UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
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ATLANTA, GEORGIA 30303-8931

July 18, 2008

Mr. Tom E. Tynan
Vice President
Southern Nuclear Operating Company, Inc.
Vogtle Electric Generating Plant
7821 River Road
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT - NRC LICENSE RENEWAL INSPECTION REPORT 05000424 and 425/2008006

Dear Mr. Tynan:

On June 6, 2008, the NRC completed an inspection regarding the application for license renewal for your Vogtle reactor facility. The enclosed report documents the inspection results, which were discussed on June 6, 2007, with you and other members of your staff in an exit meeting open for public observation at the Augusta Technical College, 216 Hwy. 24 South, Waynesboro, GA.

The purpose of this inspection was an examination of activities that support the application for a renewed license for the Vogtle facility. The inspection consisted of a selected examination of procedures and representative records, and interviews with personnel regarding implementation of your aging management programs (AMPs) to support license renewal. Inspectors performed visual examination of accessible portions of a sample of plant systems to observe any effects of equipment aging.

The inspection concluded that your license renewal activities were generally conducted as described in your License Renewal Application. The inspection also concluded that existing programs that are credited as an AMP for license renewal are generally accomplishing the intended functions. The applicant had established implementation plans in the plant corrective action program to track the committed future actions for license renewal to ensure they are completed. In walking down plant systems and examining plant equipment, the inspectors found that plant equipment was being maintained adequately.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS).

ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA R. Croteau for/

Kriss M. Kennedy, Director
Division of Reactor Safety

Docket No.: 50-424 and 425
License No.: NPF-68 and 81

Enclosure: NRC Inspection Report 05000424 and 425/2008006 w/Attachments:
1. Supplemental Information
2. Aging Management Programs Selected for Review
3. List of Acronyms Used

(cc w/encl: See Page 3)

ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Kriss M. Kennedy, Director
Division of Reactor Safety

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No:	50-424 and 425
License No:	NPF-68 and 81
Report No:	05000424 and 425/2008006
Licensee:	Southern Nuclear Company
Facility:	Vogtle Nuclear Power Plant, Unit 1 and Unit 2
Location:	7821 River Road Waynesboro, GA 30830
Dates:	May 19, 2008 through June 6, 2008
Inspectors:	L. Lake, Inspection Team Leader C. Julian, Senior Project Engineer R. Moore, Senior Reactor Inspector R. Carrion, Senior Reactor Inspector J. Rivera-Ortiz, Reactor Inspector S. Chaudary, Reactor Engineer C. Brown, ACRS Staff C. E. Acosta, Reactor Inspector
Approved by:	G. Hopper, Chief Engineering Branch 3 Division of Reactor safety

Enclosure

SUMMARY OF FINDINGS

IR 05000424 and 425/2008-006; May 19, 2008 - June 06, 2008; Vogtle Electric Generating Station, Unit 1 and 2; License Renewal Inspection Program, Aging Management Programs.

This inspection of License Renewal (LR) activities was performed by seven regional office engineering inspectors and one member of the Advisory Committee on Reactor Safeguards (ACRS) staff. 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 0612.

The inspection concluded that LR activities were being conducted as described in the License Renewal Application (LRA) and concluded that existing programs to be credited as an Aging Management Program (AMP) for license renewal are generally accomplishing the intended functions.

The applicant established implementation plans that incorporated LR commitments into the plant tracking system to track and ensure they are completed. Since complete implementation of these license renewal activities are not required until the year 2027 for Unit 1, and 2029 for Unit 2, it is important that these the activities are well documented. The inspectors observed a few instances where enhancements would be beneficial to aging management documents. These enhancements where incorporated by the applicant.

Walking down plant systems and examining plant equipment, the inspectors found no significant adverse conditions and it appears plant equipment was being maintained adequately in most of the plant. NRC inspections, conducted prior to this inspection, identified conditions inside containment that resulted in a Green NCV finding of very low safety significance due to Nuclear Cooling Service Water (NCSW) system leakage and condensation build up that could mask boric acid leakage, cause corrosion on structural components, and degradation of electrical components such as cables and electrical boxes. The licensee evaluation, along with a corrective action plan, is described in the Boric Acid AMP, section B of this report.

Attachment 1 to this report contains a partial list of persons contacted and a list of documents reviewed, and the Aging Management Programs selected for review during this inspection are listed in Attachment 2 to this report. Attachment 3 is a list of acronyms used in this report.

REPORT DETAILS

I. Inspection Scope

This inspection was conducted by NRC Region II inspectors to interview applicant personnel, observe the material condition of the plant for aging effects, and to examine a sample of documentation which supports the license renewal application (LRA). This inspection also reviewed the implementation of the applicant's Aging Management Programs (AMPs). The inspectors reviewed supporting documentation to confirm the accuracy of the LRA conclusions including existing programs and the incorporation of both plant and industry operating experience (OPE). The inspectors performed visual examination of accessible portions of a sample of systems to observe any effects of equipment aging. Attachment 1 of this report lists the applicant personnel contacted and the documents reviewed. The Aging Management Programs selected for review during this inspection are listed in Attachment 2 to this report. A list of acronyms used in this report is provided in Attachment 3.

II. Findings

A. Visual Observation of Plant Equipment

1. The inspectors performed walk-down inspections of portions of plant systems, structures, and components (SSCs) to determine their current condition and to observe any effects of equipment aging. Overall the material condition at Vogtle was good and no significant aging management issues were identified. The following SSCs were observed:

    Safety Injection System
    Component Cooling Water System
    Residual Heat Removal System
    Diesel Generators and Building
    Various Cranes in the Scope of LR
    Spent Fuel Pools
    Fire Pumps
    Containment Building and Auxiliary Building
    Service Water structures
    Electrical Transformer Area
    Switchyard

2. The inspectors visually inspected a portion of underground fire protection piping. A piping leak was identified in a branch line far outside the plant protected area. The branch line services construction warehouses and a fire training facility. The leaking line had been excavated, cut out and replaced. The inspectors examined the removed section of piping and observed that it was in excellent condition with no signs of corrosion or other aging conditions. This good condition should be representative of all the underground fire protection piping at Vogtle. This leak was due to a shifting of the mechanical bolted connection of the piping. The inspectors reviewed a listing of past CRs related to fire protection and noted that many past leaks seem to be due to mechanical connections leaking rather than piping material

corrosion. The licensee evaluation, along with corrective actions is described in the Fire Protection AMP in section B of this report.

3. The inspectors, with the applicant representatives, inspected three cable pull boxes containing medium voltage cables that are identified to be within the scope of the LR program. The inspectors observed that they contained varying amounts of water, some covering the subject cables. Plant records show that the three in scope pull boxes were last pumped out in June 2007. Plant corrective action documents reflect a history of repeated attempts at establishing different measures to prevent cable pull box flooding or to periodically remove water. It appears that past efforts have not been successful as plant records reflect that cable pull boxes are often found flooded. A condition report was written and the water level pumped down in the three in-scope pull boxes during the period of this inspection. The licensee evaluation, along with corrective actions is described in the Non-EQ Inaccessible Medium-Voltage Cables Program AMP in section C of this report.

4. Separate from this inspection, and to take advantage of the Unit 1 containment being open during the recent Unit 1 refueling outage (1R14), Region II Inspectors performed a walk down of the Unit 1 containment to determine the adequacy of the licensee's Boric Acid Corrosion Control Program. Also, in support of this license renewal inspection, they extended their walk down to include a general visual inspection of the containment internal surfaces and pressure retaining, structural, and electrical components for effects of equipment aging. During the walk down, the inspectors noted a white, crystalline film covering significant portions of containment Levels A and B. This white film was occasionally accompanied by rust, minor wastage of some structural steel components and evidence of water on electrical panels. While the film was concentrated in the vicinity of, and on, the four emergency core cooling accumulators, it was also spread on cable trays, the steel liner of containment, decking, various walls, components including valves, insulated piping, bare piping, piping supports, piping flanges and bolting, and electrical junction boxes. While no document existed to confirm the original date these conditions began to exist, interviews with plant personnel suggest they have existed since commercial operation (1987).

   This condition resulted in a finding of very low safety significance. A Green NCV of 10CFR50, Appendix B, Criterion V, was identified for lack of procedures to address compensatory measures for containment conditions which would mask indications of boric acid leakage. This violation will be documented in NRC Integrated Inspection Report 05000424, 425,/2008003. The licensee evaluation, along with a corrective action plan, is described in the Boric Acid AMP, section B of this report.

B. Review of Mechanical Aging Management Programs

1. Auxiliary Component Cooling Water (ACCW) System Carbon Steel Components Program

This is a new condition monitoring program is described in document VEGP-LR-AMP-41 and implementation is described in document VEGP-LR-IMP-01. The objective of this program is to manage cracking of carbon steel components as a result of nitrite induced stress corrosion cracking (SCC) from exposure to auxiliary component cooling water. The scope of the program covers all carbon steel components in the ACCW system. The program will be implemented through a combination of leakage monitoring and periodic inspections. Leakage monitoring and inspection activities will consist of response to ACCW surge tank alarms, Containment Building leakage monitoring, Auxiliary Building leakage monitoring, visual observations of accessible areas by Operations personnel during routine rounds, system engineer walk downs, visual inspections of ACCW external surfaces under the External Surfaces Monitoring Program, and VT-2 visual examinations performed at normal operating pressure as part of the Inservice Inspection Program. The program also includes preventive measures applicable to repairs and modifications intended to minimize crack initiation sites, lower stresses, and improve inspection access. These preventive measures will include the avoidance of crevices in new installations and component repairs, selection of better weld designs, and stress reduction techniques for assembly such as post weld heat treatment.

The inspectors reviewed program documentation describing the scope, inspection attributes, corrective actions, and acceptance criteria of this program along with the proposed procedures to implement it. Specifically, the inspectors reviewed the AMP and IMP documents, system drawings, welding procedure specifications, operator annunciator response procedures, operator daily rounds procedures and corresponding logs, ACCW system health reports, visual examination procedures, Operating Experience Program documents, and Action Items to implement the program. The inspectors also discussed the program with responsible applicant personnel and performed field walk downs to assess the present material condition. The inspectors identified that the proposed implementing procedures did not contain specific steps to take corrective actions consistent with the program documents. This observation led to a revision of the implementation package to add an existing procedure which contains adequate corrective actions.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

2. Bolting Integrity Program

This is a new condition monitoring program is described in document VEGP-LR-AMP-02, and implementation is described in document VEGP-LR-IMP-02. The objective of this program is to manage cracking, loss of material, and loss of preload in mechanical bolted closures. The scope of the program covers all safety-related and nonsafety-related bolting for pressure-retaining components within the scope of license renewal, with the exception of the reactor vessel head studs which are addressed in a separate program. The program will be implemented through periodic inspections of bolted closures via a combination of existing procedures, Inservice Inspection Program, and External Surfaces Monitoring Program. The program also includes preventive measures regarding the use of appropriate bolting and torquing practices, including control of thread lubricants based on industry guidelines, NRC generic communications, vendor recommendations, and VEGP operating experience. Additional preventive measures include periodic replacement of steam generator manway and handhole bolting to manage cumulative fatigue damage for these fasteners.

The inspectors reviewed program documentation describing the scope, inspection attributes, corrective actions, and acceptance criteria of this program along with the proposed procedures to implement it. Specifically, the inspectors reviewed the AMP and IMP documents, operator daily rounds procedures, bolting and torque manual, system monitoring and health reporting procedures, visual examination (VT-1 and VT-2) procedures, ultrasonic examination procedures, Operating Experience Program documents, and Action Items to implement the program. The inspectors also discussed the program with responsible applicant personnel and performed field walk downs to assess the present material condition. During a walk-down of the ACCW system, the inspectors identified a bolting deficiency in valve 1-1202-U4-146 (Nuclear Service Cooling Water System), which had insufficient thread engagement on the valve body to bonnet. The applicant entered the issue into the corrective action program for resolution as Condition Report 2008106355.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

3. Boric Acid Corrosion Program

The Boric Acid Corrosion Program is described in Section B.3.3 of the LRA; it is an existing program that is consistent with the program described in NUREG-1801, Section XI.M10, “Boric Acid Corrosion,” with enhancements. It is designed to ensure that leaking borated water does not lead to the degradation of the leakage source or adjacent mechanical, electrical, or structural components susceptible to boric acid corrosion.

