Findings

A. Evaluation of Scoping and Screening of Mechanical Systems

The inspectors evaluated the applicant's scoping and screening process for mechanical components by reviewing a number of plant systems that the applicant determined to be within the scope of license renewal. The LRA states that the screening process involved identification of the plant safety related systems that were within scope of license renewal because they meet criterion 1; the system performs an intended safety function. Reports were prepared for criterion 2 (non safety related effecting safety related) and criterion 3 (the five regulated events required by 10CFR 54.4.a.3) to provide additional input to the scoping and screening processes. The preliminary scoping results were used as input to the screening process, which identified in-scope passive components. The short lived passive components that could be excluded from an AMR were identified as part of the AMR process. After completing screening at the component level, the scoping results were again reviewed and revised if required. Screening results were documented in individual license renewal (LR) Project Screening Reports for each system considered to be in scope. LR drawings were developed for each in-scope system, high-lighting the portion of the system requiring aging management. Scoping and screening methods were documented in applicant's procedure LR-1000/2000 "License Renewal System/Structure Scoping ," Revision 3, January 31, 2002, and License Renewal Project Guideline LRPG-201 "System and Structure Screening Surry and North Anna Power Stations," Revision 4, February 1, 2002.

During review of LR drawings, the inspectors noted that some portions of systems which were not required for system functions within the rule had been excluded. In addition, it was not clear from the LR drawings whether non safety related (NSR) systems in the proximity of safety related (SR) systems were depicted as in scope. The applicant stated that, as a result of a Request for Additional Information (RAI) from the NRC staff, the definition of NSR equipment

that could effect SR equipment had been expanded. The expanded definition is, if NSR systems or portions of systems are fluid containing or potential fluid containing and have a spatial relationship with an SSC which is in scope, then these NSR systems would also be included in scope. This resulted in a significant increase in plant equipment being in scope for some systems. This definition was described in the LRA, Sections 2.1.2.2 and 2.1.3.6; the applicant's response to RAI 2.1-3, dated February 1, 2002; and Technical Report LR1921/LR2921, Aging Management of Criterion 2 (NS>SR) Component Groups Not Addressed in Aging Management Review Reports. The LR drawings had not been updated to high-light the numerous instances of NSR in proximity to SR equipment based on the expanded definition. The applicant has decided to not update the LR drawings and the team agreed that this was not necessary because the cost would be too high for the small value added. The inspectors agreed with the applicant's conclusion.

Unless otherwise noted, the paragraphs below address both North Anna and Surry. The following systems/structures were reviewed:

1. Reactor Coolant (RC) System

The RC System consists of systems and components designed to contain and support the nuclear fuel, contain and provide a pressure boundary for the reactor coolant, and transfer the heat produced in the reactor core to the steam and power conversion system. For each unit, the system consists of three heat transfer loops connected in parallel to the reactor vessel (RV). Each loop contains a steam generator, a pump, loop piping, and instrumentation. The pressurizer surge line is connected to the hot leg of the C loop. The licensee also included the neutron shield tank in the RC system, which provides support for the reactor vessel and limits heat transferred to the primary shield wall concrete. Piping connections are provided in the RC piping for auxiliary systems, such as safety injection (SI) and residual heat removal (RH). For licensee renewal, the applicant included the following components in the LRA under the RC System: reactor coolant piping, presssurizer, RV, RV internals, reactor coolant pumps, steam generators, and the neutron shield tank. The inspectors reviewed the applicable LRA sections, UFSAR, System Design Basis Document (SDBD), LR drawings, and scoping and screening documents for the system. All of the major components and associated piping, including instrumentation piping, the RC pump oil collection system, and the neutron shield tank, were considered in scope by the applicant. The inspectors found that the applicant had performed scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

2. Component Cooling Water (CC) System

The CC system is an intermediate closed cooling water system that transfers heat from safety-related and non safety related components to the service water (SW) system during normal and emergency operation. Each plant has four CC pumps and heat exchangers, or four subsystems shared between units. Some of the more important cooling loads are: the RH heat exchangers and pump seal coolers; the seal water heat exchangers; fuel pit coolers; the nonregenerative heat exchangers; the neutron shield tank coolers; excess letdown heat exchangers; and various RC system components (pump thermal barrier, bearing oil coolers, and motor-stator outlet air). The major components included are four CC pumps, four CC heat exchangers, a CC surge tank, a chemical addition tank, coolers for the various components/structures cooled, and associated piping, valves and instrumentation. The inspectors reviewed the applicable LRA sections, UFSAR, the SDBD, LR drawings, and scoping and screening documents for the system. The applicant considered essentially all of

the CC system in LR scope. Additional portions of the system not originally included in scope were to be added as a result of the RAI 2.1-3 response, as described above. The inspectors found that the applicant had performed scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

3. Auxiliary Steam (AS) System

The AS system header distributes 150 psig to 225 psig steam throughout the plant for auxiliary services. Some of the services include the containment vacuum ejectors, boric acid batch tank, chilled water units, and primary water tank heaters. Steam is supplied from either the main steam or extraction steam systems, depending on turbine-generator load, or the auxiliary boilers. The inspectors reviewed the applicable LRA sections, UFSAR, SDBD, LR drawings, and scoping and screening documents for the system. The portion of the system included in LR scope was the steam pressure regulating valves and associated bypass isolation valves piping just off the main steam header credited with providing main steam pressure boundary. Also, a section of piping for containment isolation was included. Additional portions of the system not originally included in scope were to be added as a result of RAI 2.1-3. The inspectors found that the applicant had performed scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

4. Blowdown (BD) System

The BD system provides a flow path for the continuous blowdown flow from each steam generator secondary side to maintain acceptable steam generator water chemistry. The system consists of blowdown pumps, coolers, tanks and associated piping and valves. The inspectors reviewed the applicable LRA sections, UFSAR, SDBD, LR drawings, and scoping and screening documents for the system. The portion of the system in LR scope consists of the components from the steam generator to the first manual isolation valves downstream of the outboard containment isolation valves. In addition, for Surry, the portion of the system that provides the circulating water system pressure boundary at the connection to the CW outlet from the main condenser is also included. For North Anna, the portion of the system that provides CC system pressure boundary at the BD system vent condenser is included. Additional portions of the system not originally included in scope were to be added as a result of RAI 2.1-3. The inspectors found that the applicant had performed scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

5. Condensate (CN) System

The CN system provides chemically treated water to the suction of the main feedwater pumps at sufficient pressure to support main feedwater pump operation. The system also provides piping, water storage, and make-up supply for auxiliary feedwater. The system consists of the main condenser, the hotwell, three condensate pumps, a condensate storage tank, an emergency condensate storage tank, seven ion exchangers and associated piping and valves. The inspectors reviewed the applicable LRA sections, UFSAR, SDBD, LR drawings, and scoping and screening documents for the system. The portion of the system containing emergency condensate storage tanks and piping to the suction of the auxiliary feedwater pumps are included in the scope of license renewal. In addition, for Surry, the portion of the system that provides the CC system pressure boundary at the make-up connection to the CC surge tank is in scope. Additional portions of the system not originally included in scope were to be added as a result of RAI 2.1-3. The inspectors found that the applicant had performed

scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

6. Feedwater (FW)

The FW system is comprised of the main feedwater and auxiliary feedwater. The system consists of piping and components required to provide treated water to the steam generators to maintain an adequate heat sink for the RC, provide for isolation following a loss-of-coolant accident or steam line break, and assist in maintaining steam generator (SG) water chemistry. Main feedwater components provide a flow path for auxiliary feedwater flow to the SGs. Auxiliary feedwater provides an emergency source of water to provide a heat sink during design basis accidents. The main feedwater system consists of two pumps, low pressure and high pressure feedwater heaters, and associated piping and valves. The auxiliary feedwater sub-system consists of three pumps (1 turbine-driven and 2 motor-driven) and associated piping and valves. The source of water for the auxiliary feedwater pumps is the emergency condensate storage tank. The inspectors reviewed the applicable LRA sections, UFSAR, SDBD, LR drawings, and scoping and screening documents for the system. The applicant considered the portion of the FW system from the high-energy line break (HELB) boundary outside the containment downstream to the SG FW nozzles, and the auxiliary FW pumps and discharge line components up to the feedwater piping connection to be in scope. In addition, the auxiliary FW pump lubricating oil and seal cooling components were considered in scope. Also, the back-up compressed air components required for the function of the feedwater isolation valves were considered in scope. Additional portions of the system not originally included in scope were to be added as a result of RAI 2.1-3. The inspectors found that the applicant had performed scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

7. Main Steam (MS) System

In addition to transporting steam produced in the SG to the main turbine, the MS provides motive steam to the turbine-driven auxiliary feed pump; removes heat from the RC system via code safety valves, SG power-operated relief valves, and/or condenser steam dump valves; and isolates steam flow to the main turbine following a reactor trip or during accident conditions to prevent an excessive cooldown that could adversely affect the reactor. The system consists of piping from the SGs to the main turbine, safety and relief valves, main steam trip valves, steam dump valves, and moisture separator reheaters. The inspectors reviewed the applicable LRA sections, UFSAR, SDBD, LR drawings, and scoping and screening documents for the system. The applicant considered the major flowpaths from the SG outlet nozzles to the turbine stop valves and the condenser steam dump valves in LR scope. The boundary extended beyond the safety related boundary of the system based on HELB analysis, station blackout (SBO), and Appendix R requirements. Additional portions of the system not originally included in scope were to be added as a result of RAI 2.1-3. The inspectors found that the applicant had performed scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

8. Fuel Pit Cooling (FC) System

The FC system transfers heat from the spent fuel pool to the CC system and provides a means for water chemistry control for the spent fuel pool. The system consists of 2 spent fuel pit cooling pumps, 2 fuel pit coolers, a skimmer pump, and associated piping and valves. The inspectors reviewed the applicable LRA sections, UFSAR, SDBD, LR drawings, and scoping

and screening documents for the system. The portion of the system containing components that support the capability of removing heat from the spent fuel pool, which includes the majority of the system, is in LR Scope. Additional portions of the system not originally included in scope were to be added as a result of RAI 2.1-3. The inspectors found that the applicant had performed scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

9. Containment Access (CE) (North Anna Only)

The personnel hatch hydraulics system operates the personnel hatch inner and outer doors. The system consists of a motor driven pump, hand pumps, and associated piping and valves. The only portions of the system in scope are the test connections, the inner and outer equalizing valves, and piping from the equalizing valves to the inner and outer doors. These components are in scope for maintaining containment pressure boundary. The inspectors reviewed the applicable LRA sections, UFSAR, LR drawings, and scoping and screening documents for the system. The inspectors found that the applicant had performed scoping and screening for this system in accordance with the methodology described in the LRA and the rule.

10. Chemical and Volume Control System (CH)

The CH functions to maintain proper water inventory in the RC; transfer, add, and adjust concentration of boron for reactivity control; provide seal water for RC pump shaft seals; provide chemistry control of reactor coolant; provide a means to fill and drain the RC; process RC letdown; and provide high-pressure flow to the safety injection system(SI). The system contains piping and valves and the following major components: boric acid storage tanks, demineralizers, a chemical mixing tank, a boric acid batch tank, a volume control tank, boric acid transfer pumps, charging pumps, and heat exchangers. The inspectors reviewed the UFSAR, LR drawings, and scoping and screening documents for the system. The applicant considered all of the major components; except for the chemical mixing tank, boric acid batch tank, and a hydrogen manifold; and essentially all of the associated piping, pressure retaining portions of components, and instrumentation tubing to be in scope for license renewal. The inspectors concluded that the applicant had performed scoping and screening for this system and identified the mechanical components subject to aging management in accordance with the methodology described in the LRA and the rule.