This program detects boric acid leakage by periodic visual inspection of systems containing borated water for evidence of leakage and by inspection of adjacent structures and components for evidence of leakage. The program was developed in response to the recommendations of Generic Letter 88-05, "Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants." The program addresses operating experience contained in recent NRC generic communications. The Boric Acid Corrosion Control Program scope and acceptance criteria will be enhanced to address the effects of borated water leakage on materials other than steels, including electrical components (e.g., electrical connectors) that are susceptible to boric acid corrosion. These enhancements will be implemented prior to the period of extended operation. The inspectors reviewed the program documentation, discussed the program with responsible station staff, reviewed self-assessments, and reviewed existing procedures which implemented the scope and actions of this program.

A licensee assessment revealed that boric acid leaks had not been consistently identified and evaluated under the VEGP Boric Acid Program. Therefore, program enhancements were implemented to ensure that all boric acid leaks are identified with a condition report; procedures were changed to clearly require personnel to write a condition report when boric acid leakage is discovered, and Boric Acid Corrosion Control training is required for all VEGP site personnel. In addition, leaks outside of containment are flagged in the field with a problem marker.

During Reactor Pressure Vessel Head inspections performed in accordance with NRC First Revised Order EA-03-009, boron residue was observed. However, there was no evidence of head material wastage or of leaking or cracked nozzles and the boron residue was determined to be associated with previous cleaning and decontamination of conoseals and was not associated with new "active" leakage.

Separate, but in support of this inspection, and to take advantage of the Unit 1 containment being open during the recent Unit 1 refueling outage (1R14), Region II inspectors performed a walk down of the Unit 1 containment to determine the adequacy of the licensee's Boric Acid Corrosion Control Program. In support of this license renewal inspection, they extended their walk down to include a general visual inspection of the containment internal surfaces and pressure-retaining, structural, and electrical components for effects of equipment aging. During the walk down, the inspectors noted a white, crystalline film covering significant portions of containment Levels A and B. This white film was occasionally accompanied by rust, minor wastage of some structural steel components and evidence of water stains on electrical panels. While the film was concentrated in the vicinity of, and on, the four emergency core cooling accumulators, it was also identified on cable trays, the steel liner of containment, decking, various walls, components including valves, insulated piping, bare piping, piping supports, piping flanges and bolting, and electrical junction boxes. While no document existed to confirm the original date these conditions began to exist, interviews with plant personnel suggest they have existed since commercial operation (1987). This condition resulted from condensation on uninsulated containment cooler piping, and from previous leaks in the coolers.

The inspectors identified a finding of very low safety significance, Green NCV, of 10CFR50, Appendix B, Criterion V, for lack of procedures to address compensatory measures for containment conditions which would mask indications of boric acid leakage. The violation will be documented in NRC Integrated Inspection Report 05000424, 425/2008003. The applicant performed an independent walkdown of the containment and determined that these conditions did not challenge the operability of the containment or equipment inside the containment. CR 2008104461 was issued to conduct an engineering evaluation, identify the apparent cause of leakage and condensation, and provide recommended corrective actions. Although still not finalized, both short and long term corrective action have been identified. Short term actions include communication to plant personnel that areas in the containment that are covered with white residue should not immediately be dismissed as being from non-borated systems and revisions to the boric acid control procedure 00435 to indicate that white residue can mask boric acid leakage. Long term recommended corrective actions include; insulation of NSCW lines located in containment and the removal and/or applying of coatings on various equipment and components throughout the containment. These corrective actions will be monitored during future NRC inspections.

The inspectors concluded that the applicant had provided adequate guidance to ensure that aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the loss of material due to boric acid corrosion of carbon steel and low alloy steel structures, systems, or components within the scope of license renewal will be adequately managed throughout the period of extended operation.

4. Buried Piping and Tanks Inspection Program

The Buried Piping and Tanks Inspection Program is a new program, described in Section B.3.4 of the LRA that will be consistent with the program described in NUREG-1801, Section XI.M34, “Buried Piping and Tanks Inspection,” with exceptions. The exception is that the program at VEGP includes stainless steel components. It will manage loss of material from the external surfaces of buried carbon steel, cast iron, and stainless steel components, including piping and buried fuel oil storage tanks. The program will be implemented prior to the period of extended operation. Aging effects include loss of material due to general pitting, crevice corrosion, and microbiologically induced corrosion (MIC). These effects are managed by preventive measures to mitigate the aging effects, i.e. protective coatings and wrappings, and visual inspections for evidence of coating damage or degradation. Buried components in the scope of license renewal will be inspected when they are excavated for maintenance or when exposed for any other reason.

The inspectors reviewed the program implementation plan and discussed the program with the assigned responsible staff. Prior to entering the period of extended operation, the licensee committed to perform a review to determine if at least one opportunistic or focused inspection of buried piping and tanks has been performed within the 10-year period prior to the period of extended operation. If an inspection did not occur, the licensee committed to perform a focused inspection performed prior to the period of

extended operation. In addition, the licensee will perform a focused inspection of buried piping and tanks within ten years after entering the period of extended operation, unless an engineering evaluation concludes that sufficient opportunistic and focused inspections have occurred during this time to demonstrate the ability of the underground coatings to protect the underground piping and tanks from degradation.

As this is a new program, only related operating experience has been documented. There have been failures in buried galvanized pipe not in scope of License Renewal. However, the only leaks identified from buried components within the scope of license renewal were in buried fire protection components and these leaks were typically attributed to design, installation, or operational issues, and not age-related. The program description in NUREG-1801 is based on industry operating experience. Because the VEGP program is based on the program description in NUREG 1801, it describes a program that should assure that implementation of the Buried Piping and Tanks Inspection Program will adequately manage the effects of aging during the period of extended operation.

Implementation of the new VEGP Buried Piping and Tanks Inspection Program prior to the period of extended operation will provide reasonable assurance that the effects of aging on the external surfaces of buried components within the scope of License Renewal will be managed such that the pressure-retaining function of those components will be maintained throughout the period of extended operation.

5. Cast Austenitic Stainless Steel (CASS) Reactor Coolant System (RCS) Fitting Evaluation Program

This was a new program that will manage the effects of loss of fracture toughness due to thermal aging of susceptible CASS components in the reactor coolant system. The program augments the VEGP In-service Inspection Program. This aging management program will evaluate the susceptibility of CASS components to thermal aging embrittlement based on casting method, molybdenum content and percent ferrite. Based on screening consistent with NUREG-1801, Rev. 1, Section XI.M12, two components at Vogtle were identified for aging management under this program. These included Unit 1 Loop 4 reactor coolant pump (RCP) inlet elbow and the Unit 2 Loop 1 RCP inlet elbow. Aging management will be accomplished by component-specific flaw tolerance evaluation, additional inspections, or a combination of these techniques.

The inspectors reviewed the description of the program in application section B.3.5 and CASS RCS Fitting Evaluation Program License Renewal Evaluation Document, VEGP-LR-AMP-05, Version 2, which stated the screening criteria for identification of components within the program scope. Additionally the inspectors reviewed the program implementation plan documented in VEGP-LR-IMP-5, CASS RCS Fitting Evaluation Program License Renewal Implementation Package, Version 1, and discussed the program with the station staff.

The implementation of this program was assigned action item number 2008202555 in the station action item tracking program and was scheduled to be implemented prior to the period of extended operation.

The applicant had provided guidance to ensure aging effects will be appropriately assessed and managed when the industry develops adequate measures to identify and manage the thermal aging effects related to CASS components. When implemented, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained throughout the period of extended operations.

6. Closed Cooling Water Program

This existing program managed the aging effects due to loss of material, cracking, and reduction in heat transfer in closed cooling water systems. Systems included in the scope of this program included Auxiliary Component Cooling Water, Component Cooling Water, Essential Chilled Water, Diesel Generator Cooling Water, Normal Chilled Water and Central Alarm Station Chilled Water. The program was based on EPRI Closed Cooling Water Chemistry Guideline, Revision 1 to TR-107396, and 2004 version. The program included chemistry control and corrosion monitoring activities. Program enhancements included development of corrosion inspections consistent with the EPRI Guideline, revision of program documents to indicate the components in each system that are most susceptible to various corrosion mechanisms, and establishment of program guidance to ensure corrosion monitoring is appropriately accomplished. The program was described in section B.3.6 of the application and the Closed Cooling Water Program License Renewal Evaluation Document, VEGP-LR-AMP-06, Version 2. The activities to accomplish the program enhancements were documented in the Closed Cooling Water Program License Renewal Implementation Package, VEGP-LR-IMP-06, Version 1 and action item 2008202559 in the station action item list.

The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed existing procedures which implemented the scope and activities of the existing program**.** Additionally, the inspectors reviewed trend information from the period of 2007 to 2008 which demonstrated that corrosion monitoring activities were accomplished and specified corrosion inhibitor levels were maintained for the component cooling water and EDG jacket water systems. The team reviewed identification and resolution of closed cooling water systems' related condition reports and self assessments for the existing closed cooling water program.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented with enhancements, there was reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

7. Diesel Fuel Oil Program

This was an existing program to manage the aging effects of loss of material in the diesel fuel oil systems through monitoring and maintenance of fuel oil quality. The program included the diesel fuel oil systems for the emergency diesel generators (EDGs) and the diesel engine fire water pumps. The program includes other aging management programs including the Periodic Surveillance and Preventive Maintenance Activities, the Fire Protection Program and the One-Time Inspection Program. The program was described in section B.3.7 of the application and VEGP-LR-AMP-13, Diesel Fuel Oil Program LR Evaluation Document, Version 2. The implementation plan for the program is documented in VEGP-LR-IMP-07, Diesel Fuel Oil Program LR Implementation Package, Version 1. The program was fully implemented with no identified enhancements. The IMP provided a cross reference to all procedures which implement the program.

The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed existing procedures which implemented the scope and activities of this program. The inspectors reviewed results of previous inspections of fuel oil tanks and procedures and results for fuel oil tank sampling as well as corrective actions for identified parameter values that exceeded acceptance criteria.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

8. External Surfaces Monitoring Program

The VEGP External Surfaces Monitoring Program is a new Aging Management Program that implements inspections of external surfaces of mechanical system components for aging management in external air environments. The program is described in Section B.3.8 of the application and VEGP-LR-AMP-08, Version 2. Surfaces constructed from materials susceptible to aging in these environments will be inspected at appropriate frequencies to assure that the effects of aging are managed such that system components remain functional to perform their intended function during the period of extended operation. The program covers evidence of corrosion, flange leakage, missing or damaged insulation, damaged coatings, and indications of fretting or wear. Inspections of insulated surfaces are to be performed on a sampling basis targeting areas identified by baseline inspections and operating experience as the most susceptible to aging and functional degradation. Accessible polymers and elastomers are inspected for age-related degradation, including cracking, peeling, blistering, chalking, crazing, delamination, flaking, discoloration, physical distortion, embrittlement (hardening), and gross softening.

Systems and components which are normally inaccessible and therefore not readily available for inspection are inspected when they are made accessible during outages, routine maintenance or repair, or they may be inspected by remote means (boroscope, robotic camera, etc.). An area which is determined to be inaccessible due to extreme

personnel safety hazards, such as a very high radiation area, will be inspected only when made accessible during maintenance or for other reasons (opportunistic inspection), or if there is evidence of degradation or any leakage in the area.

The inspectors reviewed the program documentation, and discussed the program with responsible applicant personnel to assess the consistency of scope and actions of this proposed program to the NUREG 1801, Section XI.M36.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

9. Fire Protection

The Vogtle Fire Protection Program is an existing program that includes established periodic inspections, performance testing, and condition monitoring of fire water and Halon gas based fire protection systems, plant fire barriers, and the two diesel driven fire pumps and their fuel oil supply components. The program is implemented through various existing plant procedures. The program manages water-based fire suppression systems that include sprinklers, nozzles, valves, hydrants, fittings, hose stations, standpipes, water storage tanks, and aboveground and underground piping components. The systems are tested and inspected in accordance with plant procedures based in part on the applicable National Fire Protection Association codes and standards. The fire barrier inspections include periodic visual inspection of structural fire barriers, including fire walls, floors, ceilings, fire penetration seals, and fire doors.

Diesel driven fire pumps and fuel oil supply components are periodically inspected and tested to ensure that the diesels, pumps and fuel oil supply components can perform their intended functions.

The application states that the Fire Protection Program is consistent with the programs described in NUREG-1801, Sections XI.M26, “Fire Protection” and XI.M27, “Fire Water System,” with the following exception. Performance testing of the fixed Halon fire suppression system is performed at 18 month intervals rather than at least once every 6 months as specified by NUREG-1801, Section XI.M26 but visual inspections of the Halon system are performed at 6 month intervals.

The application states that the following enhancements will be implemented prior to the period of extended operation. The Fire Protection Program will be enhanced to perform wall thickness evaluations on water suppression piping systems using non-intrusive volumetric testing or visual inspections to ensure that wall thicknesses are within acceptable limits, as specified by NUREG-1801, Section XI.M27. Initial wall thickness evaluations will be performed before the end of the current operating term and subsequent evaluations will be performed at plant specific intervals during the period of

extended operation based on results of previous evaluation results and site operating experience.

The Fire Protection Program will also be enhanced to inspect a sample of sprinkler heads as specified by NUREG-1801, Section XI.M27. Where sprinkler heads have been in place for 50 years, they will be replaced or representative samples from one or more sample areas will be submitted to a recognized testing laboratory for field service testing. This sampling will be performed every 10 years after the initial field service testing. The Fire Protection Program will be further enhanced to provide more detailed instructions for visual inspection of the Fire Pump Diesel fuel supply lines for leakage, corrosion, and general degradation while the engine is running during fire suppression system pump tests as specified by NUREG-1801, Section XI.M26.

The inspectors reviewed the Fire Protection Program License Renewal Evaluation Document, VEGP-LR-AMP-10, Version 1 and the Fire Protection Program License Renewal Implementation Package, VEGP-LR-IMP-09, Version A, and found them to be of adequate quality and consistent with the application.

To determine how the Fire Protection Program has been functioning, the inspectors reviewed records of a sample of past surveillance tests on the various components of the program. The selected sample results were satisfactory with one exception. The Fire Suppression System - 5 Year Diesel FP 2 Flow Verification test performed 7/6/07 failed to meet the acceptance criteria for minimum system pressure during operation. The required minimum pressure was 98 psi but the observed value was 90 psi. There were indications of system performance degradation and a retest was performed on 9/6/07 with a troubleshooting plan to try to determine the location of any system leaks. The test aligns flow through several specified flow loop paths and measures the operating pressure. The average of all the pressure readings was recorded as 98 but some values were below 98. The test was repeated 1/10/08 with unsatisfactory results with several loops pressures below the required minimums. Acceptable results are expected after the corrective actions on the header leak and the discharge check valve discussed below are completed.

On 1/28/08, an underground piping leak was identified in a branch line far outside the plant protected area. The branch line services construction warehouses and a fire training facility. The leak was isolated with valves and the line was excavated beginning 5/20/08. On 5/28/08, the isolating valves were opened to send water to the fire training center and a much larger leak occurred in an elbow joint causing an auto-start of the diesels driven fire pumps. Even after reclosure of the isolating valves, the system could not regain normal pressure resulting in multiple auto-starts of all three fire pumps (2 diesels, 1 electric). It was subsequently found that a discharge check valve in a recirculation/test line from diesel fire pump 1 was stuck open.

The diesel engine was tagged out when the inspectors examined it and may have also been damaged due to being rotated backwards by flow through the stuck open check

valve. The system engineer stated they plan to reperform the flow test once the diesel fire pump is returned to service. This item is identified in the corrective action program and is in the process of being repaired. The leaking line had been excavated, cut out and replaced. The inspectors examined the removed section of piping and observed that it was in excellent condition with no signs of corrosion or other aging conditions. This condition should be representative of all the underground fire protection piping at Vogtle. This leak was due to a shifting of the mechanical bolted connection of the piping. The inspectors reviewed a listing of past CRs related to fire protection and noted that many past leaks seem to be due to mechanical connections leaking rather than piping material corrosion.

The inspectors examined the fire water storage tanks, the diesel and electric driven fire pumps, and various fire water system components. On plant walkthroughs inspectors did not observe any signs of degraded fire barriers. The inspectors concluded that the fire protection equipment at Vogtle is functioning adequately and is not suffering from excessive aging.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. The program is functioning adequately and there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

10. Flow-Accelerated Corrosion (FAC) Program

This is existing program is described in VEGP-LR-AMP-11 and implementation is described in VEGP-LR-IMP-10. The objective of this program is to manage loss of material (wall thinning) due to FAC in susceptible plant piping and other components. The program will be implemented through analysis to determine FAC susceptible locations, predictive modeling techniques, baseline inspections of wall thickness, follow-up inspections, and repair or replacement of degraded components as necessary. Specifically, the program consists of periodic inspections and evaluation of the data to detect wall thinning and compare data to current requirements and historical data values to predict when and if minimum wall thickness will occur. Piping replacements are planned prior to wall thickness reaching minimum requirements. Inspection points and inspection frequency is periodically adjusted dependant on inspection data, plant operations history, and industry information. The program is based on the industry guidance provided in NSAC-202L-R2, “Recommendations for an Effective Flow-Accelerated Corrosion Program,” including subsequent revisions of this guidance.

The inspectors reviewed program documentation describing the scope, inspection attributes, corrective actions, and acceptance criteria of this program along with the proposed procedures to implement it. Specifically, the inspectors reviewed the AMP and IMP documents, ultrasonic examination procedures, piping material specifications, susceptibility analysis procedures for FAC on piping systems, data base of susceptible locations, system drawings for FAC program purposes, FAC inspection reports,

corrective action program documents, program self assessments, Operating Experience Program documents, response to NRC communications, and action items to implement the program. The inspectors also interviewed applicant personnel responsible for the program implementation. The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. The FAC program is adequately functioning and there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

11. Flux Thimble Tube Inspection Program

This is an existing program which managed the loss of material due to fretting/wear of the incore flux detector thimble tubes. The program implemented the VEGP response to NRC Bulletin 88-09, Thimble Tube Thinning in Westinghouse Reactors, using non-destructive examination to monitor for wear on flux thimble tubes. The program is described in section B.3.11 of the application and VEGP-LR-AMP-12, Flux Thimble Tube Inspection Program, Version 1. The licensee identified enhancements specified for this program included the establishment of an overall program procedure documenting the Flux Thimble Tube Inspection Program administration and implementing activities. The enhancement was documented in the Flux Thimble Tube Inspection Program License Renewal Implementation Package, VEGP-LR-IMP-11, Version 1 and action item 2008202567 in the station action item list. Flux thimble tube inspections at Vogtle have historically been performed under vendor procedures. The site procedure to govern the program will be established prior to the period of extended operation.

The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed the draft overall program procedure included in the implementation package**.** Additionally, the inspectors reviewed the results of previous flux thimble tube inspections and documentation of corrective actions.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented with enhancements, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

12. Generic Letter 89-13 Program

The VEGP Generic Letter 89-13 Program is an existing program, described in Section B.3.12 of the LRA, which relies on the activities that implement the VEGP response to the NRC-recommended actions contained in Generic Letter (GL) 89-13, “Service Water System Problems Affecting Safety-Related Equipment.” The Generic Letter 89-13 Program activities include mitigation, as well as performance and condition monitoring techniques to ensure that the effects of aging on the Nuclear Service Cooling Water System (NSCW), and on those components supplied by the NSCW system, will be managed. The Generic Letter 89-13 Program is consistent with the program described in NUREG-1801, Section XI.M20, “Open-Cycle Cooling Water System,” with one

exception and enhancements. The exception is that NUREG-1801 states that testing and inspections are to be conducted annually and during refueling outages. The VEGP Generic Letter 89-13 Program activities are performed at a variety of intervals depending on the component, the parameter being monitored, and the results of previous inspections and are consistent with the VEGP commitments made in response to GL 89-13. The inspection intervals range from monthly to as much as ten years, depending on the component. The VEGP Generic Letter 89-13 Program activities will be enhanced prior to the period of extended operation to include inspection of the NSCW Transfer Pumps' casings and bolting and the inspection of the NSCW Cooling Tower spray nozzles as a specific item to be inspected during cooling tower inspections.

The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed existing procedures which implemented the scope and activities of this program. The inspectors reviewed NRC inspections and applicant self assessments of the existing program implementation during the past several years. In addition, the inspectors reviewed the corrective actions for identified equipment degradation. Since the early 1990s, operating experience has found the NSCW supply flow orifice to experience blockage by debris. Due to the repeated instances of fouling of NSCW components, periodic flow measurements were instituted for small diameter flow orifices, and several modifications were implemented to prevent debris from entering the NSCW cooling towers. Also, the cooling tower basins were inspected and cleaned by diving services, and an expanded inspection scope was performed during the 1996 refueling outage on each unit. Furthermore, analysis of the debris indicated that some debris was the result of Colmonoy coating flaking off of NSCW pump sleeves and wear rings. The NSCW Pumps were refurbished to eliminate this coating as a source of debris. The more aggressive inspection program implemented in response to the flow blockage issues proved to be effective in identifying fouling of flow orifices and heat exchangers prior to loss of function. The inspectors concluded that the applicant had conducted adequate historic reviews of plant-specific and industry experience to determine aging effects.

The applicant provided adequate guidance to ensure that aging effects will be appropriately assessed and managed through the continued implementation of the existing Generic Letter 89-13 Program. When implemented with enhancements, there is reasonable assurance that the components in the scope of License Renewal will continue to perform their intended function(s) during the period of extended operation.

13. In-Service Inspection (ISI) Program

The VEGP ISI program is described in LRA Section B.3.13; it is an existing plant-specific program that is consistent with the program described in NUREG-1801, Section XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD." The program mandates non-destructive examination techniques, testing, and inspections of components and systems to detect deterioration and manage aging effects. The program uses periodic visual, surface, and volumetric examination and leakage tests of

Class 1, 2, and 3 pressure-retaining components, their integral attachments, and supports to detect and characterize flaws. The program is implemented in accordance with 10 CFR 50.55(a), which imposes inservice inspection requirements of ASME Section XI for Class 1, 2, and 3 pressure-retaining components, their integral attachments, and supports. Inspection, repair, and replacement of these components are covered in Subsections IWB, IWC, IWD, and IWF, respectively. Because the ASME Code is a consensus document that has been widely used over a long period, it has been shown to be generally effective in managing aging effects in Class 1, 2, and 3 components and their integral attachments in light-water cooled power plants. The extent and schedule of the inspection and test techniques prescribed by the program are designed to maintain structural integrity and ensure that aging effects will be discovered and repaired before the loss of intended function of the component. Inspection can reveal cracking, loss of material due to corrosion, leakage of coolant, and indications of degradation due to wear or stress relaxation, such as verification of clearances, settings, physical displacements, loose or missing parts, debris, wear, erosion, or loss of integrity at bolted or welded connections.

The inspectors reviewed applicable procedures which serve as the governing plant procedures that assure compliance with ASME Code ISI requirements, the ASME Boiler and Pressure Vessel Code Section XI Repair and Replacement Program, and exceptions to code requirements, which are granted by approved relief requests and periodically reviewed in accordance with provisions of 10CFR50.55a. These exceptions (relief requests) are not considered exceptions to the NUREG-1801 License Renewal criteria. The inspectors also discussed the program with plant cognizant personnel, reviewed the Second 10-Year ISI plan for both units, and reviewed inspection results from the last outage. In conformance with 10 CFR 50.55a(g)(4)(ii) and as based on ASME Inservice Inspection Program B (IWA-2432), the VEGP ISI Program is updated at the end of each 120-month inspection interval to the latest edition and addenda of the Code specified in 10 CFR 50.55a twelve months before the start of the new inspection interval. The VEGP Inservice Inspection Program second inspection interval ended in May 2007. The VEGP third inservice inspection interval requirements are based on ASME Section XI, 2001 Edition including the 2002 and 2003 Addenda. The inspectors also reviewed an assessment of the VEGP ISI program conducted by EPRI in late 2002 which identified program weaknesses which were captured in the applicant corrective action program. These corrective actions will be monitored during future NRC inspections.

When implemented as described, the VEGP ISI program provides reasonable assurance that the aging effects will be managed such that the systems and components crediting the program will continue to perform their intended functions consistent with the current licensing basis through the period of extended operation.