11. Quench Spray System (QS)

The North Anna QS system which is equivalent to the Containment Spray System at Surry, functions to limit containment post-accident peak pressure and temperature to within design limits and to reduce post accident airborne iodine concentration. The system is composed of two motor-driven pumps which take suction from the refueling water storage tank (RWST), associated valves, spray headers, and piping to direct flow from the RWST and into containment through the spray headers. The system also includes components for recirculation and cooling of the RWST. The inspectors reviewed the system scoping and screening documents, LR drawings, the UFSAR, and design basis information. The applicant considered all the components in the flow path from the RWST to the spray headers to be in scope. The inspectors concluded that the applicant had performed scoping and screening for this system and identified the mechanical components subject to aging management in accordance with the LRA and the rule.

12. Recirculation Spray System (RS)

The RS functions to provide long term heat removal from the containment atmosphere and core cooling water following a design basis accident. Water collected in the containment sump is pumped by two outside RS pumps and two inside RS pumps through heat exchangers to spray headers at the top of the containment. A pump casing cooling system is also provided at North Anna. The inspectors reviewed the system scoping and screening documents, LR drawings, the UFSAR, and design basis information. The applicant considered all the components in the flow path from the sump to the spray headers to be in scope. The inspectors concluded that the applicant had performed scoping and screening for this system and identified the mechanical components subject to aging in accordance with the LRA and the rule.

13. Residual Heat Removal System (RH)

The RH functions to transfer heat from the RC to the CC system during shutdown conditions by taking suction from the RC Loop A hot leg and returning via heat exchangers to the RC Loops B and C cold legs. The system consists of two independent, redundant trains, each containing a pump, heat exchanger, and associated piping and components. The inspectors reviewed the system scoping and screening documents, LR drawings, and the UFSAR. The applicant considered essentially all the components in the flow path to be in scope. The inspectors concluded that the applicant had performed scoping and screening for this system and identified the mechanical components subject to aging management in accordance with the LRA and the rule.

14. Safety Injection System (SI)

The SI functions to provide emergency core cooling and reactivity control during and following design basis accidents. The system includes two high head injection pumps (the CH charging pumps perform this function), two low head injection pumps, three hydro-pneumatic accumulator tanks, and associated piping and components. The system provides injection of borated water directly into the RC and also is capable of long term decay heat removal by recirculating coolant, cooled by the RH, from the containment sump. The inspectors reviewed the system scoping and screening documents, LR drawings, the UFSAR, and design basis documentation. The applicant considered essentially all the components required for function of the injection flow paths to be in scope. The inspectors concluded that the applicant had performed scoping and screening for this system and identified the mechanical components subject to aging management in accordance with the LRA and the rule.

15. Chilled Water System (CD)

The North Anna CD system which is equivalent to portions of the Surry component cooling, ventilation, and bearing cooling water systems, functions to provide chilled water to the main control room and emergency switchgear room air-conditioning chilled water system to remove heat from the control room envelope. In addition, the CD provides chilled water to various plant loads including the containment air recirculation coolers. The inspectors reviewed the systems scoping and screening documents, LR drawings, the UFSAR, and design basis documentation. The applicant considered the portions of the systems which support control room envelope cooling and the containment pressure boundary portions to be in scope. The inspectors concluded that the applicant had performed scoping and screening for this system and identified the mechanical components subject to aging management in accordance with the LRA and the rule.

16. Containment Vacuum System (CV)

The CV functions to provide the initial subatmospheric pressure in containment and to maintain that pressure during operation and also provides a flowpath for the post-accident hydrogen analyzer. The CV consists of a steam jet air ejector, two mechanical vacuum pumps, and the required piping, valves, and instrumentation. The inspectors reviewed scoping and screening documentation, LR drawings, the UFSAR, and design basis documentation. The applicant considered the portions of the system which perform a containment pressure boundary function to be in scope. The inspectors concluded that the applicant had performed scoping and screening for this system and identified the mechanical components subject to aging management in accordance with the LRA and the rule.

17. Vacuum Priming System (VP)

The VP consists of three vacuum pumps, piping, and components which function to remove non-condensable gases from various plant systems. The inspectors reviewed scoping and screening documentation, LR drawings, and the UFSAR. The applicant considered the portions of the system which perform a containment pressure boundary function to be in scope. For Surry, the applicant also considered the portions which perform a circulating water pressure boundary and portions which provide a vent path for the component cooling heat exchangers that form a service water pressure boundary to be in scope. The inspectors concluded that the applicant had performed scoping and screening for this system and identified the mechanical components subject to aging management in accordance with the LRA and the rule.

18. Vacuum Priming Seal Water (VSW)

The VSW functions to provide seal water for the circulating water system. The system does not provide a function required by the rule. The applicant considered this system not to be in scope. The inspectors reviewed scoping information, the UFSAR, and design basis documentation. The inspectors agreed with the applicant's conclusion.

19. Service Water (SW)

At both sites, the SW system transfers heat from plant systems and components to the ultimate heat sink. In the case of Surry, water gravity flows from the high-level intake canal structure in and through the Circulating Water system into separate lines of the attached SW system then through the components that need to be cooled. In the case of North Anna, the SW is pumped from the SW reservoir (spray pond) or the Lake Anna reservoir into the plant.

The Surry SW system includes diesel-driven emergency service water pumps located at the low-level intake structure in the Emergency Service Water Pump House at the James River level. These pumps and in scope Circulating Water intake structure are designed to provide water from the river to the higher intake canal during emergency conditions when the circulating water pumps are unavailable.

With its different configuration, the North Anna site has in scope two auxiliary SW pumps that are installed in the main circulating water intake structure on Lake Anna and four main SW pumps at the SW reservoir pump house. SW is normally recirculated through the plant via the main pumps and back to the spray pond. The auxiliary pumps are able to provide an alternate supply of water to the SW supply headers. An alternate return path is also provided to the

Circulating Water discharge tunnel from the SW return headers. The auxiliary pumps or the not-in-scope screen wash pumps can make up to maintain the level of the SW reservoir.

The SW system at both sites primarily consists of components that provide cooling water to the heat exchangers of various plant systems. The portion of the SW system that is subject to aging management review consists of the emergency or auxiliary SW pumps and associated auxiliary equipment, and components that provide cooling water to the recirculation spray heat exchangers, the component cooling heat exchangers, the control room chiller condensers, and the charging pump lubricating oil and seal water cooling subsystems. The SW system components that could result in plant flooding in the event of a failure also require an aging management review.

The inspectors reviewed the appropriate scoping documents, UFSAR sections, system design basis and selected detail drawings in the review process. The inspector concluded that the applicant had performed scoping and screening for the SW system in accordance with the methodology described in the LRA and the Rule.

20. Circulating Water (CW)

As discussed in the SW section for Surry, the CW system provides the source of water for the ultimate heat sink during normal and emergency plant operations. Circulating water pumps discharge water from the James River into the high intake canal, the ultimate heat sink. The high intake canal water level is at a greater elevation than the discharge point and gravity flow delivers water to plant systems and components. At Surry, the high canal and many of its structural components are in scope. The CW system provides a heat sink for the main condenser and is the source of water for the SW system.

For North Anna, the CW system does not transport the ultimate heat sink flow and therefore was mostly not concluded to be in scope. The inspectors agreed with this conclusion.
The North Anna Power Station lake Intake Structure contains the CW intake tunnel header, Auxiliary SW Pump House, Fire Pump House, and Intake Structure Control House. The Intake Structure is located on the shore of the North Anna reservoir (Lake Anna). Circulating water is withdrawn from the Lake Anna into the Intake Structure to provide cooling water for the main condensers for Units 1 and 2. Backup, auxiliary SW for Units 1 and 2 and make-up water for the separate, SW spray pond, the ultimate heat sink, is also provided from the Intake Structure, through separate water lines. The Intake Structure is an eight-bay (four bays per unit) reinforced concrete structure that serves both units. There is a total of eight trash racks, but only the two trash racks associated with the safety related auxiliary SW Pump House and one trash rack associated with the auxiliary fire pump are within the scope of license renewal.

The inspectors reviewed the appropriate scoping documents, UFSAR sections, system design basis and selected detail drawings in the review process. The inspector concluded that the applicant had performed scoping and screening for the CW system in accordance with the methodology described in the LRA and the Rule.

21. Alternate AC (AAC) Diesel Generator Systems

This section addresses the following plant systems:
- AAC system diesel and breaker arrangement
- AAC diesel cooling water (BCW) system
- AAC diesel fuel oil (BFO) system

- AAC diesel lubricating oil (BLO) system
- AAC diesel starting air (BSA) system

The AAC system, installed in response to 10 CFR 50.63, provides AC power to one emergency electrical bus on the selected unit during a postulated Station Blackout (SBO) event. The AAC diesel generator system consists of the diesel generator and associated support systems. The portion of the AAC diesel generator system that is subject to aging management review consists of the components that are required for the operation of the AAC diesel generator to meet SBO requirements. The engine and electrical generator are active components and, therefore, are not subject to aging management review.

The inspectors reviewed the appropriate scoping documents, UFSAR sections, system design basis and selected detail drawings in the review process. The licensee did not place the service air in the AAC building in scope and the inspectors agreed with that decision. The inspectors concluded that the applicant had performed scoping and screening for the AAC system in accordance with the methodology described in the LRA and the Rule.

22. Emergency Diesel Generator (EG) Systems

The Surry EG system includes the following plant systems:

- Emergency electrical power (EE) system
- Emergency generator (EG) system

The Surry emergency electrical power (EE) and emergency generator (EG) systems are functionally equivalent to the North Anna emergency diesel generator cooling (EC), emergency diesel generator lubrication (EL), emergency diesel generator starting air (EB), emergency generator (EG), and fuel oil (FO) systems.

The EG is a diesel engine-driven electrical generator that provides a backup source of electrical power to the emergency electrical bus in the event that the normal supply is unavailable. The EG systems consist of the diesel generator and associated support systems. The portion of the EG system that is subject to aging management review consists of the components that are required for the operation of the EGs. The engine and electrical generator are active components and, therefore, are not subject to aging management review.

The inspectors reviewed the appropriate scoping documents, UFSAR sections, system design basis and selected detail drawings in the review process. The inspector concluded that the applicant had performed scoping and screening for the EG and support systems in accordance with the methodology described in the LRA and the Rule.

23. Leakage Monitoring (LM)

The leakage monitoring (LM) system provides Containment pressure signals to the engineered safety features actuation system. The system is also designed to provide pressure sensing during Containment leak rate testing. The portion of the LM system that is subject to aging management review consists of the components that perform a Containment pressure boundary function as part of the LM system Containment penetrations, inclusive of the systems Containment isolation valves.

The inspectors reviewed the appropriate scoping documents, UFSAR sections, system design basis and selected detail drawings in the review process. The inspectors concluded that the applicant had performed scoping and screening for the LM system in accordance with the methodology described in the LRA and the Rule.