14. Nickel Alloy Management Program for Non-Reactor Vessel Closure Head Penetration Locations

This program, as described in Section B.3.14 of the LRA, is plant-specific and will manage cracking due to primary water stress corrosion cracking (PWSCC) for

non-reactor vessel head nickel alloy component locations. The development of this program is based on MRP-126, "Generic Guidance for Alloy 600 Management." The program has been categorized as a new program for license renewal, even though elements of this program exist as implementation details are still under development by the industry. This program will manage cracking due to PWSCC for the following nickel alloy component locations including: Butt welds within the primary system, Reactor Vessel Inlet and Outlet Nozzle Dissimilar Metal Welds, Pressurizer Surge, Spray, Safety, and Relief Nozzle Dissimilar Metal Welds, Reactor Vessel Bottom Mounted Instrument Nozzles, Reactor Vessel Flange Leakage Monitor Tube, and Steam Generator Primary Channel Head Drain Connection Tube & Dissimilar Metal Welds.

Based on inspections conducted on pressurizer butt welds, reactor vessel nozzle butt welds, reactor vessel bottom mounted instrumentation penetrations and steam generator primary channel head drain connection tube dissimilar metal weld, the applicant has not detected PWSCC at any Alloy 600/82/182 location to date. However, based on industry experience and similarities with other units where PWSCC has been detected, Alloy 600/82/182 locations are susceptible to PWSCC. For this reason, the applicant has committed to: (1) continue to participate in industry initiatives directed at resolving PWSCC issues, such as owners group programs and the EPRI Materials Reliability Program; (2) comply with applicable NRC Orders and; (3) submit a program inspection plan for VEGP that includes implementation of applicable NRC Bulletins, Generic Letters, and staff accepted industry guidance. The inspection plan will be submitted to the staff for review and approval not less than 24 months prior to entering the period of extended operation for VEGP Units 1 and 2.

The inspectors reviewed the evaluation document, the program implementation plan, program related corporate and plant-specific procedures, inspection results, and held discussions with applicant personnel responsible for the inspections. The inspectors concluded that, when implemented as described, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained throughout the period of extended operation.

15. Nickel Alloy Management Program for Reactor Vessel Closure Head Penetrations

This program, as described in Section B.3.15, is an existing program and consistent with Section XI.M11A of the GALL (NUREG-1801). It was developed to address industry concerns regarding the potential for primary water stress corrosion cracking (PWSCC) in nickel alloy components exposed to the reactor coolant environment. This program is based upon the requirements of NRC First Revised Order EA-03-009, which establishes requirements for susceptibility ranking and inspections.

Detection of cracking is accomplished through a combination of bare metal visual examinations and non-visual techniques. Bare metal visual examination is performed for 100% of each reactor vessel head surface, including 360º around each reactor vessel head penetration nozzle. Non-visual techniques require either (1) ultrasonic testing of

each reactor vessel head penetration nozzle (i.e., nozzle base metal) from two inches above the J-Groove weld to the bottom of the nozzle and an assessment to determine if leakage has occurred into the interference fit zone, or (2) Eddy current testing or dye penetrant testing of the wetted surface of each J-Groove weld and reactor vessel head penetration base metal to at least two inches above the J-Groove weld. Additionally, general visual inspection is performed at each refueling outage to identify potential borated water leaks from pressure retaining components above the reactor vessel head. The current program includes one relaxation and one alternative from NRC First Revised Order EA-03-009 inspection requirements which are the following:

- Order EA-03-009, Section IV.C(5)(a), specifies examination coverage for bare metal visual examination of the reactor vessel head surface. Full examination coverage is not possible without removal of reflective metal insulation. A minimum additional dose of 10 rem is expected to inspect the less than one percent of the vessel head surface obscured by the insulation. The obscured area is in an area where leakage is not expected to initiate. The applicant requested relaxation from the NRC to not inspect the small surface of the reactor vessel head obscured by insulation. This relaxation was granted by the staff in a September 2005 Safety Evaluation (ML052300617).

- Order EA-03-009, Section IV.C(5)(b), specifies examination volume for reactor vessel head penetration nozzle base material. Full examination volume coverage using ultrasonic testing is not possible at VEGP due to geometry considerations. Specifically, the bottom end of the nozzles are threaded, internally tapered, or both. This geometry makes ultrasonic inspection in accordance with NRC First Revised Order EA-03-009 a hardship based on the need to consider the increased radiation dose due to implementation of surface examination options. The applicant proposed to the staff to ultrasonically test nozzle ends to the maximum extent possible. This alternate approach was approved by the staff in an August 2006 Safety Evaluation (ML062360585). The inspectors reviewed the evaluation document, the program implementation plan, program related corporate and plant-specific procedures, inspection results, and held discussions with applicant personnel responsible for the inspections.

The inspectors concluded that, when implemented as described, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained throughout the period of extended operation.

16. Oil Analysis Program

This existing program ensured that lubricating oil and hydraulic fluid environments in the in-scope mechanical systems were maintained to the required quality and that contaminants (primarily water and particulates) for these systems were maintained within acceptable limits, thereby preserving an environment that is not conducive to loss of material, cracking, or reduction of heat transfer. The One Time Inspection program [B.3.17], described in paragraph 17 below, includes inspections to verify the

effectiveness of the oil analysis program. The program is described in section B.3.16 of the application and VEGP-LP-AMP- 26, Oil Analysis Program LR Evaluation Document, Version 2. The implementation plan is described in VEGP-LR-IMP-16, Oil Analysis Program LR Implementation Package, and Version 1. Program enhancements identified in the evaluation document included establishment of an overall program procedure or guideline that will formalize the sampling and analysis activities of this program including the basis for viscosity and metal limits. The enhancements were identified as action items in the station action item data base as items 2008300031, 2008300032, and 2008300033. The inspectors reviewed the program documentation, discussed the program with responsible station personnel and reviewed existing procedures which implemented the scope and activities of this program. Additionally, the inspectors reviewed the corrective actions for identified oil samples which exceeded acceptance criteria.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented with enhancements, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation. The enhancement noted in the program description was scheduled to be implemented prior to the period of extended operation.

17. One Time Inspection Program

This new program will use one time inspections to provide objective evidence that an aging effect is not occurring, or that the aging effect is occurring slowly enough to not affect the components or structures intended function during the period of extended operation, and will therefore not require additional aging management. The inspections will be performed within a window of ten years immediately preceding the period of extended operation. This program will verify the effectiveness of the aging management programs for water chemistry control, diesel fuel oil, and oil analysis. The program will include determination of a sample size, identification of inspection locations, determination of examination technique, and evaluation of the need for follow-up examinations.

The inspectors reviewed the description of the program in application section B.3.17 and VEGP-LR-AMP-28, One Time Inspection Program License Renewal Evaluation Document, Version 1, which identified the scope with respect to the aging management programs addressed, material/environment combinations and aging effects of concern. Additionally the inspectors reviewed the program implementation plan documented in VEGP-LR-IMP-17, One Time Inspection Program License Renewal Implementation Package, Version A, and discussed the program with station license renewal staff. The implementation package included draft procedures for the program and visual examinations. The implementation of this program was assigned item number 2008202575 in the station action item tracking program.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is

reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained through the period of extended operation.

18. One Time Inspection Program for ASME Class 1 Small Bore Piping

This new program was intended to provide objective evidence that the aging effect of cracking, due to thermal, mechanical and inter-granular stress corrosion, was not occurring, or occurring slowly enough to not affect the intended function of in-scope small bore piping during the period of extended operation. Small bore is less than a 4 inch nominal pipe size (NPS). To address stress corrosion cracking, a one time volumetric examination of a sample of small bore butt welds will be performed. Examination locations will be selected using a risk-based approach that will consider susceptibility, inspectability, dose, and operating experience. To address thermal fatigue cracking, the applicant will screen and evaluate pipe lines using MRP-146, "Management of Thermal Fatigue in Normally Stagnant Non-isolable Reactor Coolant System Branch Lines," or later updated guidance. The program criteria stated was that loss of system function will not occur and loss of RCS boundary does not occur during period of extended operation. The program will be implemented and inspections completed and evaluated within a window of ten years proceeding the period of extended operation. Inspection of small bore piping socket welds will continue to be performed by VT-2 inspection as is done in the current, 3rd interval, In-service Inspection (ISI) Program Plan**.**

The program was described in section B.3.18 of the application and in VEGP-LR-AMP-27, One Time Inspection Program for ASME Class 1 Small Bore Piping LR Evaluation Document, Version 2. The implementation plan was described in VEGP-LR-IMP-18, One Time Inspection Program for ASME Class 1 Small Bore Piping LR Implementation Package, Version 1. The commitment to implement the One Time Inspection Program for ASME Class 1 Small Bore Piping was identified as station action items 2008202578 and 2008202579. The inspectors reviewed the program documentation and discussed the program with responsible applicant personnel.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

19. One Time Inspection Program for Selective Leaching

This new program will be a one time inspection program to assess selective leaching in susceptible cast iron and copper alloy components. The one-time examination will include a sample population of components most likely to exhibit selective leaching. Initial examinations will be performed within a window of ten years immediately preceding the period of extended operation. If degradation due to selective leaching is identified, additional examinations will be performed. The program was described in section B.3.19 of the application and VEGP-LR-AMP-29, One Time Inspection Program for Selective Leaching License Renewal Evaluation Document, Version 2.

The evaluation document generally identified the program scope with respect to component types, material, and environment. The implementation plan documented in VEGP-LR-IMP-19, One Time Inspection Program for Selective Leaching, License Renewal, Implementation Package, Version 1, included a summary listing of selective leaching locations and a draft procedure which outlined specific inspection locations and inspection requirements. The commitment to implement the program is documented as action item 2008202579. The inspectors reviewed the program description, the implementation package, and the draft procedure and discussed the program development and implementation with the station license renewal staff.

The inspectors concluded that the applicant provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained throughout the period of extended operations.

20. Overhead and Refueling Crane Inspection Program

The Overhead and Refueling Crane Inspection Program is an existing Aging Management Program at VEGP, however, the program will be further enhanced to explicitly identify inspection of crane rails and crane structural components for loss of material due to corrosion and wear, and for indication of rail misalignment. The program is described in Section B.3.20 of the License Renewal Application, and VEGP-LR-AMP-30. The VEGP Overhead and Refueling Crane Inspection Program is primarily concerned with passive, long lived, carbon steel structural components that make up the bridge and trolley. The program is credited with managing loss of material for the steel rails and girders within the scope of license renewal.

The Overhead and Refueling Crane Inspection Program has been in effect for many years at VEGP and is based on guidance contained in ANSI B30.2 for overhead cranes. The Overhead and Refueling Crane Inspection Program includes Nuclear Safety Related and Quality Related material handling systems and is a condition monitoring program. The regulatory basis for periodically inspecting Nuclear Safety Related and Quality Related cranes is found in NUREG-0612 [Reference 3, Article 5.1.1]. The Overhead and Refueling Crane Inspection Program has been evaluated in accordance with the guidance provided in NUREG -1801.

The inspectors reviewed crane inspection records, procedures and work orders. The inspectors also verified that issues pertaining to aging management were appropriately addressed such as those identified during inspections of the cranes. For license renewal, the following cranes were identified as being within the scope of program: polar crane, spent fuel cask crane, refueling machine, and the fuel handling machine bridge cranes. The applicant plans to include requirements to inspect for bent or damaged members, loose bolts/components, broken welds, abnormal wear of rails, and corrosion of steel members and connections to ensure that aging effects are monitored and managed.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed with enhancements. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

21. Periodic Surveillance and Preventive Maintenance Activities

This program, as described in Section B.3.21 of the application, includes existing and new periodic inspections and tests that are relied on by license renewal to manage the aging effects applicable to the components included in the program. Inspection and testing activities monitor various parameters such as surface condition, loss of material, presence of corrosion products or fluid leakage, signs of cracking, or reduction of wall thickness. Intervals are established to provide timely detection of degradation. Inspection and testing intervals are dependent on the component, material, and environment, and take into consideration industry and plant-specific operating experience and manufacturer's recommendations.

The existing program will be enhanced by adding inspections of the following components: Steam Generator Blowdown Secondary Sample Bath Shells for loss of material, Steam Generator Blowdown Corrosion Product Monitor cooler shells for loss of material, and Potable Water System water heater housings (for the in-scope water heaters).

The inspectors reviewed the evaluation document, implementation procedures, and associated references and determined that, when implemented, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained throughout the period of extended operation.

22. Piping and Duct Internal Inspection Program

This program, as described in Section B.3.22 of the LRA, is a new program consistent with the GALL (NUREG-1801), Section XI.M38, with exceptions. It will manage corrosion of steel, stainless steel, and copper alloy components and degradation of elastomer components due to changes in material properties and that are not addressed by other aging management programs. Examination techniques may include visual examination, non-visual NDE such as ultrasonic testing or radiography and physical manipulation of elastomers. In cases where visual inspection may not be the most appropriate inspection technique or may not be feasible due to geometric or other limitations, other examination methods will be used which effectively detect and assess degradation.

The applicant has developed a list of components included within the scope of this program. Inspection locations and intervals will be dependent on assessments of the likelihood of significant degradation and on current industry and plant-specific operation experience.

VEGP Piping and Duct Internal Inspection Program is consistent with Section XI.M38 of the GALL (NUREG-1801) with the following exceptions, which exceed GALL recommendations:

- It includes not only steel piping, piping components and ducting, but also other components such as stainless steel, copper alloy and elastomer components. It will monitor not only component surfaces through visual examination, but may also use non-visual techniques to monitor parameters such as wall thickness and ductility.

- It will include acceptance criteria for both visual and non-visual techniques. For physical manipulation or destructive examination of elastomers, no indication of unacceptable hardening, de-lamination, or cracking of the elastomer is acceptable. For thickness measurements of steel, stainless steel, and copper alloy components, remaining wall thickness must be sufficient to provide reasonable assurance that the component will continue to perform its design function until the next scheduled inspection.

The inspectors reviewed the evaluation document, implementation procedures and associated references and determined that, when implemented as conceptually developed and intended, there is reasonable assurance that the intended function of the SSCs within the scope of this program will be maintained throughout the period of extended operation.

23. Reactor Vessel Closure Head (RVCH) Stud Program

This is an existing program with elements described in VEGP-LR-AMP-34 and its implementation described in VEGP-LR-IMP-23. The objective of this program is to manage loss of material and cracking in the reactor vessel closure head studs, nuts, and washers. The program will be implemented through visual and volumetric examinations, and leakage detection consistent with the VEGP Inservice Inspection Program. The applicant will implement a RVCH Stud Program consistent with the 2001 Edition through 2003 Addenda of the ASME Code, Section XI, Table IWB-2500-1, and it will be updated in conformance with 10 CFR 50.55(a) for future inspection intervals. Preventive measures will include control of bolting materials and lubricants as described in NRC Regulatory Guide 1.65. The applicant has previously inspected the studs, nuts and washers and has appropriately scheduled successive inspections. In addition, the applicant has implemented controls to assure the use of approved lubricants via program and maintenance procedures.

The inspectors reviewed program documentation describing the scope, inspection attributes, corrective actions, and acceptance criteria of this program along with the implementation procedures. Specifically, the inspectors reviewed the AMP and IMP documents, Inservice Inspection Plans, current lubricant specifications, Reactor Vessel disassembly procedures, Visual Examination (VT-1) procedure, ultrasonic examination

procedure for bolts and studs, ultrasonic examination reports, ISI program self-assessments, corrective action program documents, Operating Experience Program documents, and Action Items to implement the program. The inspectors also interviewed applicant personnel responsible for the program implementation.

The inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented as described, there is reasonable assurance that adequate inspections required by ASME will be performed through the extended period and that the intended function of the RVCH studs will be maintained during the period of extended operation.

24. Reactor Vessel (RV) Internals Program

This is a new condition monitoring program is described in document VEGP-LR-AMP-33 and implementation is described in document VEGP-LR-IMP-24. The Reactor Vessel Internals Program is intended to augment the inspection requirements of ASME Section XI, IWB Category B-N-3, to ensure that aging effects do not result in a loss of intended function of internal components during the period of extended operation. The Program will be an integrated inspection and evaluation program which will address all of the reactor internals in accordance with industry guidelines currently under development. It is credited as a program for managing cracking, loss of fracture toughness due to thermal aging, irradiation embrittlement or void swelling, loss of preload due to stress relaxation, loss of material due to wear, and changes in dimension due to void swelling. The applicant plans to stay involved with the Electric Power Research Institute (EPRI) Material Reliability Program (MRP) Reactor Vessel Internals Focus Group, which is developing the model for the inspection and evaluation.

The applicant's program also includes two component locations that are not currently included in the draft program developed by EPRI MRP Reactor Internals Focus Group. These locations are the reactor vessel thermal sleeves and the core support lugs, attachment welds, and support pads. For these component locations, the applicant will develop inspection guidance and acceptance criteria based on industry operating experience, plant specific operating experience, and vendor recommendations.

The inspectors reviewed program documentation, the LR commitment data base, and the Reactor Coolant System Materials Management Program procedure. The inspectors also held discussion with responsible applicant personnel about the draft EPRI MRP guidelines, "PWR Internals Inspection and Evaluation Guidelines," currently MRP-227. The inspectors concluded that the Reactor Vessel Internals Program is planned and the applicant is appropriately involved with industry initiatives to assure an adequate program will be initiated. In addition, the applicant is committed to submit the inspection plan for NRC review at least 24 months prior to entering the period of extended operation.

The inspectors concluded that when implemented as described, there is reasonable assurance that adequate inspections required by ASME, as augmented by industry

guidelines, will be performed through the extended period and that the intended function of the RV internals will be maintained during the period of extended operation.

25. The Reactor Vessel (RV) Surveillance Program

The Reactor Vessel Surveillance Program is an existing program credited with managing the aging effects of the reactor beltline area in the Vogtle plant. The purpose of the surveillance program is to monitor for changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region which result from exposure to neutron irradiation and the thermal environment. Vogtle's program evaluates neutron embrittlement of the capsules through surveillance testing and the evaluation of the reactor vessel surveillance capsules (tensile specimens, charpy specimens, and dosimetry), fluence calculations, benchmarking, and monitoring of effective full-power years (EFPYs). The applicant stated the program is consistent with GALL AMP XI.M31, Item 6 with the following exception. For both the VEGP Unit 1 and 2 reactor vessels, capsules with an accumulated neutron fluence equivalent to 60 years of operation have been pulled and tested. However, two capsules remain in each of the Unit 1 and 2 reactor vessels. The applicant will remove these remaining capsules when the capsules will have an accumulated neutron fluence that is not less than once nor greater than twice the peak end of life fluence expected for an additional 20-year license renewal (80 years of operation.)

The inspector reviewed the program documents to verify the surveillance capsule withdrawal schedule and that those capsules scheduled for completion have been removed and tested. In addition, the inspector interviewed personnel and reviewed the external neutron monitoring program.

The inspectors concluded that when implemented as described, there is reasonable assurance that the reactor vessel will be adequately maintained through the period of extended operation.

26. Steam Generator Tubing Integrity Program

This is an existing condition monitoring program with elements described in VEGP-LR-AMP-37 and its implementation described in VEGP-LR-IMP-26. This AMP is a subprogram of the VEGP Steam Generator Program, which is an integrated program for managing the condition of the VEGP steam generators. The objective of this AMP is to manage degradation of SG anti-vibration bars, stay rod assemblies, tubes (U-tubes) and tube plugs, tube bundle wrapper and support assembly, tube support plates, and flow distribution baffles. The program is implemented through tube examinations, tube repairs, and engineering assessments consistent with NEI 97-06, Steam Generator Tubing Integrity Program Guidelines, and VEGP Technical Specifications 5.5.9 and 3.4.13 (d). The examinations consist of eddy current testing (ECT) of the SG tubes based on known and expected degradation mechanisms. Tube repairs are performed in accordance with the TS "Repair Criteria" and with qualified repair methods. Engineering assessments consist of Degradation Assessment (DA), Condition Monitoring (CM), and

Operational Assessment (OA). The DA addresses the inspection plan and ECT techniques based on the existing and potential degradation mechanisms, which are obtained from plant historical data and industry operating experience. The CM documents a comparison of the as-found condition against the performance criteria for structural integrity to confirm that adequate steam generator integrity has been maintained during the previous operating period. The OA is a "forward-looking" evaluation of the SG tube condition to predict that the tube integrity performance criteria will be acceptable until the next scheduled inspection. Preventive measures include primary water chemistry control under a separated AMP: "VEGP Water Chemistry Control Program." Detection of primary to secondary leakage is in accordance with the EPRI PWR Primary to Secondary Leak Guidelines.

The inspectors reviewed program documentation describing the scope, inspection attributes, corrective actions, and acceptance criteria of this program along with the procedures to implement it. Specifically, the inspectors reviewed the AMP and IMP documents, SG Program documents, SG Strategic Plan, Degradation Assessment reports, Condition Monitoring and Operational Assessment reports, and SG Program Health reports. The inspectors also held discussions with the steam generator program coordinator and reviewed program activities and found that the program was being implemented as described in the LR documents.

The inspectors concluded that the existing Steam Generator Tube Integrity Program is being effectively implemented, includes the elements described in the LRA, and there is reasonable assurance that this program will effectively manage the effects of aging on the steam generator tubes during the period of extended operation.

27. Steam Generator Program for Upper Internals

This is an existing condition monitoring program with elements described in VEGP-LR-AMP-36 and its implementation described in VEGP-LR-IMP-27. This AMP is a subprogram of the VEGP Steam Generator Program, which is an integrated program for managing the condition of the VEGP steam generators. The objective of this AMP is to manage degradation of steam generator secondary side internal components whose failure could impact tubing integrity. The components within the scope of this AMP are: auxiliary feedwater spray piping, auxiliary feedwater nozzle thermal sleeves, feedwater distribution assembly piping and fittings, feedwater inlet nozzle thermal sleeves, feedwater J-tubes, moisture separator assemblies – primary, moisture separator assemblies. The program is implemented through visual inspections of the SG secondary side and engineering assessments consistent with NEI 97-06, Steam Generator Tubing Integrity Program Guidelines. Eddy Current examinations performed as part of the SG Tubing Integrity Program also provide indications of the secondary side conditions. The visual inspections of the SG secondary side components are performed as part of the foreign object search and retrieval (FOSAR) activities. All foreign materials that are removed, determined to be irretrievable with potential to cause tube damage, or have caused tube damage are evaluated in the Condition Monitoring (CM) and the Operational Assessment (OA) reports, along with the corrective action

program. Preventive measures include secondary water chemistry control under a separated AMP: “VEGP Water Chemistry Control Program.”

The inspectors reviewed program documentation describing the scope, inspection attributes, corrective actions, and acceptance criteria of this program along with the procedures to implement it. Specifically, the inspectors reviewed the AMP and IMP documents, SG Program documents, SG Strategic Plan, Degradation Assessment reports, Condition Monitoring and Operational Assessment reports, and SG Program Health reports. The inspectors also held discussions with the steam generator program coordinator and reviewed program activities and found that the program was being implemented as described in the LR documents.

The inspectors concluded that the existing Steam Generator Program for Upper Internals is being effectively implemented, includes the elements described in the LRA, and there is reasonable assurance that this program will effectively manage the effects of aging on the steam generator upper internals during the period of extended operation.

28. Water Chemistry Control Program

This is an existing program to mitigate the aging effects of the loss of material, cracking, and reduction in heat transfer in system components and structures through the control of water chemistry. This included control of detrimental chemical species and the addition of chemical agents. The station water chemistry control program is based on the Electric Power Research Institute (EPRI) Pressurized Water Reactor (PWR) Primary Chemistry Guidelines: Volume 1 and 2, Revision 5, and PWR EPRI Secondary Water Chemistry Guidelines, Revision 6. The program included periodic monitoring, control of detrimental chemical contaminants, and the addition of chemical agents. The program is described in section B.3.28 of the application and VEGP-LR-AMP-39, Water Chemistry Control Program License Renewal Evaluation Document, Version 2. The implementation plan is described in VEGP-LR-IMP-28, Water Chemistry control Program License Renewal Implementation Package, Version 1. There were no enhancements identified for this program. The implementation plan provided a cross reference to station procedures implementing the program.

The inspectors reviewed the program documentation, discussed the program with the responsible station staff, and reviewed existing procedures which implemented the scope and actions of this program. The inspectors reviewed trending of critical chemistry parameters and reviewed the identification and resolution of identified conditions in which parameter limits were exceeded. Additionally, the inspectors reviewed applicant self assessments of the water chemistry program.