24. Small Containment Penetrations

The Containment has numerous mechanical and electrical penetrations that form part of the Containment pressure boundary, all of which are within the scope of license renewal. The large locks, hatches, and LM system are not a part of this section. The penetrations are welded to the Containment liner and provide a seal between Containment and the outside atmosphere. High temperature piping penetrations include inner and outer coolers to limit the heat transferred to the Containment concrete wall. The high temperature penetrations are cooled by the Component Cooling System.

The internal surfaces of the Containment penetration process piping, the external surfaces of the process piping from the first attachment weld to the piping system both inside and outside of the Containment, and the associated Containment isolation valves are scoped and evaluated for aging management with the applicable process system. The inner and outer coolers attached to the high temperature pipe penetrations are scoped and evaluated for aging management with the Component Cooling system.

The electrical penetration assemblies, excluding sleeves and “O”-rings, are within the scope of the Environmental Qualification Program (Section 2.5 of the application). The ventilation dome opening has a hatch cover located on the outside of the Containment, which is filled with concrete.

The inspectors reviewed the appropriate scoping documents, UFSAR sections, system design basis and selected detail drawings in the review process. The inspector concluded that the applicant had performed scoping and screening for the subject penetrations in accordance with the methodology described in the LRA and the Rule.

25. Fuel Handing Equipment (FH), Load-handling Cranes and Devices

The load-handling cranes and devices within the scope of license renewal are listed below:

Containment polar cranes (supported by the Containment crane wall)
Containment annulus monorails
Containment jib cranes
Refueling manipulator cranes
Fuel handling bridge crane
Spent fuel crane
New fuel transfer elevator
Auxiliary Building monorails

The elements of load-handling cranes and devices that are subject to aging management review are limited to those load-bearing elements and structural elements that support load handling in a passive manner. This includes the structural beams, girders, columns, trolley rails, base plates, and anchors for attachment to structures, and retaining clips.

The inspectors reviewed the appropriate scoping documents, UFSAR sections, system design basis and selected detail drawings in the review process. The inspector concluded that the applicant had performed scoping and screening for the FH equipment in accordance with the methodology described in the LRA and the Rule.

26. Compressed Air (CA) System (North Anna)

The CA system provides an emergency source of breathing-quality air for operators for a period in excess of the design period required to return a containment to subatmospheric pressure after a design-basis accident. This air will also pressurize the main control room (MCR) area sufficiently to ensure only outward leakage. The compressed air supply bottles are sized to supply enough air to pressurize the space to 0.05-inch W.G. and to make up for leakage. Pressurization of the MCR envelope is required for postulated accidents involving radioactive release in order to limit the dose to control room personnel. The CA system consists of compressed breathing air bottles, piping and valves. The portion of the CA system that is subject to aging management review consists of the air bottles, distribution piping, and other passive components that provide pressurization air upon a system actuation. The inspectors reviewed the UFSAR, section 9.4.1; section 2.3.3.13 of the LRA; applicable LR drawings; and scoping and screening reports for CA. The inspectors concluded that the applicant had performed scoping and screening for the CA system in accordance with the methodology described in the North Anna LRA and the rule.

27. Main Control Room and Emergency Switchgear Room Ventilation (MCR/ESGR) System (Surry)

The main control room and emergency switchgear room (MCR/ESGR) is a subsystem of the Surry ventilation (VS) system. The pressurization of the MCR envelope is required for postulated accidents involving radioactive release in order to limit the dose to control room personnel until the containment can be restored to subatmospheric pressure following a design basis accident (i.e., within one hour). Pressurization is performed by the MCR/ESGR bottled air system initially, and by the MCR/ESGR emergency ventilation system for the long term. The bottled air system consists of compressed breathing air bottles, piping, and valves. Redundant bottled air banks provide a minimum of 33,000 standard cubic feet each of free air, and each bank is sufficient for approximately one hour of pressurization. The inspectors reviewed the UFSAR, section 9.13.3.6; section 2.3.3.21 of the LRA; applicable LR drawings; and scoping and screening reports for CA. The portion of the MCR/ESGR subsystem that is subject to aging management review consists of the air bottles, distribution piping, and other passive components that provide pressurization air upon a system actuation. The inspectors concluded that the applicant had performed scoping and screening for the MCR/ESGR subsystem in accordance with the methodology described in the Surry LRA and the rule.

28. Instrument Air (IA) System (North Anna)

The instrument air (IA) system provides a reliable source of clean, dry, oil-free compressed air to air-operated valves, instruments, and other miscellaneous components in the plant. Critical components that require compressed air in order to perform intended functions are provided with backup subsystems and do not rely upon the normal IA system as the sole source of compressed air. The system consists of two (one per unit) motor-driven compressors, two motor-driven containment instrument air compressors, receivers, dryers, filters, strainers, associated valves, instruments, piping, orifices, tubing, fittings, and coolers. The inspectors reviewed the UFSAR, section 9.3.1; section 2.3.3.14; applicable LR drawings; and scoping and

screening reports for IA. The portion of the IA system that is subject to aging management review consists of the components that perform a containment pressure boundary function as part of the IA system containment penetration, and the backup compressed air subsystem components that provide for operation of critical components. The IA compressor coolers perform a service water system pressure boundary function and are also subject to aging management review. The inspectors concluded that the applicant had performed scoping and screening for the IA system in accordance with the methodology described in the North Anna LRA and the rule.

29. Instrument Air (IA) System (Surry)

The instrument air (IA) system is a subsystem of the compressed air system and provides a reliable source of clean, dry, oil-free compressed air to air-operated valves, instruments, and other miscellaneous components in the plant. Critical components that require compressed air in order to perform intended functions are provided with backup subsystems and do not rely upon the normal IA system as the sole source of compressed air. The system is equipped with two (one per unit) 100% capacity electric motor-driven air compressors, two water-sealed, rotary containment instrument air compressors, receivers, dryers, filters, strainers, associated valves, instruments, piping, orifices, tubing, fittings, and coolers. The inspectors reviewed the UFSAR, section 9.8; section 2.3.3.14 of the LRA; applicable LR drawings; and scoping and screening reports for IA. The portion of the IA system that is subject to aging management review consists of the components that perform a containment pressure boundary function as part of the IA system containment penetration, and the backup compressed air subsystem components that provide for operation of critical components. The containment IA compressor after coolers perform a component cooling water system pressure boundary function and are also subject to aging management review. The inspectors concluded that the applicant had performed scoping and screening for the IA system in accordance with the methodology described in the Surry LRA and the rule.

30. Service Air (SA) System (North Anna)

The SA system provides a source of compressed air to support plant general service compressed air requirements. The SA system can be used as a source of compressed air to the IA system. The system contains two (one per unit) 100% capacity motor-driven air compressors, receivers, filters, strainers, associated valves, instruments, piping, orifices, tubing, fittings, and coolers. The service air compressors are the primary source of compressed air to both the service air and instrument air subsystems during normal station operation. The inspectors reviewed the UFSAR, section 9.3.1; section 2.3.3.16 of the LRA: applicable LR drawings; and scoping and screening reports for SA. The portion of the SA system that is subject to aging management review is limited to components that perform a containment pressure boundary function as part of the SA system containment penetration. The inspectors concluded that the applicant had performed scoping and screening for the SA system in accordance with the methodology described in the North Anna LRA and the rule.

31. Service Air (SA) System (Surry)

The SA system is a subsystem of the compressed air system and provides a source of compressed air to support plant general service compressed air requirements. The SA system can be used as a source of compressed air to the IA system. The system contains two (one per unit) 100% capacity motor-driven air compressors, a shared diesel-powered compressor, receivers, filters, strainers, associated valves, instruments, piping, orifices, tubing, fittings, and

coolers. The service air compressors are the primary source of compressed air to both the service air and instrument air subsystems during normal station operation. The inspectors reviewed the UFSAR, section 9.17; section 2.3.3.16 of the LRA; applicable LR drawings; and scoping and screening reports for SA. The portion of the SA system that is subject to aging management review is limited to components that perform a containment pressure boundary function as part of the SA system containment penetration. The inspectors concluded that the applicant had performed scoping and screening for the SA system in accordance with the methodology described in the Surry LRA and the rule.

32. Post-accident Hydrogen Removal (HC) System (North Anna)

The HC system provides the capability to monitor and control the post-accident containment atmosphere hydrogen concentration. The system consists of two identical portable skid-mounted hydrogen recombiners, two hydrogen analyzers, two purge blowers, filters, strainers, expansion joints, flexible connections, flow elements, associated valves, piping, and tubing. The system and its components are common to both reactor units. The skid-mounted recombiners are hooked up to the reactor containments, and the system is designed to allow either recombiner to be operational on either containment in 24 hours or less after a loss of coolant accident. The inspectors reviewed the UFSAR, section 6.2.5; section 2.3.3.28 of the LRA; applicable LR drawings; and scoping and screening reports for HC. The portion of the HC system that is subject to aging management review consists of the components that are associated with containment hydrogen monitoring and control, and that perform a containment pressure boundary function as part of the HC system containment penetration. The inspectors concluded that the applicant had performed scoping and screening for the HC system in accordance with the methodology described in the North Anna LRA and the rule.

33. Gaseous Waste (GW) System (Surry)

The gaseous waste (GW) system provides holding capacity and processing for potentially radioactive gases collected from various plant systems. The GW system also provides the capability to monitor and control the post-accident containment atmosphere hydrogen concentration via the hydrogen analyzer and recombiner units. The in-scope portion is functionally equivalent to the North Anna post-accident hydrogen control (HC) system. The scoped portion of the system consists of two identical portable skid-mounted hydrogen recombiners, hydrogen analyzers, flexible connections, associated valves, piping, and tubing. The inspectors reviewed the UFSAR, section 6.2.3.12; section 2.3.3.26 of the LRA; applicable LR drawings; and scoping and screening reports for GW. The portion of the GW system that is subject to aging management review consists of the components that are associated with containment hydrogen monitoring and control, and that perform a containment pressure boundary function as part of the GW system containment penetration. The inspectors concluded that the applicant had performed scoping and screening for the GW system in accordance with the methodology described in the Surry LRA and the rule.

During the review of the LR drawings for the GW system, the inspectors noted that the hydrogen recombiners, while clearly within the scope of the system, did not appear on any of the LR drawings identified in the LRA. This apparent discrepancy was brought to the licensee's attention. The explanation involved significant differences in the recombiner installations between the two plants. At Surry, the hydrogen recombiners are two standalone cubicles inside the containment, supplied with safety related electrical power for the heating element; no process piping is incorporated and the recombiners function through natural convection. At North Anna, the recombiners are outside of the containment, use blowers to draw hydrogen

from the containment and return water vapor to the containment, and have associated process valves and piping. Because there is no process piping associated with the Surry recombiners there was no indication of their presence on the boundary drawings. This significant difference in recombiner installations was not addressed in the LRAs for either plant, the screening reports, nor was it evident from the UFSARs for either plant. The licensee acknowledged this circumstance, stated that significant differences between the two stations were intended to be highlighted, and this occurrence was an oversight.

B. Evaluation of Scoping and Screening of Electrical Systems

The inspectors observed that the scoping and screening of electrical systems employed significantly different methods than the mechanical or structural disciplines. The method used to determine which electrical and I&C components are subject to an aging management review was organized based on component groups. This method was selected for use with the electrical and I&C components since most electrical and I&C components are active, thus, the applicant concluded that this method provided the most efficient means for determining electrical and I&C components that require an aging management review. The method is consistent with the industry guidance documented in NEI 95-10.