The inspectors concluded that the applicant had conducted adequate historic reviews of plant specific and industry experience to determine aging effects. The applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

29. 10 CFR Part 50, Appendix J Program

The 10 CFR 50 Appendix J Program is an existing program, described in LRA Section B.3.29. It is consistent with the program described in NUREG-1801, Section XI.S4, “10 CFR 50, and Appendix J.” The VEGP 10 CFR 50 Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors" Program utilizes the performance-based testing approach of 10 CFR 50 Appendix J, Option B, and includes appropriate guidance from Regulatory Guide 1.163, Revision 0, "Performance-Based Containment Leak-Test Program," together with NEI 94-01, “Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50 Appendix J” and ANSI/ANS 56.8, "Containment System Leakage Testing Requirements.” The program monitors leakage rates through the containment liner/welds, penetrations, fittings, and access openings to detect degradation of the pressure boundary. Seals, gaskets, and bolted connections are also monitored under the program. No exceptions to NUREG-1801 or enhancements to the current program are planned.

The inspectors reviewed and discussed previous outage reports, leak rate test results, and applicable procedures with plant personnel. Acceptance criteria for leakage rates are defined in plant technical specifications. Containment integrated leak rate testing (ILRT) was last performed in March 2002 for Unit 1(during 1R10), and in March 1995 for Unit 2 (during 2R4). Local leak rate tests (LLRTs) performed prior to the ILRTs identified some leaks to be repaired prior to the ILRTs. The ILRT test results were satisfactory and in compliance with the Technical Specifications and 10 CFR 50, Appendix J. Based on two consecutive as-found leakage rates of less than 1.0 La (allowable leakage rate), the ILRT test frequency for Unit 1 and Unit 2 was lengthened to 15 years; therefore, the next IRLT for Unit 1 (1R20) is scheduled for Spring 2017 and for Unit 2 (2R14) is scheduled for Spring 2010. In addition, the industry and site operating experience has shown that the LLRTs are effective at identifying and initiating corrective actions for leakage at containment penetrations including the equipment hatch and air locks, and confirming the corrective actions taken.

Implementation of the 10 CFR Part 50 Appendix J Program has been effective in managing aging effects and there is reasonable assurance that effects of aging will be managed such that applicable structures and components associated with the containment pressure boundary will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.

30. ASME Section XI, Subsection IWE Program

This is an existing program credited in the LRA for monitoring aging of the reactor containment which includes visual examination of the steel containment liner and integral attachments, containment hatches and airlocks, seals, gaskets, and moisture barriers, and pressure-retaining bolting in accordance with ASME Section XI.

The frequency and scope of examinations specified in 10 CFR 50.55a and Subsection IWE ensure that aging effects would be detected before they would compromise the design basis requirements. The ASME Section XI, Subsection IWE Program is implemented and maintained in accordance with the general requirements for engineering programs. VEGP will perform successive examinations in accordance with procedure 85053-C, "Visual Examination for ASME XI Subsection IWE and IWL and General Visual Inspections".

The application states that there is no corresponding NUREG-1801 program, however, attributes of the program have been compared to the ten elements of an aging management program for license renewal as described in NUREG-1800, table A.1-1. The program manages loss of material and cracking for the primary containment and its integral attachments by conducting visual examinations, either directly or remotely, and includes augmented examinations to measure wall thickness of the containment liner. 10CFR50a(b)(2)(ix) specifies additional requirements for inaccessible areas and states that the licensee is to evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas. VEGP has identified corrosion in areas around the moisture seal between the containment base mat and liner plate and identified the corrosion had no effect on containment structural integrity. These areas will be periodically reexamined in accordance with Section XI, IWE requirements.

The inspectors reviewed the LR program description evaluation document, the program implementation package, reviewed the applicable plant procedures, reviewed recent inspection results, and held discussions with responsible applicant personnel. The inspectors concluded that the IWE Inspection Program was in place, had been properly implemented, and was consistent with the description in the LRA. There is an established tracking mechanism to ensure that all LR actions are tracked and completed.

When implemented as described, there is reasonable assurance that the required inspections and evaluations will be performed through the extended period and there is reasonable assurance that the intended function of the reactor containment will be maintained through the period of extended operation.

31. ASME Section XI, Subsection IWL Program

This program is an existing program credited in the LRA for aging management of accessible and inaccessible pressure retaining primary containment concrete by performing inspections required by ASME Section XI. The program is in accordance with ASME Code, Section XI, Subsection IWL, 1992 Edition, 1992 Addenda. The program consists of periodic visual inspection of the reinforced concrete containment structure for degradation conditions such as corrosion, cracks, distortion, efflorescence, exposed reinforcing steel, popout, scaling, and spalling. The concrete containment structure consists of a prestressed reinforced concrete cylinder and hemispherical dome, and does not utilize a post-tensioning system in their design. Therefore the IWL requirements pertaining to post-tensioning do not apply.

The ASME Section XI, Subsection IWL Program is implemented and maintained in accordance with the general requirements for engineering programs. VEGP will perform successive examinations of concrete components classified as Class CC, and tendon examinations, at least once every five years. The implementation of examinations is shown in the following procedures; GEN-100, “Tendon Surveillance Program Manual”, and 85053-C, “Visual Examination for ASME XI Subsection IWE and IWL and General Visual Inspections”.

The VEGP ASME Section XI, Subsection IWL program is continually being upgraded based upon industry and plant-specific experience. Additionally, plant OE is shared between SNC sites through regular peer group meetings, a common corporate sponsor, and outage participation of program managers from other SNC sites. Plant-specific operating experience (OE) includes assessments, performed on both a plant specific and corporate basis, dealing with program development, effectiveness, and implementation.

The inspectors reviewed the LR program evaluation document, the program implementation package, reviewed the applicable plant procedures, reviewed recent inspection results, and held discussions with responsible applicant personnel.

The inspectors concluded that the IWL Inspection Program was in place, had been properly implemented, and was consistent with the description in the LRA. There is an established tracking mechanism to ensure that all actions are tracked and completed. When implemented as described, there is reasonable assurance that the required inspections and evaluations will be performed through the extended period and there is reasonable assurance that the intended function of the reactor containment will be maintained through the period of extended operation.

32. Structures Monitoring Program

The Structural Monitoring Program (SMP) at VEGP is an existing program based upon the requirements and guidance set forth in 10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants” and Regulatory Guide 1.160, Rev. 2, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants.” This program is described in Section B.3.32 of the application and VEGP-LR-AMP-38. VEGP uses the SMP to monitor the condition of structures and structural components within the scope of the Maintenance Rule, thereby providing reasonable assurance that there is no loss of intended function of a structure or a structural component. The program, however, is to be enhanced to include: additional structures that require monitoring for license renewal during the period of extended operation, non-safety-related as well as safety-related hangers and supports, (the program document currently indicates only Category 1 hangers and supports), and periodic ground water monitoring samples to be obtained from locations near the power block structures. Enhancements to the VEGP Structural Monitoring Program will be implemented prior to the period of extended operation.

The inspectors reviewed the AMP description for the SMP, selected plant inspection data, engineering documents, site procedures, drawings, corrective action documents, inspection and audit reports, and procedures required to manage the effects of aging. The inspectors also discussed the applicable programs with responsible personnel and reviewed personnel qualifications. Also, inspectors conducted a general walkthrough inspection of the site, including the reactor building, auxiliary building, service water intake structure, diesel generator building, and other applicable structures, systems or components related to the SMP. The inspectors reviewed records and held discussions with the applicant's supervisory and technical personnel to verify that areas where signs of degradation, such as spalling, cracking, leakage through concrete walls, corrosion of steel members, deterioration of structural materials and other aging effects, had been identified and documented. The applicant maintains photographic and/or written documentation of these inspections containing adequate details of areas inspected and conditions observed to facilitate effective monitoring and trending of structural deficiencies or degradations.

During the walkthrough inspection on May 22, 2008, a crack in the roof of Room 209 (Piping Penetration Ventilation Room), which appeared to leak, was examined. The surfaces adjacent to the crack had white deposits on the surface that appeared to be leached carbonate and/or hydroxide material from the concrete roof slab. The licensee had identified and documented this crack (CR #2007111205) in the structural monitoring inspection for Maintenance Rule compliance in October of 2007. A review of the CR indicated that the crack had been identified in earlier inspections, and was repaired by caulking to stop the leak. However, the 2007 inspection disclosed a continuing leak. The CR evaluated the significance of this crack and leakage with the perspective of current MR requirements; e.g., structural failure, operability and expected serviceability of the roof over the current "licensed life" of the plant. This evaluation appeared to be based on "Engineering Judgment" rather than any documented investigation, analysis and/or industry standards. Characteristics of the crack, such as, dimensions (length, width, and direction) were not noted on the CR. Also, there was no information as to when the crack was originally identified, repaired, the dimension of the crack when first noticed, and the kind of material (caulk) used to prevent leakage through the roof. There was no evidence of the quality or characteristics of the fluid leakage, its source (i.e., rain or other source), or its long term effect on the reinforced concrete slab. It, therefore, cannot be determined with any degree of certainty that the crack was growing, or in a stable state; if the caulking was an effective leak barrier; or if the fluid leakage was not detrimental to the concrete in long run. Such lack of detail raised questions regarding the effectiveness of the MR program in addressing the GALL requirements related to aging management of concrete structures for extended operation. There were no measurements or explicit standards of acceptance applied to assess the significance of this condition.

The inspectors concluded that a method of consistent measurements, causal analysis, and assessment of material properties were not performed and constituted a weakness in the program. Without correcting this weakness, the program may not meet a reasonable standard for monitoring and trending; thereby, reducing the effectiveness of the AMP in identifying, trending, and managing the aging effect in reinforced concrete.

The applicant recognized the weakness in the program and initiated changes in the SMP to enhance evaluation and trending of findings identified during inspections and monitoring. The applicant issued action item No. 2008200758 to implement these changes.

Based on the above observations and corrective actions, the inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. When implemented with enhancements, there is a reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

33. Masonry Wall Program

The Masonry Wall Program is part of the VEGP Structural Monitoring Program, described in Section B.3.33 of the application and VEGP-LR-AMP-40, and also implements the structural monitoring requirements specified by 10 CFR 50.65, and the NRC Bulletin IEB-80-12. The Masonry Wall Program is an existing program that manages aging of masonry walls, and structural steel restraint systems of the masonry walls, within the scope of license renewal. The program includes the concrete masonry units and restraint systems used for sealing and providing radiation shielding at some access openings in the Seismic Category 1 structures. This program will be further enhanced to include Non-Category 1 structures and items prior to the period of extended operation.

Although, at VEGP there are no masonry walls in Seismic Category I structures, certain openings in the Auxiliary Building are sealed with concrete masonry units for radiation shielding and maintenance access purposes. These concrete units are restrained by steel angle or steel beams to provide structural support. Non-Category I structures that utilize masonry walls include; the Turbine Building, the Switch House located in the High Voltage Switchyard, the Dry Active Waste (DAW) Warehouse, the DAW Processing Facility, Radwaste Process Facility, the Radwaste Transfer Building, and the Fire Water Pump Houses. These structures will be included within the scope of the program prior to the period of extended operation.

The inspectors concluded that the applicant provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

34. The Fatigue Monitoring Program

The Fatigue Monitoring Program consists of two existing programs, which are the Fatigue and Cycle Monitoring Program and Thermal Stratification Data Collection. The Fatigue and Cycle Monitoring Program provides controls to track the cyclic transient occurrences. The Thermal Stratification Data Collection program monitors for adverse thermal stratification and temperature cycling resulting from isolation valve leakage in the non-isolable reactor coolant system branch lines.

The Fatigue Monitoring Program uses a combination of cycle counting, cycle-based fatigue monitoring, and stress-based fatigue monitoring to ensure components are maintained within the design limits.

The inspector reviewed the last three thermal cycle reports, plant procedures, calculations, RAIs, and interviewed personnel responsible for development and implementation of the program. In particular, the inspector conducted a detailed interview with plant personnel concerning the software used to track design transients and calculate the fatigue usage.

The applicant is currently reevaluating the software to be used for metal fatigue monitoring in the period of extended operation. For locations which require an aging management program for the period of extended operation, the applicant commits to implementing a fatigue management software program that will use six stress components in the fatigue calculation as discussed in the ASME Code, Section III, Subsection NB, Subarticle NB-3200. The program will be benchmarked and fatigue monitoring locations will be modeled with as built configuration. The software will be put into service at least two years prior to the period of extended operation.