Component groups within the scope of license renewal were identified beginning with the generic industry list from NEI 95-10, Appendix B. The list of electrical component groups was then narrowed to those that perform an intended function without moving parts or without a change in configuration or properties, i.e. the criterion of 10 CFR 54.21(a)(1)(i). Passive component groups that are not subject to replacement based on a qualified life or specified time period, i.e. the screening criterion of 10 CFR 54.21(a)(1)(ii) were next identified as requiring an aging management review.

The applicant concluded that only the following electrical/I&C component groups performed an electrical passive function in support of system intended functions:

Cable and connectors: Cables and connectors within the scope of the Environmental Qualification (EQ) Program are the subject of time-limited aging analyses (TLAA). Therefore the applicant concluded that only non-EQ cables and connectors require an aging management review.

Electrical penetrations: All electrical penetration assemblies are within the scope of the EQ Program and are also the subject of a TLAA.

Bus duct: A bus duct is a component assembly conducting electrical power between equipment using a pre-assembled raceway (enclosure) design, with conductors installed on insulated supports. The non-segregated bus ducts in the scope of license renewal used at the site are the totally enclosed non-ventilated type. These bus ducts are located above the switchgear, and are connected to the top of the entry cubicles.

The applicant concluded that the following non-segregated bus ducts are within the scope of license renewal, with the reason indicated in parentheses:

The three 3000-ampacity bus ducts of Transfer Buses D, E, and F. (Station Blackout)

The four 1200-ampacity bus ducts of the H and J buses for each of the two units. (Safety related)

The inspectors found the methodology and the conclusions reached by the applicant to be satisfactory.

C. Evaluation of Scoping and Screening of Structural Components

1. Structural Scoping and Screening Process

The applicant's scoping methodology is presented in Section 5.2 of Technical Report LR-1000/LR-2000, "System/Structure Scoping of North Anna and Surry," Revision 3, 1/31/02. The scoping results are provided in Table 2.2-3 of the license renewal application (LRA) for in-scope structures and in Table 2.2-4 for structures that are not within the scope of license renewal.

Section 6.3.2 of Technical Report LR-1001/LR-2001, "System/Structure Screening Methodology, Surry and North Anna Power Station," Revision 3, 2/1/00 states that the process used by the applicant to screen structures and structural components is different than the screening process for mechanical or electrical systems and components. There is no separate screening report for structures and structural components. The screening results are in the license renewal application tables. The screening process and detailed results for structures are presented in Section 2.1 of the "License Renewal Project - Aging Management Review (AMR)" reports.

In reviewing the screening results tables of the LRA, to facilitate the inspection, the inspectors requested a typical list of the structural components that are not within the scope of license renewal. The tables do not contain such a list. The applicant provided the inspectors a list which includes class III masonry walls, roof membranes, metal siding, brick veneer, active crane items, waste water sumps, drains and trenches, certain access doors, turbine pedestal, certain dikes, certain manholes, piezometers, and coatings.

2. Structures that the LRA concludes are within the scope of license renewal.

The inspectors reviewed documentation supporting the scoping and screening process for the following structures that were concluded by the applicant to be within the scope of license renewal.

a. North Anna Containment

The containment is a reinforced concrete structure which houses the reactor and the NSSS components. The containment is a safety related structure and acts as a fission product barrier and pressure boundary, hence, the entire structure is within the scope of license renewal. The Surry containment is designed and constructed in a similar fashion as that of the North Anna containment.

Section 2.1 of Technical Report LR-2603, "AMR of North Anna Containment Structure," Revision 3, 11/8/01 indicates that the containment penetration components within the scope of license renewal and requiring an aging management review are listed in the following reports for the North Anna Power Station:

LR-2177, Containment Access.
LR-2167, Fuel Handling System.
LR-2137, Penetration-Electrical.
LR-2136, Penetrations Systems.

Section 3.0 of LR-2603 lists the boundary of the containment evaluated in the AMR including the containment (exterior concrete wall and dome with steel liner, internal concrete and steel structure, sub-components and members), equipment hatch platform, containment penetrations (mechanical penetrations, electrical and spare penetrations, and fuel transfer tube), containment access (equipment and personnel hatches), and reactor refueling cavity liner and seal. However, there are other AMRs that evaluate structural sub-components and commodities located inside the containment and are determined to be within the scope of license renewal. They are: LR-2651 for General Structural Support; LR-2652 for Cranes and Heavy load-lifting Devices; LR-2653 for NSSS Equipment Support; LR-2603 for Concrete Pads and Grouting; and LR-2654 for Miscellaneous Structural Commodities. The Inner and Outer Coolers, attached to hot pipe penetrations, are evaluated in LR-2410 for Closed Water Systems and the embedded steel in the fuel transfer canal are evaluated in LR-2601 for the Fuel Building.

During the inspection, the inspectors questioned whether or not the leak chase channel welds are within the scope of license renewal. The applicant stated that the leak chase channel welds are tested as an integral part of the containment liner's plate welds during the operational phase leak rate testing, and therefore are within the scope of license renewal. The inspectors agreed with the results of the containment scoping and screening.

b. Surry Intake Structure

The Surry intake structure consists of a low level intake structure, a high level intake structure, concrete circulating water pipe, discharging tunnel and seal pit. All the above mentioned structures are considered class 1 structures, passive, long-lived, and seismically designed, therefore, they are all in scope. The screening results are contained in Section 2.1 of LR-1605, "Aging Management Review, Intake Structures - Surry Power Station," Revision 2, 5/29/01.

The low level intake structure consists of eight bays and each bay is equipped with stop logs for de-watering, trash racks, traveling screens, an emergency service water pump house, and a low level intake control house. Water is pumped from the James River through the low level intake structure to a high level intake canal to provide cooling water for the main condensers and water for the service water system. Three of the eight trash racks, which serve the service water pumps and the fire protection pump are considered to provide a safety related intended function and are in scope. The other trash racks are not in scope. The traveling screens, the low level intake control house, and the stop logs are not in scope due to the fact they are not safety related and their failure will not affect the operability of other safety related equipment.

The high level intake structure includes the following components; the concrete intake structure, the trash racks at the mouth of each bay, two missile shield enclosures, the portable metal plates, the traveling screens, and the high level intake control house. There are eight trash racks, one for each bay, to remove debris that could affect the safety related service water system. All four racks of unit 1 and two of the four racks of unit 2 associated with the emergency service water are in scope. Other components that are not in scope are the high level intake control house and the traveling screens because they are not safety related and their failure will not affect the operability of other safety related components.

The concrete circulating water pipe is in scope. Components of the discharge tunnel and seal pit are all in scope except the flexible sealant on the inside face of the tunnel joint and some PVC material on the discharge structure.

The inspectors agreed with applicant's assessment on the Surry intake structure.

c. Surry Auxiliary Building

The Surry auxiliary building is a reinforced concrete and steel structure. The building provides shelter to many pieces of safety related equipment. Section 2.1 of LR-1600, "Aging Management Review, Auxiliary Building Structure - Surry Power Station," Revision 3, 5/25/01 provides the screening results of the Surry auxiliary building. The term auxiliary building structure is used to include the following structures; the auxiliary building, the cable vault, the pipe tunnel, the cable tunnel, and the motor control centers. The applicant considers the entire auxiliary building structure within the scope of license renewal except, the roof membrane, the metal siding, and the sump.

In order to assess the adequacy of the applicant's determination to exclude the roof membrane and the metal siding, the inspectors requested the structural and equipment location drawing of the part of the Surry auxiliary building where the roof membrane and the metal siding are located. The applicant provided the inspectors with 4 equipment location drawings (11448-FM-5A through 5D), 2 architectural drawings (11448-FA-24B & 24C) showing where the roof membrane is located, and 2 structural drawings (11448-FS-24A & 24C) which depict the metal siding. The architectural drawings show that the non safety related roof membrane is a very light material which is situated above the steel deck roof, which is within the scope of license renewal. The failure of the membrane will not affect operability of any safety related equipment. Degradation to the metal siding will not affect safety related equipment inside the building. The inspectors agreed with the applicant determination that the entire auxiliary building is in scope.

d. North Anna Fuel Building

The North Anna fuel building is a common facility for both Unit 1 and Unit 2. The fuel building designation includes the following structures:

Fuel building structure
New fuel storage area
Spent fuel pool, including transfer canal
Spent fuel storage racks

The fuel building is a safety related structure and is in the scope of license renewal. The subcomponents of the fuel building perform several intended functions. They provide support and shelter for safety related equipment as well as meeting license renewal Criterion 2 (10CFR54.4(a)(ii)) and Criterion 3 (10CFR54.4(a)(iii)). The only sub-components that do not perform any intended safety function and thus are screened out of an aging management review, are the roof membrane and sump. The inspectors agreed with this assessment.

e. Surry Other Class 1 Structures

Section 2.1 of LR-1607, "Aging Management Review of Other Class 1 Structures at Surry Power Station," Revision 2, 5/25/01 indicates that the Surry Other Class 1 Structures include

the safeguard building, the main steam valve house, the containment spray pump building, the fuel oil pump house, and the fire pump house (diesel engine-driven pump cubicle only).

The safeguard building is a safety related structure. The structure and its structural components provide shelter and support to many safety related equipment, therefore, this structure is within the scope of license renewal.

The main steam valve house, the containment spray pump building, and the fuel oil pump house are all safety related structures and they serve as shelter and support to many safety related equipment. They are all within the scope of license renewal.

The fire pump house is in the scope because it contains fire protection equipment (Appendix R). The fire pump house is divided into cubicles that house the diesel driven pump and the motor driven pump. The diesel driven pump cubicle houses the Appendix R equipment, therefore, it is in scope. On the other hand, the motor driven fire pump is not Appendix R equipment and, hence, is not in scope. The roof and masonry walls of that cubicle are also not in scope. The brick veneer and sumps in the fire pump house are not in scope as described in Section C.a of this report. The inspectors reviewed LR-1607 and Drawing 11448-FA-36B, "Plans, Elevations & Dets. of Fire Pump House," Revision 7, 9/18/93 and agreed with the applicant's assessment.

f. North Anna Earthen Structures

The North Anna earthen structures include the service water reservoir and the flood wall west of the Unit 2 turbine building as described in Section 2.1 of LR-2602, "Aging Management Review of the North Anna Earthen Structures, " Revision 5, 12/5/01.

The sources of service water for North Anna 1&2 are the service water reservoir and the North Anna reservoir. These two independent bodies of water form the ultimate heat sink for the North Anna Power Station. Makeup water for the service water reservoir is from the North Anna reservoir. The service water reservoir related structures are the service water pump house, the service water valve house, the service water reservoir instrumentation, emergency dike and intercepting channel, and service water reservoir spray piping. The only components in the service water reservoir structures not in the scope of license renewal are the service water reservoir instrumentation and the emergency dike and intercepting channel.

The service water reservoir instrumentation includes the piezometers, the test wells, and the settlement monitoring. All these instruments are non safety related and their failure will not affect the intended function of any safety related structure or system. The emergency dike and intercepting channel are constructed for flood protection of the station and they are non safety related structures whose failure will not affect safety related function of the service water reservoir. The inspectors agreed with the applicant's assessment.

g. North Anna Miscellaneous Structures

Section 2.1 of LR-2604, "North Anna Miscellaneous Structures," Revision 2, 5/25/01 specifies that this group of structures includes the turbine building, the service building, the station blackout building, and the security diesel building.