For the Fatigue Monitoring Program, the inspector concluded that the applicant had adequate guidance to ensure aging effects are appropriately identified and addressed and that there is reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

C. Review of Electrical Aging Management Programs

The VEGP LRA concluded that the only electrical components that require an aging management program are electrical cables and connectors, and metal enclosed electrical busses. Electrical equipment, including cables, that are already subject to the 10 CFR 50.49 environmental qualification (EQ) program are age managed by that program. The applicant considers the EQ program subject to a Time Limited Aging Analysis (TLAA) to demonstrate that EQ components' qualified life can be extended an additional 20 years or to ensure that they will be replaced at the appropriate time. The AMPs proposed by the applicant are as follows:

35. Non-EQ Cables and Connections Program

The Non-EQ Cables and Connections Program is a new inspection program that will be established to periodically inspect electrical cables that are routinely exposed to adverse localized environments caused by heat, radiation or moisture. Commodities in this program are electrical cables and connections which are not included in the environmental qualification requirements of 10 CFR 50.49, but are located in an adverse localized environment which is significantly more severe than the specified service conditions for the insulated cable or connection. The aging effect of concern is reduced insulation resistance caused by degradation of the insulating materials on electrical cables and connections that is visually observable, such as color changes or surface cracking. These visual indications will be used as indicators of degradation.

A representative sample of accessible insulated cables and connections within the scope of license renewal will be visually inspected for cable and connection jacket surface anomalies such as embrittlement, discoloration, and cracking. The technical basis for the sample selections of cables and connections to be inspected is to be provided by the applicant as part of implementing this program. The applicant has committed that the Non-EQ Cables and Connections Program will be implemented and the first inspection completed prior to starting the period of extended operation. The application states that the Non-EQ Cables and Connections Program will be consistent with the program described in NUREG-1801, Section XI.E1, "Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements."

The inspectors reviewed the Non-EQ Cables and Connections Program LR Evaluation Document, VEGP-LR-AMP-22, Version 1 and the Non-EQ Cables and Connections Program License Renewal Implementation Package, VEGP-LR-IMP-34, Version 1, and found them to be of adequate quality and consistent with the application. The evaluation document states that the applicant investigated the VEGP operating history for in-scope electrical components using condition reports (CR) searches, internal correspondence, plant walkdowns and interviews with station staff. The inspectors reviewed the responsible engineer's data base records of this work and found it adequate.

Based on the above observations, the inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is a reasonable assurance that the intended function of those in-scope electrical components will be maintained through the period of extended operation.

36. Non-EQ Inaccessible Medium-Voltage Cables Program

The Non-EQ Inaccessible Medium-Voltage Cables program is a new Aging Management Program that commits to establish a program to take periodic actions to prevent normally energized Medium-Voltage underground cables from remaining submerged in water for long periods of time. The inspectors reviewed the evaluation document and the implementation package pertaining to this AMP and found them to be of adequate quality and consistent with the application.

Vogtle uses tunnels for safety related cable runs that are not subject to flooding. The only cable run of this type that is in scope for license renewal is the 4kV underground run from the turbine building to the high voltage switchyard. The applicant states that these cables are needed for recovery from a Loss of Offsite Power which brings them into scope for license renewal.

During this inspection, the NRC, with the applicant representatives, inspected the three cable pull boxes along this cable run and observed they contained varying amounts of water, some covering the subject cables. Current plant practice is to perform a repetitive task to inspect the many cable pull boxes throughout the plant at least once every four years and pump out any water found. Engineering document REA 01-VAA655 lists 60

outdoor pull boxes containing medium voltage cables, but only three are in scope for license renewal. Plant records show that the three in scope pull boxes were last pumped in June 2007. Plant corrective action documents reflect a history of repeated attempts at establishing different measures to prevent cable pull box flooding or to periodically remove water. It appears that past efforts have not been successful, as plant records reflect that cable pull boxes are often found flooded. Rain water is the most likely source as the pull box lids at Vogtle are not designed to be water tight. A Condition Report was written and the water level pumped down in the three in-scope pull boxes during the period of this inspection.

The proposed new Aging Management Program for Non-EQ Inaccessible Medium-Voltage Cables would inspect the in-scope pull boxes for water and remove accumulated water on a frequency of inspection based on actual plant experience but at least once every two years. NRC expressed concerned that, based on past plant experience and current as found conditions, a two year frequency may be inadequate to accomplish the stated purpose of preventing these in-scope normally energized Medium-Voltage underground cables from remaining submerged in water for long periods of time.

In response to the NRC concern, the applicant committed to include enhancements in the AMP for Non-EQ Inaccessible Medium-Voltage Cables to require inspection of the in-scope pull boxes for water and remove accumulated water on a frequency beginning with once a quarter and, based on actual plant experience, on a two year frequency thereafter. The inspectors found the increased surveillance frequency adequate to accomplish the stated purpose of preventing these in-scope normally energized Medium-Voltage underground cables from remaining submerged in water for long periods of time.

Based on the above observations, the inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented with enhancements, there is a reasonable assurance that the intended function of those in-scope electrical components will be maintained through the period of extended operation.

37. Non-EQ Cable Connections One-Time Inspection Program

The Non-EQ Cable Connections One-Time Inspection Program is a new program that will perform one-time inspections on a sample of bolted electrical connections that are in the scope of license renewal to confirm that loosening of electrical connections is not an aging effect requiring additional aging management during the period of extended operation. The application states that this plant-specific aging management program is being offered as an alternative to the program described in NUREG-1801, Section XI.E6. The program will inspect for loosening of bolted electrical connections due to thermal cycling, ohmic heating, electrical transients, vibration, chemical contamination, corrosion, and oxidation. The factors to be considered for sample selection are application (medium and low voltage, defined as <35kV), circuit loading (high loading), and environment (high temperature, high humidity, vibration, etc.) and the technical basis for

the sample selections will be documented. Inspection methods may include thermography, contact resistance testing, or other appropriate methods including visual inspection based on plant configuration and industry guidance. The inspections are to be performed within a window of five years immediately preceding the period of extended operation for the first unit (Unit 1). If an unacceptable condition or situation is identified in the selected sample, the Corrective Action Program will be used to evaluate the condition and determine appropriate correction action.

The inspectors reviewed the Non-EQ Cable Connections One-Time Inspection Program LR Evaluation Document, VEGP-LR-AMP-25, Version 2 and the Non-EQ Cable Connections One-Time Inspection Program License Renewal Implementation Package, VEGP-LR-IMP-36, Version 1, and found them to be of adequate quality and consistent with the application.

Based on the above observations, the inspectors concluded that the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is a reasonable assurance that the intended function of those in-scope electrical components will be maintained through the period of extended operation.

38. Environmental Qualification (EQ) Program

The Environmental Qualification (EQ) Program is an existing program that implements the requirements of 10 CFR 50.49. The EQ Program was established to demonstrate that certain electrical components located in potentially harsh plant environments are qualified and capable of performing their safety functions in those harsh environments. The EQ Program manages component thermal, radiation and cyclical aging, through the use of prototype testing and analytical aging evaluations. The program requires action be taken before individual components in the scope of the program exceed their qualified life. Actions taken may include replacement on a specified time interval of piece parts or complete components to maintain qualification, or analytical reanalysis to extend the qualified life of the component.

As required by 10 CFR 50.49, EQ components not qualified for the 40 year service life of the plant are to be refurbished, replaced, or have their qualification life extended prior to reaching the aging limits established in their evaluation. Some aging evaluations for EQ components specifying a qualification of at least 40 years were considered by the applicant as TLAAs for license renewal.

The reanalysis of an aging evaluation for the qualification of components under 10 CFR 50.49(e) is performed on a routine basis as part of the EQ Program. The reanalysis is normally performed to extend the qualification by reducing conservatisms incorporated in the prior evaluation. While a component life limiting condition may be due to thermal, radiation, or cyclical aging, the vast majority of component aging limits are based on thermal conditions. The analysis may have used conservative bounding conditions that can be refined to extend the qualification.

Reducing excess conservatism in the assumed component service conditions (for example, temperature, radiation, and cycles) used in the prior aging evaluation is frequently employed for a reanalysis. Temperature data used in original aging evaluations were conservatively based on plant design temperatures. Actual measured plant temperature data may be used in an aging evaluation reanalysis to reduced excess conservatism and extend a components qualified life. Similar methods of reducing excess conservatism in the assumed component service conditions used in prior aging evaluations may be used for radiation and cyclical aging. If the qualification cannot be extended by reanalysis, the component is refurbished, replaced, or re-qualified by further testing prior to exceeding the period for which the current qualification remains valid. The inspectors reviewed a EQ program team self assessment dated 9/9/2005 performed for all of the Southern Nuclear plants and found it adequate. Three Action Items (AI) for Vogtle resulted and they were subsequently resolved and closed.

The inspectors reviewed the Environmental Qualification Program License Renewal Evaluation Document, VEGP-LR-AMP-07, Version 1, and the Environmental Qualification Program License Renewal Implementation Package, VEGP-LR-IMP-37, Version 1. The inspectors observed that the Implementation Package contained several administrative and typographical errors, which the applicant promptly corrected with a Version 2 revision of the document. The inspectors also observed that neither of these documents described a systematic program to review the Environmental Qualification Documentation Packages (EQDPs) to extend the qualification of EQ components from 40 to 60 years. The inspectors interviewed corporate engineers responsible for the Vogtle EQ program to determine how that work was accomplished.

The inspectors were told that there was no single formal program implemented to review the EQDPs and extend them to reflect a 60 year plant license. Rather, this work had been done in segments over the previous approximately 10 years. Prior to each outage EQ engineers were given lists of components EQDPs to review to attempt to extend the qualification life of the components by reanalysis to remove excess conservatism as described above. This work was primarily based on incorporating extensive measurements of actual plant operating local temperatures where components are located rather than original assumed design temperatures. The purpose of the work was to avoid unnecessary maintenance refurbishment or replacement of EQ components. During these reanalysis the calculations were typically revised where appropriate to reflect a 60 year plant life. In 2007, the EQDPs were again reviewed to identify those that contained qualified lives that expire between 40 and 60 years. Fifteen were identified and an AI 2007200068 was assigned to review and resolve those EQDPs. The inspectors were told by the engineer responsible for the AI that, at the time of this inspection, four of the 15 have been completed. The AI had a due date of 6/30/2008.

Inspectors identified one instance of discrepancies in documentation supporting the EQ program. While reviewing a sample of EQDPs, the inspectors encountered calculation X4CPS.0075.477, initially issued 5/30/95, concerning Westinghouse Hard Line Potting Adapter/Cable Splice Assemblies for incore thermocouple and resistance temperature detectors. The calculation concerns two types of splice assemblies; a 2-wire

thermocouple potting adapter/cable splice assembly and a 4-wire RTD potting adapter/cable splice assembly. Both components were originally qualified for one year and a referenced Westinghouse letter extended the qualified life from 1 to 10 years for the 2-wire thermocouple assembly, but not the 4-wire RTD assemblies. The calculation was revised, on 10/3/2000, to change the containment environment temperature from 99 degrees F to 94 degrees F to attempt to extend the qualified life of these components. The result of the calculation was that the 2-wire thermocouple assembly has a calculated qualified life of 59.55 years and the 4-wire RTD assembly has a calculated qualified life of 6.23 years. The inspectors questioned the status of the 4-wire RTD assembly as its 6.23 year qualified life would have long been exceeded. The applicant initiated CR 2008106309 to document this discrepancy and after consultation with the corporate EQ engineering staff it was determined that the 4-wire RTD assembly had been replaced and was no longer installed in the plant.

Based on the above observations, the inspectors concluded that the Environmental Qualification Program for Vogtle is functioning adequately and the applicant had provided adequate guidance to ensure aging effects will be appropriately assessed and managed. As implemented, there is a reasonable assurance that the intended function of the SSCs will be maintained through the period of extended operation.

4OA6 Meetings, Including Exit

On June 6, 2008, the inspectors presented the inspection results to Mr. T. Tynan and other members of the applicant staff in an exit meeting open for public observation at the Augusta Technical College, 216 Hwy 24 South, Waynesboro, GA. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Applicant Personnel

L. Bohn, License Renewal Mechanical
J. Churchwell, ISI Engineer
M. Carey, License Renewal Electrical
R. Collins, Chemistry Engineer
E. Davidson, License Renewal Mechanical
R. Dedrickson, Plant Manager
P. Ghosal, License Renewal Structural
P. Goodman, Fire Protection System Engineer
J. Hornbuckle, License Renewal Mechanical
W. Jennings, License Renewal ISI
W. Lunceford, License Renewal Chemistry
J. Martin, Electrical Engineer
D. Minyard, Structural Engineer
A. Moore, IWE/IWL Engineer
R. Moore, Environmental Qualification Engineer
C. Myer, License Renewal Supervisor
J. Mulvehill, License Renewal Environmental Protection
D. Stephens, License Renewal Fire Protection
T. Tynan, Site Vice President
T. Youngblood, Site Engineering Director

Members of the Public Attending Exit Meeting

S. Hayes, Georgia DNR

NRC personnel

D. Ashley, NRR Project Manager, License Renewal
D. Ayers, Deputy Director Division of Reactor Safety
K. Clark, Public Affairs Officer
G. McCoy, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None

LIST OF DOCUMENTS REVIEWED

Program Descriptions:

VEGP-LR-AMP-16, Inservice Inspection (IWE and IWL) Program License Renewal Evaluation Document, Version 2.