The turbine building is a multi-story structure, which is enclosed with concrete walls below grade and primary metal siding above grade. The turbine building is a non safety related

structure but it houses fire protection (Appendix R) equipment. The entire turbine building is within the scope of license renewal except the following: the turbine pedestal, the roof membrane, and metal siding.

The turbine pedestal supports the turbine generator, which is non safety related equipment. The turbine pedestal, including the mat, is isolated from the rest of the turbine building. The turbine pedestal does not perform any safety function, its failure will not affect safety equipment, and therefore it is not in the scope of license renewal. The roof membrane and metal siding are not within the scope of license renewal as explained in Section C.1 above.

The service building is a safety related structure and houses numerous safety related and non safety related equipment. The entire building is within the scope of license renewal except for the roof membrane and the metal siding.

The station blackout building is a non safety related, non-seismic structure. However, the building houses SBO equipment that provides alternate power to the safe shutdown equipment for both units, therefore, the building is within the scope of license renewal. The only sub-components not in scope are the roof membrane and metal siding.

The security diesel building is a one story building that is enclosed with concrete walls and roof. This structure is a non safety related and non-seismic building. No safety related equipment is located in the building. However, the building houses the security diesel generator and that makes the entire building in scope.

The inspectors agreed with these assessments.

3. Structures that LRA concludes are not within the scope of license renewal

a. Vacuum Priming Pump House

The intake vacuum priming system prevents air accumulation in the station intake water pumps discharge line while the pumps are operating. The intake vacuum priming system consists of a vacuum tank and two vacuum pumps located in the intake vacuum priming house. The intake vacuum priming house is a reinforced concrete structure with 12 inch thick walls and steel deck roof. Failure of this structure will not affect any safety related systems, structures, or components. The system can also includes two vacuum breakers located at the crown of the 96" circulate water pump discharge line. None of the above mentioned components perform any safety related functions as defined by 10 CFR 54.4.

The inspectors reviewed Drawing 11448-FC-8B,"C.W. Intake Pipe Support & Vacuum Priming House," Revision 4, 2000 and agreed with the applicant's assessment that this structure is not in scope.

b. RSST (Reserve Station Service Transformer) Exterior Bus Bar Support Structure

The reserve station service power is supplied by 3-phase 34.3/4.16KV transformers. The reserve station service power is a preferred power source but the station emergency diesel generator is the safety related system credited for emergency use. The reserve station service power is not classified as safety related and does not perform any safety related functions. The inspectors reviewed Drawings 11448-FE-30E, "Arrangement Plan Reserve Station Service Transformer," Revision 2 1/21/85; 11448-FE-30F, "Misc. Details 5KV Reserve Station Service

Bus," Revision 2 2/21/85; and 11448-FE-30G "Arrangement Elevations Reserve Station Service Transformer & Bus," Revision 1, 2/22/85 and found the support structures are framed steel structures. Because they are supporting non safety related systems and their failure will not affect any safety related systems, structures, or components, the supporting structures are not in scope. The inspectors agreed with this assessment.

c. Condensate Storage Tank Foundation

The condensate storage tank is 300,000 gallon capacity steel tank that supplies water to several non safety systems. It also supplies make-up water to the safety related emergency condensate storage tanks. The inspectors requested engineering drawings of the condensate storage tank foundation to review but the applicant could not find such drawings. The applicant finally found drawing 11448-FB-3C, "Yard - Water & Fire Protection Lines, Sheet 3," Revision 8, 12/31/71. This drawing shows the foundation of the fire protection water tank which is identical to that for the condensate storage tank according to a Stone & Webster internal memo from the construction manager to the Surry site dated 12/26/68. The memo stated that both tanks have a Stone & Webster standard 5A3-1 earth foundation with a 6-inch thick, 2 feet and 6 inches deep reinforced concrete ring wall supporting the tank. Since the tank is not safety related and its failure will not affect any intended functions of safety related components, the condensate storage tank foundation is not in scope. The inspectors aggreed with this conclusion.

d. Independent Spent Fuel Storage Facility (ISFSI)

The independent spent fuel storage facility is a non safety related reinforced concrete structure used to store spent fuel elements on site. The ISFSI is constructed under a separate license and is not related to power generation and is not under 10 CFR 54 rules. Therefore, the ISFSI is not within the scope of license renewal under 10 CFR Part 54. The inspectors agreed with this conclusion.

D. Fire Protection

On October 16 and 17, 2001, the NRC staff performed an independent license renewal fire protection system scoping audit. A senior staff fire protection engineer visited Virginia Electric and Power Company corporate office in Glenn Allen, VA, to review the detailed documentation associated with the applicant's fire protection program and the associated scoping activities for the purpose of license renewal. The audit resulted in the need for additional information that was provided by the applicant in a letter to the NRC dated February 4, 2001. The results of this audit and the additional information provided by the applicant are being documented in the staff's safety evaluation report related to the license renewal of North Anna, Units 1 and 2, and Surry, Units 1 and 2, scheduled to be issued in June 2002. However, on the basis of the evaluation discussed above, the staff found that the applicant had included the necessary fire protection Structures, Systems, and Components within the scope of license renewal, and the fire protection structures and components subject to an Aging Management Review were consistent with requirements of 10 CFR 54.4 and 10 CFR 54.21(a), respectively.

The applicant was asked to describe the specific failures that have occurred on the buried components within the scope of this evaluation. The applicant identified four failures over the past 15 years (approximately). Two of the failures (both in the fire protection system) were caused by manufacturer defects, and two failures (one in the fire protection system, the other in the diesel fuel oil system) were caused by installation defects. This information was provided to the staff for further consideration in its safety review.

E. Visual Observation of Plant Equipment

On September 19, 2001, during a North Anna Unit 1 refueling outage, an inspector performed walkdown inspections of accessible portions of plant systems, components, structures, and electrical cable inside the Unit 1 containment to observe material condition and inspect for aging conditions that might not have been recognized and accounted for in the LRA. The observations of general material conditions included: inspection of piping components for evidence of leaks or corrosion, inspection of coatings (piping, tanks, and structural components), and inspection of electrical cable for visual deterioration. In general, material condition was good and no aging management issues were identified. The following is a partial list of equipment observed:

top of presssurizer
code safety valve piping
pressurizer spray piping
Power Operated Relief Valve piping
Pressurizer Relief Tank and piping to PRT
recirculation spray piping
RC pump motors and coolers
steam generators
RC loop stop valves
neutron shield tank coolers and component coolant piping to coolers
RV head, including Control Rod Drive coils and head vent valves
Residual Heat Removal piping, heat exchanger and pumps
SI piping and valves
service water piping
electrical cable and cable trays
instrument air receiver tank
SI accumulator (exterior and interior) including discharge isolation valve and check valve
steam generator blowdown lines and valves
component cooling water piping
containment liner
feedwater piping
main steam piping

III. Conclusions

The inspection concluded that the scoping and screening portion of the applicant's license renewal activities were conducted as described in the License Renewal Application and that documentation supporting the application is in an auditable and retrievable form. The inspection concluded that the scoping and screening process was successful in identifying those systems, structures, and components required to be considered for aging management.

Exit Meeting Summary

The results of this inspection were discussed on February 8, 2002 with members of the VEPCO staff in an exit meeting open for public observation at the Innsbrook Technical Center. The applicant acknowledged the findings presented and presented no dissenting comments. During the exit meeting the inspectors asked the licensee whether any of the material examined during

the inspection should be considered proprietary. Applicant representatives replied that no proprietary material was reviewed during the inspection.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Applicant

P. Aitken, Engineer
T. Banks, License Renewal / Environmental
R. Blount, Site Vice President, Surry
D. Christian, Sr. Vice President & Chief Nuclear Officer
B. Corbin, Director - Nuclear Projects
J. Davis, Director, Safety & Licensing
E. Grecheche, Vice President, Nuclear Support Services
M. Henig, Supervisor, Licensing Renewal
D. Horn, Business Systems Specialist
M. Hotchkiss, Engineer
L. Morris, Technical Advisor
B. Rodill, Lead Engineer
W. Russell, Engineer
T. Snow, Engineer
D. Sommers, Supervisor - Licensing
C. Sorrell, Civil Engineer
J. Voss, Engineer
J. Williams, Engineer
L. Wroniewicz, Manager, Licensing Projects
R. Zuercher, Nuclear Public Affairs

NRC

L. Plisco, Division Director, Division of Reactor Projects

LIST OF DOCUMENTS REVIEWED

General License Renewal Documents

Application for Renewed Operating Licenses - North Anna Power Station Units 1 and 2
Application for Renewed Operating Licenses - Surry Power Station Units 1 and 2
North Anna Power Station Updated Final Safety Analysis Report
Surry Power Station Updated Final Safety Analysis Report
ET No. CEP-97-0019, Maintenance Rule Scoping and Performance Criteria Matrix Surry Units 1 and 2, Revision 10
ET No. CEP-97-0018, Maintenance Rule Scoping and Performance Criteria Matrix North Anna Units 1 and 2, Revision 12
License Renewal Project Guideline LRPG-201, System and Structure Screening - Surry and North Anna Power Stations, Revision 4
Technical Report LR-1000/LR-2000, System/Structure Scoping - North Anna Power Station - Surry Power Station, Revision 3

Technical Report LR-1001/LR-2001, System/Structure Screening Methodology - Surry and North Anna Power Stations, Revision 3
Technical Report LR-1007/LR-2007, Criterion 2 Report, Non safety related Affecting Safety related - Surry and North Anna Power Stations, Revision 5
Regulated Events Report LR-1006, Loss of All Alternating Current Power (SBO), Revision 1
Regulated Events Report LR-1005, Fire Protection 10 CFR 50.48 and Appendix R Surry Power Station, Units 1 & 2, Revision 1
Technical Report LR-1921/LR2921, License Renewal Project Position Paper - Aging Management of Criterion 2 (NS>SR) Component Groups Not Addressed in Aging Management Review Reports, Revision 1
Regulated Events Report LR-2005, Fire Protection 10 CFR 50.48 and Appendix R North Anna Power Station, Units 1 & 2, Revision 1
Technical Report LR-1004/2004, 10CFR54.4 Regulated Programs - Pressurized thermal Shock, Revision 0

License Renewal Screening Reports

LR-1117, Reactor Coolant System - Surry Power Station, Revision 1
LR-2121, Reactor Coolant System - North Anna Power station, Revision 1
LR-1100, Blowdown System - Surry Power Station, Revision 1
LR-1102, Condensate System - Surry Power Station, Revision 1
LR-1103, Feedwater System - Surry Power Station, Revision 1
LR-1104, Main Steam system - Surry Power Station, Revision 1
LR-1110, Auxiliary Steam System - Surry Power Station, Revision 1
LR-2100, Blowdown System - North Anna Power Station, Revision 1
LR-2102, Auxiliary Steam - North Anna Power Station, Revision 1
LR-2104, Main Steam System - North Anna Power Station, Revision 1
LR-2107, Feedwater System - North Anna Power Station, Revision 1
LR-1121, Safety Injection System - Surry Power Station, Revision 1
LR-2148, Containment Vacuum System - North Anna Power Station, Revision 1
LR-1143, Containment Vacuum System - Surry Power Station, Revision 1
LR-2159, Chilled Water System - North Anna Power Station, Revision 1
LR-1111, Ventilation System - Surry Power Station, Revision 1
LR-1126, Bearing Cooling System - Surry Power Station, Revision 1
LR-1151, Vacuum Priming System - Surry Power Station, Revision 1
LR-1142, Service Water System - Surry Power Station, Revision 1
LR-1144, Leakage Monitor System -Surry Power Station, Revision 1
LR-1138, Reactor Building Penetration System -Surry Power Station, Revision 1
LR-1140, DC Power System - Surry Power Station, Revision 1
LR-1115, Circulating Water System - Surry Power Station, Revision 1
LR-2151, Service Water System - North Anna Power Station, Revision 1
LR-2137, Penetrations (Electrical) System - North Anna Power Station, Revision 1
LR-2136, Penetrations (Mechanical) System - North Anna Power Station, Revision 1
LR-2138, Revision 1, Batteries System - North Anna Power Station, Revision 1
LR-1109, Service Air System, Surry, Revision 1
LR-1111, Ventilation System, Surry , Revision 1
LR-1112, Instrument Air System, Surry , Revision 1
LR-1147, Gaseous Waste System, Surry, Revision 1
LR-2108, Compressed Air System, North Anna , Revision 1
LR-2110, Service Air System, North Anna, Revision 2
LR-2113, Instrument Air System, North Anna , Revision 1
LR-2152, Post Accident Hydrogen Removal System, North Anna, Revision 1

License Renewal Drawings

North Anna Power Station Unit 1

11715-LRM-070A, Main Steam System, Sheets 1, 2, &3
11715-LRM-070B, Main Steam System, Sheets 1, 2, &3
11715-LRM-072A Auxiliary Steam & Air removal System, Sheets 1 and 2
11715-LRM-074A, Feed Water System, Sheets 1, 3, &4
11715-LRM-074B, AUX Feedwater Pumps Lube Oil System 1-FW-P-2, 1-FW-P-3A & 1-FW-P-3B, Sheet 1
11715-LRM-079A, Component Cooling Water System, Sheets 1, 2 & 3
11715-LRM-079B, Component Cooling Water System, Sheets 1, 2, 3, 4, & 5
11715-LRM-079C, Component Cooling Water System, Sheets 1, 2, 3, 4, & 5
11715-LRM-079D, Component Cooling Water System, Sheet 4
11715-LRM-079E, Component Cooling Water System, Sheet 1
11715-LRM-088A, Fuel Pit CLNG & Refueling PUR. SYS. , Sheets 1, 2, 3, & 4
11715-LRM-093A, Reactor Coolant System, Sheets 1, 2 & 3
11715-LRM-093B, Reactor Coolant System, Sheets 1 & 2
11715-LRM-093C, Reactor Coolant System, Sheets 1 & 2
11715-LRM-093E, RCP Oil Collection System, Sheet 1
11715-LRM-098A, Steam Generator Blowdown System, Sheets 2, 3, & 4
11715-LRB-100A, Personnel Hatch Hydraulic System, Sheet 1
11715-LRM-095A, Chemical & Volume Control System, Sheets 1, 2, 3, & 4
11715-LRM-095B, Chemical & Volume Control System, Sheets 1&2
11715-LRM-095C, Chemical & Volume Control System, Sheets 1 & 2
11715-LRM-095D, Chemical & Volume Control System, Sheets 1 & 2
11715-LRM-091A, Containment Quench & Recirculation Spray System, Sheets 1, 2, 3, & 4
11715-LRM-091B, Containment Quench & Recirculation Spray System, Sheet 1
11715-LRM-094A, Residual Heat Removal System, Sheets1 & 2
11715-LRM-096A, Safety Injection System, Sheets 1, 2, & 3
11715-LRM-096B, Safety Injection System, Sheets 1, 2, 3, & 4
11715-LRB-040C, Air Conditioning Chilled Water System, Sheets 1 & 2
11715-LRB-040E, Air Conditioning Refrigerant System, Sheets 1 & 2
11715-LRM-092A, Containment Vacuum System, Sheet 2
11715-LRB-035A, Yard - Fuel Oil Lines, Sheet 1 and 2
11715-LRB-035C, Emerg. Gen. 1H [1J, 2H, 2J] Fuel Oil Sys. (Unit 1 and 2), Sheets 1 to 4
11715-LRM-078A, Service Water System (Units 1 and 2), Sheets 1, 3, 4, & 5
11715-LRM-078C, Service Water System (Units 1 and 2), Sheet 1 & 2
11715-LRM-078G, Service Water System (Units 1 and 2), Sheet 1 & 2
11715-LRM-078H, Service Water System (Units 1 and 2), Sheet 1
11715-LRM-078J, Service Water System (Units 1 and 2), Sheet 1
11715-LRM-078K, Service Water System (Units 1 and 2), Sheet 1
11715-LRM-092A, Leakage Monitoring System, Sheet 1 & 2
11715-LRM-113A, Starting Air Station Black Out, Sheet 1 [site]
11715-LRM-113C, Cooling Water Station Black Out, Sheet 1 [site]
11715-LRM-113B, Lube Oil Station Black Out, Sheet 1 [site]
11715-LRM-113G, Air Intake & Exhaust Station Black Out, Sheet 1 [site]
11715-LRM-107A, Emergency Diesel Air Services, Sheet 1
11715-LRM-082A, Compressed Air System, North Anna, Unit 1, Sheets 1 & 2
11715-LRM-082C, Compressed Air System, North Anna, Unit 1, Sheet 1
11715-LRM-082D, Compressed Air System, North Anna, Unit 1, Sheet 2

11715-LRM-082M, Compressed Air System, North Anna, Unit 1, Sheet 1
11715-LRM-082N, Compressed Air System, North Anna, Unit 1, Sheets 1, 2, 3, & 4
11715-LRM-092A, Sheet 2, Containment Vacuum System, North Anna, Unit 1
11715-LRM-106A, Containment Atmosphere Cleanup System, North Anna, Units 1 & 2, Sheets 1, 2, 3 & 4
11715-LRM-FY-002, License Renewal Site Plan, North Anna Power Station, Rev 0

North Anna Power Station Unit 2

12050-LRM-070A, Main Steam System, Sheets 1, 2, & 3
12050-LRM-070B, Main Steam System, Sheets 1, 2, & 3
12050-LRM-072A, Auxiliary Steam & Air Removal SYS, Sheets 1 & 2
12050-LRM-074A, Feedwater System, Sheets 1, 3 and 4
12050-LRM-074B, AUX Feedwater Pumps Lube Oil System 2-FW-P-2, 2-FW-P-3A & 2-FW-P-3B, Sheet 1
12050-LRM-079A, Component Cooling Water System, Sheets 1, 2, 3, 4, & 5
12050-LRM-079B, Component Cooling Water System, Sheet 3
12050-LRM-079C, Component Cooling Water System, Sheet 1
12050-LRM-093A, Reactor Coolant System, Sheets 1, 2 & 3
12050-LRM-093B, Reactor Coolant System, Sheets 1 & 2
12050-LRM-093C, Reactor Coolant System, Sheets 1 & 2
12050-LRM-093E, RCP Oil Collection System, Sheet 1
12050-LRM-093D, Reactor Coolant System, Sheets 1 & 2
12050-LRM-098A, Steam Generator Blowdown System, Sheets 2, 3, & 4
12050-LRB-100A, Personnel Hatch Hydraulic System, Sheet 1
12050-LRM-095A, Chemical & Volume Control System, Sheets 1 & 2
12050-LRM-095B, Chemical & Volume Control System, Sheets 1 & 2
12050-LRM-095C, Chemical & Volume Control System, Sheets 1 & 2
12050-LRM-095D, Chemical & Volume Control System, Sheets 1 & 2
12050-LRM-091A, Containment Quench & Recirculation Spray System, Sheets 1, 2, 3, & 4
12050-LRM-091B, Containment Quench & Recirculation Spray System, Sheet 1
12050-LRM-094A, Residual Heat Removal System, Sheets 1 & 2
12050-LRM-096A, Safety Injection System, Sheets 1, 2, & 3
12050-LRM-096B, Safety Injection System, Sheets 1, 2, 3, & 4
12050-LRM-092A, Containment Vacuum System, Sheet 2

Surry Power Station Unit 1

11448-LRM-064A, Main Steam System, Sheet 1, 2, 3, 4, 5, & 6
11448-LRM-064B, Steam Generator Nitrogen CONN SYS, Sheet 1
11448-LRM-066A, AUX Steam & Air Removal System, Sheets 1 & 2
11448-LRM-067A, Condensate System, Sheet 1 & 2
11448-LRM-068A, Feedwater System, Sheet 1, 3, & 4
11448-LRM-068A, Feedwater Emergency Make-up SYS Surry Unit 1, Sheet 4 of 4??
11448-LRM-072A, Component Cooling Water System, Sheets 1, 2, 3, 4, 5, 6, & 7
11448-LRM-072B, Component Cooling Water System, Sheets 1, 2, & 3
11448-LRM-072C, Component Cooling Water System, Sheets 1, 2, 3, 4, & 5
11448-LRM-072D, Component Cooling Water System, Sheets 1, 2, & 3
11448-LRM-072E, Component Cooling Water System, Sheets 1 & 2
11448-LRM-072G, Component Cooling Water System, Sheet 1
11448-LRM-081A, Fuel Pit Systems, Sheet 1
11448-LRM-086A, Reactor Coolant system, Sheets 1, 2, & 3

11448-LRM-086B, Reactor Coolant system, Sheets 1 & 2
11448-LRM-086C, Reactor Coolant System, Sheets 1 & 2
11448-LRM-124A, Steam Generator Blowdown RECIRC & XFER SYS, Sheets 1, 2, 3, & 4
11448-LRM-088A, Chemical & Volume Control System, Sheets1, 2, 3, & 4
11448-LRM-088B, Chemical & Volume Control System, Sheets 1, 2, & 3
11448-LRM-088C, Chemical & Volume Control System, Sheets 1 & 2
11448-LRM-084A, Containment Spray System, Sheets 1, 2, & 3
11448-LRM-084B, Containment Recirculation Spray System, Sheets 1 & 2
11448-LRM-087A, Residual Heat Removal System, Sheets 1 & 2
11448-LRM-089A, Safety Injection System, Sheets 1, 2, & 3
11448-LRM-089B, Safety Injection System, Sheets 1, 2, 3, & 4
11448-LRB-041A, Chilled Water System, Sheets 1, 2, &3
11448-LRM-085A, Containment Vacuum & Leakage Monitoring System, Sheets 1 & 2
11448-LRM-074A, Vacuum Priming System, Sheet 1
11448-LRM-084B, Recirculation Spray System, Sheets 1 & 2
11448-LRM-071A, Circulating and Service Water System, Sheets 1, 3, & 4
11448-LRM-071B, Circulating and Service Water System, Sheet 1
11448-LRM-71D, Service Water Fuel Oil System, Sheets 1, 2, & 3
11448-LRB-038A, Fuel Oil Lines, Sheets 1 & 2
11448-LRB-038B, Fuel Oil System, Sheet 1
11448-LRB-038B, Fuel Oil System - Station Black Out, Sheet 1
11448-LRM-071E, Fuel Oil System, Sheet 1
11448-LRB-046D, Lube Oil System - SBO, Sheets 1, 2, 3 & 4
11448-LRM-046A, Emergency Diesel Generator # 1, Sheet 1, 2, & 3
11448-LRB-041B, Control Room Bottled Air System, Surry , Unit 1, Sheets 1, 2, & 3
11448-LRM-075C, Compressed Air System, Surry, Unit 1, Sheets 1 & 3
11448-LRM-075E, Compressed Air System, Surry, Unit 1, Sheet 2
11448-LRM-075G, Compressed Air System, Surry, Unit 1, Sheet 1
11448-LRM-075J, Containment Instrument Air System, Surry, Unit 1, Sheet 1
11448-LRM-085A, Containment Vacuum & Leakage Monitor System, Surry, Unit 1, Sheet 2
11448-LRM-090C, Containment Hydrogen Analyzer System, Surry, Unit 1, Sheet 1
11448-LRM-FY-001, License Renewal Site Plan, Surry Power Station

Surry Power Station Unit 2

11548-LRM-047F, RCP Oil Collection System, Sheet 1
11548-LRM-064A, Main Steam System, Sheet 1, 2, 3, 4, 5, & 6
11548-LRM-064B, STM GEN Nitrogen CONN System, Sheet 1
11548-LRM-066A, AUX Steam & Air Removal System, Sheets 1 & 2
11548-LRM-067A, Condensate System, Sheet 2
11548-LRM-068A, Feedwater System, Sheet 1, 3, & 4
11548-LRM-072A, Component Cooling Water System, Sheets 1, 2, 3, 4, 5, 6, & 7
11548-LRM-072B, Component Cooling Water System, Sheets 1, 2, & 3
11548-LRM-072C, Component Cooling Water System, Sheets 1 & 2
11548-LRM-086A, Reactor Coolant System, Sheets 1, 2, and 3
11548-LRM-086B, Reactor Coolant System, Sheets 1 and 2
11548-LRM-086C, Reactor Vessel Level INSTR System, Sheets 1 and 2
11548-LRM-124A, Steam Generator Blowdown RECIRC & XFER SYS, Sheets 1, 2, 3, & 4
11548-LRM-088A, Chemical & Volume Control System, Sheets 1 & 2
11548-LRM-088B, Chemical & Volume Control System, Sheets 1, 2, & 3
11548-LRM-088C, Chemical & Volume Control System, Sheets 1 & 2
11548-LRM-084A, Containment Spray System, Sheets 1, 2, & 3

11548-LRM-084B, Containment Recirculation Spray System, Sheets 1 & 2
11548-LRM-087A, Residual Heat Removal System, Sheets 1 & 2
11548-LRM-089A, Safety Injection System, Sheets 1, 2, & 3
11548-LRM-089B, Safety Injection System, Sheets 1, 2, 3, & 4
11548-LRM-073A, Bearing Cooling Water System, Sheet 1
11548-LRB-006A, Air Cooling and Purging System, Sheet 1
11548-LRM-085A, Containment Vacuum & Leakage Monitoring System, Sheets 1 & 2
11548-LRM-074A, Vacuum Priming System, Sheet 1
11548-LRB-071A, Circulating and Service Water System, Sheet 2
11548-LRM-071C, Circulating and Service Water System, Sheet 1
11548-LRM-130A, Rad Monitor System, Circ and Serv Wtr, Sheet 1
11548-LRM-085A, Cont. Vac. and Leakage Monitoring System, Sheet 1 and 2
11548-LRM-075E, Compressed Air System, Surry, Unit 2, Sheet 1
11548_LRM-085A, Containment Vacuum & Leakage Monitor System, Surry, Unit 2, Sheet 2

System Design Basis Documents

SDBD-NAPS-AFW, Auxiliary Feedwater System North Anna Power Station, Revision 4
SDBD-SPS-AFW, Auxiliary Feedwater System Surry Power Station, Revision 3
SDBD-SPS-BD, Steam Generator Blowdown System Surry Power Station, Revision 0
SDBD-NAPS-BD, Steam Generator Blowdown System North Anna Power Station, Revision 0
SDBD-NAPS-FC, Fuel Pool Cooling and Purification System, North Anna Power Station Revision 0
SDBD-NAPS-CN, Condensate System North Anna Power System, Revision 1
SDBD-SPS-CN, Condensate System Surry Power System, Revision 1
SDBD-NAPS-CC, Component Coling System North Anna Power Station, Revision 1
SDBD-SPS-CC, Component Cooling System Surry Power Station, Revision 1
SDBD-NAPS-FW, Feedwater System North Anna Power Station, Revision 2
SDBD-SPS-FW, Feedwater System Surry Power Station, Revision 2
SDBD-NAPS-MS, Main Steam and Ancillary Systems North Anna Power Station, Revision 2
SDBD-SPS-MS, Main Steam and Ancillary Systems Surry Power Station, Revision 1
SBDB-NAPS-RC, Reactor Coolant System North Anna Power Station, Revision 0
SBDB-SPS-RC, Reactor Coolant System Surry Power Station, Revision 0
SDBD-NAPS-QS, Quench Spray System North Anna Power Station, Revision 3
SDBD-SPS-CS, Containment Spray System Surry Power Station, Revision 3
SDBD-NAPS-RS, Recirculation Spray System North Anna Power Station, Revision 3
SDBD-NAPS-CV, Containment Vacuum and Leakage Monitoring System North Anna Power Station, Revision 0
SDBD-NAPS-CW, Circulating Water System North Anna Power Station, Revision 1
SDBD-SPS-CW, Circulating Water System Surry Power Station, Revision 1
SDBD-SPS-EG, Revision 4, Emergency Diesel generator system
SDBD-NAPS-EG, Revision 3, Emergency Diesel Generator System
Stone & Webster Engineering Corporation Inter-Office Memorandum, D.K. Feldtmose to D.H. Armstrong, “Tanks, Surry Power Station,” 12/26/68

Station Detail and System Drawings

North Anna Power Station
11715-FV-1A, Revision 14, Reactor Containment Schedule of Penetrations
12050-FV-1A, Revision 8, Reactor Containment Schedule of Penetrations
11715-FE-35A, Revision 17, Arrangement of Electrical Penetrations
11715-FE-35C, Revision 10, Electrical Penetration Descriptions - Cable Tunnel, Sheet 2

11715-FE-35B, Revision 7, Electrical Penetration Descriptions, Cable Tunnel Side, Sheets 1 and 2, Unit 1
11715-FE-1E, Revision 20 and 23 (sheets 1 and 2, respectively), 125V DC One Line Diagram
11715-FE-18DB, Revision 8, Wiring Diagram Technical Support Center 120/208V UPS Dist Subpanels, 1-EP-CB-133&134, Unit 1 & 2
11715-FM-5C, Revision 10 and13 [respectively], Arrangement Service Building, Sheets 2 and 3
11715-FB-24L, Revision 15, Ventilation & Air Conditioning Service Building, Sheet 11
11715-FV-1A, Revision 14, Schedule of Piping Penetrations, Sheet 1
11715-FB-034F, Compressed Dry Air Bottle System, North Anna, Units 1 & 2, Sheets 1, 2, 3, 4, & 5

Surry Power Station
11448-FV-1C, Revision 4, Reactor Containment Piping Penetrations, Sheet 3
11448-FM-071A, Revision 61, Flow/Valve Operating Numbers, Diagram Circulating and Service Water System, Unit 1
11448-FB-3C, Revision 8,Yard-Water & Fire Protection Lines Sheet 3
11448-FE-30F, Revision 2, Arrangement Plan Reserve Station Service Transformer
11448-FE-30F, Revision 2, Miscellaneous Details 5KV Reserve Station Service Bus
11448-FE-30G, Revision 1, Arrangement Elevations Reserve Station Service Transformer & Bus
11448-FC-8B, Revision 4, CW. Intake Pipe Supports & Vacuum Priming House
11448-FC-8D, Revision1, Miscellaneous Platforms for CW Intake Pipes at Vacuum Priming House
11448-FC-8C, Revision 2, CW Intake Supports & Vacuum Priming House Sheet -3
11448-FC-42A, Revision 1, ISFSI Facility No. 1 Foundation - Plan, Sections, and Details
11448-FC-42A1, Revision 0, ISFSI Facility No. 2 Foundation - Plan, Sections, and Details
11448-FM-56A, Revision 6, Arrangement - High Level Intake Structure
11448-FC-9Q, Revision 6, High Level Intake Structure Sheet 1, Foundation Mat & Wall Elevations
11448-FS-24A, Revision 6, Steel Framing Sheet 1, Auxiliary Building
11448-FS-24C, Revision 3, Elevations, Auxiliary Building
11448-FA-24B, Revision 11, Elevations & Roof Plan, Auxiliary Building
11448-FA-24C, Revision 5, Wall Sections, Auxiliary Building
11448-FM-5C, Revision 14, Arrangement Auxiliary Building, Surry Power Station
11448-FM-5A, Revision 16, Arrangement Auxiliary Building, Surry Power Station
11448-FM-5D, Revision 13, Arrangement Auxiliary Building, Surry Power Station
11448-FM-5B, Revision 12, Arrangement Auxiliary Building, Surry Power Station

License Renewal Aging Management Reviews

North Anna Power Station
LR-2500, Revision 3, Aging Management Review- Pressurizer - North Anna Power Station
LR-2501, Revision 2, Aging Management Review - Reactor Vessel - North Anna Power Station
LR-2502, Revision 5, Aging Management Review - Steam Generator - North Anna Power Station,
LR-2503, Revision 2, Aging Management Review - Reactor Vessel Internals - North Anna Power Station
LR-2652, Revision 2, Load Handling Cranes and Devices
LR-2603, Revision 3, Containment
LR-1111, Revision 1, Ventilation System
LR-2401, Air and Gas System, North Anna
LR-2605, Intake Structures, North Anna

LR-2604, Revision 2, North Anna Miscellaneous Structures.
LR-2602, Revision 5, North Anna Earthen Structures
LR-2601, Revision 3, North Anna Fuel Building

Surry Power Station
LR-1500, Revision 4, Aging Management Review- Pressurizer - Surry Power Station
LR-1501, Revision 3, Aging Management Review - Reactor Vessel - Surry
LR-1502, Revision 4, Aging Management Review - Steam Generator - Surry Power Station
LR-1503, Revision 2, Aging Management Review - Reactor Vessel Internals - Surry Power Station
LR-1652, Revision 2, Load Handling Cranes and Devices
LR-1407, Revision, 2, Ventilation and Vacuum Systems
LR-1401, Revision 3 Air and Gas System, Surry
LR-1607, Revision 2, Surry Other Class 1 Structures
LR-1600, Revision 3, Surry Auxiliary Building Structure
LR-1605, Revision 2, Surry Intake Structures

ATTACHMENT 2

NORTH ANNA & SURRY
LICENSE RENEWAL SCOPING INSPECTION
INSPECTION SAMPLE

Mechanical Systems LRA Concludes Are Within the Scope of License Renewal

SYSTEM	LRA SECTION REFERENCE
AAC Diesel Cooling Water (BCW)	Section 2.3.3.10, Alternate AC (AAC) Diesel Generator Systems
AAC Diesel Fuel Oil (BFO)	Section 2.3.3.10, Alternate AC (AAC)
AAC Diesel Lube Oil (BLO)	Section 2.3.3.10, Alternate AC (AAC)
AAC Diesel Starting Air (BSA)	Section 2.3.3.10, Alternate AC (AAC)
Alternate AC (AAC)	Section 2.3.3.10, Alternate AC (AAC)
Auxiliary Steam (AS)	Section 2.3.4.1, Auxiliary Steam (AS)
Batteries (125V DC Components)(BY)	See Footnotes No. 1&2.
Blowdown (BD)	Section 2.3.4.2, Blowdown (BD)
Chemical Volume and Control (CH)	Section 2.3.3.1, Chemical and Volume Control (CH)
Chilled Water (CD) See Footnote 3	Section 2.3.3.7, Chilled Water (CD)
Circulating Water (CW)	Section 2.4.6, Intake Structures
Component Cooling (CC)	Section 2.3.3.8, Component Cooling (CC)
Compressed Air (CA) See Footnote 3	Section 2.3.3.13, Compressed Air (CA)
Condensate (CN)	Section 2.3.4.3, Condensate (CN)
Containment Access (CE)	Section 2.4.1, Containment
Containment Vacuum (CV)	Section 2.3.3.17, Containment Vacuum (CV)
Electrical Instrumentation (EI)	See Footnotes No. 1&4.
Electrical Power (EP)	See Footnote No. 1.
Electro-Hydraulic Control (EH)	See Footnote No. 1.
Emergency Diesel Cooling (EC)	Section 2.3.3.11, Emergency Diesel Generator (EDG) Systems See Footnote 3
Emergency Diesel Generator (EG)	Section 2.3.3.11 See Footnote 3
Emergency Diesel Lubrication (EL)	Section 2.3.3.11 See Footnote 3
Emergency Diesel Starting Air (EB)	Section 2.3.3.11 See Footnote 3
Emergency Electrical Power (EE)	See Footnote No. 1
Feedwater (FW)	Section 2.3.4.4, Feedwater (FW)
Fire Protection (FP)	Section 2.3.3.31, Fire Protection (FP)
Fire Protection Monitoring (FPM)	See Footnotes No. 1&3.
Fuel Handling (FH)	Section 2.4.12, Load-handling Cranes and Devices
Fuel Oil (FO)	Section 2.3.3.11, Emergency Diesel Generator (EDG) Systems See Footnote 3.
Fuel Pit Cooling (FC)	Section 2.3.2.2, Fuel Pit Cooling (FC)
Heat Tracing (HT)	See Footnote No. 1.
High-Radiation Sampling System (HRSS)	Section 2.3.3.2, High-Radiation Sampling System (HRSS) See Footnote 3.
Incore Instrumentation (IC)	Section 2.3.3.3, Incore Instrumentation (IC)
Instrument Air (IA)	Section 2.3.3.14, Instrument Air (IA)
Leakage Monitoring (LM)	Section 2.3.3.18, Leakage Monitoring (LM)

Liquid and Solid Waste (LW)	Section 2.3.3.26, Liquid and Solid Waste (LW)
Main Steam (MS)	Section 2.3.4.5, Main Steam (MS)
Neutron Monitoring (NM)	See Footnotes No. 1&5.
Nuclear Instrumentation (NI)	See Footnote No. 1&5.
Penetration-Electrical (PE)	Section 2.4.1, Containment See Footnote 6
Penetrations (PEN)	Section 2.4.1, Containment See Footnote 6
Post-Accident Hydrogen Removal (HC)	Section 2.3.3.28, Post-Accident Hydrogen Removal (HC) See Footnote 3.
Quench Spray (QS)	Section 2.3.2.1, Quench Spray (QS) See Footnote 3
Radwaste (RW)	Section 2.3.3.27, Radwaste (RW)
Reactor Coolant (RC)	Section 2.3.1, Reactor Coolant System
Reactor Protection (RPS)	See Footnote No. 1.
Recirculation Spray (RS)	Section 2.3.2.3, Recirculation Spray (RS)
Residual Heat Removal (RH)	Section 2.3.2.4, Residual Heat Removal (RH)
Rod Control (RCS)	Section 2.3.1.2, Reactor Vessel
Safety Injection (SI)	Section 2.3.2.5, Safety Injection (SI)
Service Air (SA)	Section 2.3.3.16, Service Air (SA)
Service Water (SW)	Section 2.3.3.6, Service Water (SW)
Solid State Protection (SSP)	See Footnote No. 1.
Vacuum Priming (VP)	Section 2.3.3.20, Vacuum Priming (VP)
Valve Monitoring (VMS)	See Footnote No. 1.
Vital Bus (VB)	See Footnotes No. 1&2.

Mechanical Systems LRA Concludes Are Not Within the Scope of License Renewal

System	UFSAR Reference
AAC Diesel Service Air (BSR)	System not explicitly described in the UFSAR
Electrical Equipment (4kv & above) (PH)	Section 8.1.2
Gaseous Waste (GW)	Section 11.3
Vacuum Priming Seal Water (VSW)	Section 10.4.2.2 See Footnote 1.

1. This system does not contain any mechanical components that require an AMR. However, this system does contain electrical/I&C and/or structural components, which have been evaluated on a commodity basis.

2. The North Anna batteries (BY) and vital bus (VB) systems are functionally equivalent to the Surry DC Power (EPD) system.

3. North Anna system for which the in-scope portions are functionally equivalent to in-scope portions of a Surry system(s) with a different name.

4. The North Anna electrical instrumentation (EI) and solid state protection (SSP) systems are functionally equivalent to the Surry ATWS mitigation (AMS), consequence limiting safeguards (CLS), process instrumentation (PRO), and recirculation mode transfer (RMT) systems.

5. The North Anna neutron monitoring (NM) and nuclear instrumentation (NI) systems are functionally equivalent to the Surry nuclear instrumentation (NI) system.

6. The North Anna penetration-electrical (PE) and penetrations (PEN) systems are functionally equivalent to the Surry reactor building penetrations (PEN) system.

Structures LRA Concludes Are Within the Scope of License Renewal

Structure	Screening Results Section
Auxiliary Building	Section 2.4.2, Auxiliary Building Structure
Auxiliary Feedwater Pump House	Section 2.4.3, Other Class I Structures
Auxiliary Feedwater Tunnel	Section 2.4.3, Other Class I Structures
Auxiliary Service Water Expansion Joint Enclosure	Section 2.4.7, Yard Structures
Buried Fuel Oil Tank Missile Barrier	Section 2.4.7, Yard Structures
Casing Cooling Pump House	Section 2.4.3, Other Class I Structures
Casing Cooling Tank Foundation	Section 2.4.7, Yard Structures
Chemical Addition Tank Foundation	Section 2.4.7, Yard Structures
Circulating Water Intake Tunnel	Section 2.4.6, Intake Structures
Containment	Section 2.4.1, Containment
Discharge Tunnel & Seal Pit	Section 2.4.6, Intake Structures
Domestic Water Treatment Building	Section 2.4.7, Yard Structures
Duct Banks	Section 2.4.7, Yard Structures
Emergency Condensate Storage Tank Foundation and Missile Barrier	Section 2.4.7, Yard Structures
Flood wall west of the Turbine Building	Section 2.4.8, Earthen Structures
Fuel Building	Section 2.4.4, Fuel Building
Fuel Oil Pump House	Section 2.4.3, Other Class I Structures
Fuel Oil Storage Tank Dike	Section 2.4.7, Yard Structures
Intake Structure	Section 2.4.6, Intake Structures
Main Steam Valve House	Section 2.4.3, Other Class I Structures
Manholes	Section 2.4.7, Yard Structures
Quench Spray Pump House 1	Section 2.4.3, Other Class I Structures
Refueling Water Storage Tank Foundation	Section 2.4.7, Yard Structures
Safeguards Building	Section 2.4.3, Other Class I Structures
SBO Building	Section 2.4.5, Miscellaneous Structures
Security Diesel Building	Section 2.4.5, Miscellaneous Structures
Security lighting poles	Section 2.4.7, Yard Structures
Service Building	Section 2.4.5, Miscellaneous Structures
Service Water Pipe Expansion Joint Enclosure	Section 2.4.3, Other Class I Structures
Service Water Pump House	Section 2.4.3, Other Class I Structures
Service Water Reservoir	Section 2.4.8, Earthen Structures
Service Water Tie-in Vault	Section 2.4.3, Other Class I Structures
Service Water Valve House	Section 2.4.3, Other Class I Structures
Transformer Firewalls/Dikes 2	Section 2.4.7, Yard Structures
Turbine Building	Section 2.4.5, Miscellaneous Structures
Ya r d Va l v e P i t	Section 2.4.7, Yard Structures

1. The North Anna Quench Spray Pump House is functionally equivalent to the Surry Containment Spray Pump Building.

2. Applies to main and station service transformers.

Structures LRA Concludes Are Not Within the Scope of License Renewal

Structure	UFSAR Reference
Concrete firewalls/foundations for the reserve station service transformers	Structures are not explicitly described in the UFSAR.
Concrete foundations for the main transformers and station service transformers	Structures are not explicitly described in the UFSAR.
Condensate Storage Tank Foundation	Structure is not explicitly described in the UFSAR.
Independent Spent Fuel Storage Facility (ISFSI)	Structure is not explicitly described in the UFSAR.
RSST exterior bus bar support structure	Structure is not explicitly described in the UFSAR.
Switchyard	Structure is not explicitly described in the UFSAR.
Switchyard Control House and Communications Building	See Footnote 1 Structure is not explicitly described in the UFSAR.
Transmission Line Towers	Structures are not explicitly described in the UFSAR.
Vacuum Priming Pump House	Structure is not explicitly described in the UFSAR. See Footnote 1

1. This North Anna structure is functionally equivalent to a Surry structure with a different name.

ATTACHMENT 3

LIST OF ACRONYMS USED

AAC	Alternate AC Diesel Generator System
AMR	Aging Management Review
AS	Auxiliary Steam System
BD	Blowdown System
CA	Compressed Air
CC	Component Cooling Water
CD	Chilled Water System
CE	Containment Access
CH	Chemical Volume and Control System
CN	Condensate System
CV	Containment Vacuum System
CW	Circulating Water System
EG	Emergency Diesel Generator
EQ	Environmental Qualification program
ESGR	Emergency Switchgear Room
FC	Fuel Pit Cooling
FH	Fuel Handling
FW	Feedwater
GW	Gaseous Waste
HC	Post-Accident Hydrogen Removal System
HELB	High Energy Line Break
IA	Instrument Air
ISFSI	Independent Spent Fuel Storage Facility
KV	Kilovolt
LM	Leakage Monitoring
LR	License Renewal
LRA	License Renewal Application
MCR	Main Control Room
MS	Main Steam
NSR	Non Safety related
NRR	NRC Office of Nuclear Reactor Regulation
NSSS	Nuclear Steam Supply System
QS	Quench Spray
RAI	Request for Additional Information
RCP	Reactor Coolant Pump
RC	Reactor Coolant System
RH	Residual Heat Removal
RS	Recirculation Spray
RSST	Reserve Station Service Transformer
RV	Reactor Vessel
RWST	Refueling Water Storage Tank
SA	Service Air
SBO	Station Blackout event
SDBD	Design Basis Document
SG	Steam Generator
SI	Safety Injection
SR	Safety related

SSC	Systems, Structures, and Components
SW	Service Water
TLAA	Time-Limited Aging Analysis
UFSAR	Updated Final Safety Analysis Report
VEPCO	Virginia Electric and Power Company
VP	Vacuum Priming System
VSC	Vacuum Priming Seal Water