VEGP-LR-AMP-08, External Surfaces Monitoring Program

VEGP-LR-AMP-30, Overhead and Refueling Crane Inspection Program

VEGP-LR-AMP-38, Structural Monitoring Program

VEGP-LR-AMP-40, Structural Monitoring Program - Masonry Walls

VEGP-LR-AMP-15, Inservice Inspection Program License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-43, Generic Letter 89-13 Program License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-04, Buried Piping and Tanks Inspection Program Licensee Renewal Evaluation Document, Version 2

VEGP-LR-AMP-03, Boric Acid Corrosion Control Program License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-01, 10 CFR 50 Appendix J Program License Renewal Evaluation Document, Version 1

VEGP-LR-AMP-27, One Time Inspection Program for ASME Class 1 Small Bore Piping LR Evaluation Document, Version 2

VEGP-LR-AMP-13, Diesel Fuel Oil Program LR Evaluation Document, Version 2

VEGP-LR-AMP-39, Water Chemistry Control Program License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-05, CASS RCS Fitting Evaluation Program License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-29, One Time Inspection Program for Selective Leaching License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-12, Flux Thimble Tube Inspection Program, Version 1

VEGP-LR-AMP-28, One Time Inspection Program License Renewal Evaluation Document, Version 1

VEGP-LP-AMP- 26, Oil Analysis Program LR Evaluation Document, Version 2

VEGP-LR-AMP-20, Nickel Alloy Management Program for RV Closure Head Penetrations LR Evaluation Document, Version 2

VEGP-LR-AMP-21, Nickel Alloy Management Program for Non-Reactor Vessel Closure Head

VEGP-LR-AMP-31, Periodic Surveillance and Preventive Maintenance Activities License Renewal Evaluation Document, Version 1

VEGP-LR-AMP-44, Piping and Duct Internal Inspection Program

VEGP-LR-AMP-22,.Non-EQ Cables and Connections Program LR Evaluation Document, Version 1

VEGP-LR-AMP-25, Non-EQ Cable Connections One-Time Inspection Program LR Evaluation Document, Version 2

VEGP-LR-AMP-07, Environmental Qualification Program License Renewal Evaluation Document, Version 1

VEGP-LR-AMP-10, Fire Protection Program License Renewal Evaluation Document, Version 1

VEGP-LR-AMP-35, Version 2, Reactor Vessel Surveillance Program License Renewal Evaluation Document.

VEGP-LR-AMP-09, Fatigue Monitoring Program

GEN-XXX, License Renewal Program Manual, Version DRAFT

VEGP-LR-AMP-41, ACCW System Carbon Steel Components Program License Renewal Evaluation Document, Version 1

VEGP-LR-AMP-02, Bolting Integrity Program License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-11, Flow Accelerated Corrosion Program," Version 1

VEGP-LR-AMP-34, Reactor Vessel Closure Head Stud Program License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-33, Reactor Vessel Internals Program License Renewal Evaluation Document, Version 2

VEGP-LR-AMP-37, Steam Generator Tubing Integrity Program License Renewal Evaluation Document, Version 1

VEGP-LR-AMP-36, Steam Generator Program for Upper Internals License Renewal Evaluation Document, Version 1

VEGP-LR-AMP-06, Closed Cooling Water Program License Renewal Evaluation Document, Version 2

LRA, B.3.8, External Surfaces Monitoring Program

LRA, B.3.20, Overhead and Refueling Crane Inspection Program

LRA, B.3.32, Structural Monitoring Program

LRA, B.3.33, Structural Monitoring Program - Masonry Walls

Implementation Plans

VEGP-LR-IMP-30, Inservice Inspection Program – IWE/IWL License Renewal Implementation Package, Version 1.

VEGP-LR-IMP-13, Inservice Inspection Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-12, Generic Letter 89-13 Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-04, Buried Piping and Tanks Inspection Program Licensee Renewal Implementation Package, Version 1

VEGP-LR-IMP-03, Boric Acid Corrosion Control Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-29, 10 CFR 50 Appendix J Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-18, One Time Inspection Program for ASME Class 1 Small Bore Piping LR Implementation Package, Version 1

VEGP-LR-IMP-07, Diesel Fuel Oil Program LR Implementation Package, Version 1

VEGP-LR-IMP-16, Oil Analysis Program LR Implementation Package, Version 1

VEGP-LR-IMP-28, Water Chemistry control Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-5, CASS RCS Fitting Evaluation Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-19, One Time Inspection Program for Selective Leaching, License Renewal, Implementation Package, Version 1

VEGP-LR-IMP-11, Flux Thimble Tube Inspection Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-17, One Time Inspection Program License Renewal Implementation Package, Version A

VEGP-LR-IMP-14, Nickel Alloy Management Program License Renewal Implementation Package, Version 2

VEGP-LR-IMP-21, Periodic Surveillance and Preventive Maintenance Activities License Renewal Implementation Package, Version 2

VEGP-LR-IMP-22, Piping and Duct Internal Inspection Program License Renewal Implementation Package and the draft procedures incorporated, Version 2

VEGP-LR-IMP-34, Non-EQ Cables and Connections Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-36, Non-EQ Cable Connections One-Time Inspection Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-37, Environmental Qualification Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-09, Fire Protection Program License Renewal Implementation Package, Version A

VEGP-LR-IMP-25, Reactor Vessel Surveillance Program License Renewal Implementation Package, version 1

VEGP-LR-IMP-38, Fatigue Monitoring Implementation Package

VEGP-LR-IMP-01, ACCW System Carbon Steel Components Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-02, Bolting Integrity Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-10, Flow Accelerated Corrosion Program License Renewal Implementation Package, Version 1.0

VEGP-LR-IMP-23, Reactor Vessel Closure Head Stud Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-24, Reactor Vessel Internals Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-26, Steam Generator Tubing Integrity Program License Renewal Implementation Package, Version 1

VEGP-LR-IMP-27, Steam Generator Program for Upper Internals License Renewal Implementation, Version 1

VEGP-LR-IMP-06, Closed Cooling Water Program License Renewal Implementation Package, version 1

AI 2007200068, Identification of EQ Documentation Packages that need qualification life extensions to 60 years.

AI2005201968, During EQ self-assessment it is recommended that corporate document ENG-008, General Engineering Guidance be added to Vogtle site RER procedure 50002-C

AI 2005201971, During EQ self-assessment it is recommended that EQ Program Supervisor receive the same training as the EQ engineer and back-up

AI 2001201441, Track completion of REA 01-VAA655 to determine long term solution to water intrusion into pullboxes and manholes

AI 2007203475, To track the initial implementation of the Buried Piping Program

AI 2008202548, Review the license renewal Buried Piping and Tanks Inspection Program implementation package and implement changes to procedures and processes as needed to satisfy the commitments referenced in the implementation package

AI 2008202552, Perform a review prior to entering the period of extended operation to determine if at least one opportunistic or focused inspection of buried piping and tanks has been performed within the 10-year period to the period of extended operation

AI 2008202554, In accordance with NRC commitments related to the Buried Piping and Tanks Inspection Program, a focused inspection of buried piping and tanks will be performed within ten years after entering the period of extended operation

Plant and Corporate Procedures

PSC Procedure SQ 8.4, Revision 0; General Exterior Containment Concrete Inspection

Proc. No. 84303-C, Revision 1; Containment Liner General Visual Examination

GEN-100, Containment Tendon Surveillance Requirements, Revision 3.1

Proc. No. 27315-C, Revision 18, Spent Fuel Cask Crane Monthly, Quarterly, and Annual Checkout

Proc. No. 27340-C, Revision 19, Refueling Machine Maintenance

Proc. No. 27342-C, Revision 9, Fuel Handling Machine Bridge Crane Service Check

Proc. No. 50026-C, Revision 6.4, ESD Operating Experience Program

Proc. No. 93100-C, Revision 30, Refueling Tools and Equipment Pre-service Inspection/Checklist

Proc. No. 93246-C, Revision 21, Reactor Polar Crane Service Check

Proc. No. NMP-ES-021, Revision 1.0, Structural Monitoring Program for the Maintenance Rule

Document No. AX4AL01-00072, Revision 7.0, 225 ton Motorized Block speed Reducer Installatiion

Procedure 00411-C, Inservice Inspection Program, Revision 14.2

Procedure 50026-C, EDS – Operating Experience Program, Revision 6.4

Nuclear Management Procedure (NMP)-ES-018, SNC Inservice Inspection Engineering Program, Version 1.0

NMP-ES-024, Nondestructive Examination and Certification Processes, Version 2.1

NMP-ES-024-201, Visual Examination (VT-1), Version 1.0

NMP-ES-024-202, Visual Examination (VT-2), Version 1.0

NMP-ES-024-203, Visual Examination (VT-3), Version 1.0

NMP-ES-030, Reactor Coolant System Materials Management Program (RCS MMP), Version 1.0

NMP-GM-008, Operating Experience Program, Version 3.0

Procedure 27118-C, Westinghouse Large Frame Motor Heat Exchanger Maintenance, Revision 6.1

Procedure 27418-C, Maintenance on the Non-Essential (Normal) and Essential Chillers, Revision 21.1

Procedure 30025-C, Periodic Analysis Scheduling Program, Revision 58

Procedure 32540-C, Sampling and Analysis of Plant Systems for Corbicula, Revision 3.1

Procedure 35360-C, Chemistry Control of the Circulating Water System, Revision 33.1

Procedure 35363-C, Chemistry Control of the NSCW System, Revision 3.1

Procedure 83305-C, Heat Exchanger Testing/Maintenance Program, Revision 7.5

Procedure 83306-C, CCW and ACCW Heat Exchanger Testing, Revision 7.3

Procedure 83308-C, Testing of Safety-Related NSCW System Coolers, Revision 30.2

Procedure 83309-C, Safety-Related Heat Exchanger Inspection, Revision 6.2

Procedure 83310-C, Emergency Diesel Generator Jacket Water Heat Exchanger Testing, Revision 5.6

NMP-ES-024-201, Visual Examination (VT-1), Version 1.0

NMP-ES-036, Underground Pipe Monitoring Program, Version 1.0

NMP-GM-006-GL01, Work Planning and Packaging, Version 5.0 (Draft)

NMP-GM-008, Operating Experience Program, Version 3.0

Procedure 25016-C, Earthwork, Revision 5.0

Procedure 25021-C, Coating, Revision 18

Procedure 50026-C, ESD - Operating Experience Program, Revision 6.4

Procedure 85020-C, Visual Inspection, Revision 12

Procedure 85XXX-C, Visual Inspection of Underground Pipes and Tanks, Revision A

NMP-ES-019-001, Boric Acid Corrosion Control Program Implementation, Version 3

Nuclear Management Procedure (NMP)-ES-019, Boric Acid Corrosion Control Program, Version 4.0

Procedure 00152-C, Federal and State Reporting Requirements, Revision 38

Procedure 00435-C, Boric Acid Corrosion Control, Revision 5.2

Procedure 14825-1, Quarterly Inservice Valve Test, Revision 83

Procedure 14825-2, Quarterly Inservice Valve Test, Revision 77

Procedure 14864-1, Containment General Leak Inspection, Revision 2

Procedure 14864-2, Containment General Leak Inspection, Revision 2

Procedure 30025-C, Periodic Analysis Scheduling Program, Revision 59

Procedure 34317-1, Operation of the Unit 1 DRMS Containment Atmosphere Process Monitor 1RE-2562, Revision 1.4

Procedure 34317-2, Operation of the Unit 2 DRMS Containment Atmosphere Process Monitor 2RE-2562, Revision 1.4

Procedure 83201-C, Corrosion Assessment, Revision 7.1

Procedure 83202-C, Corrosion Assessment, Revision 9.1

Procedure 83309-C, Safety-Related Heat Exchanger Inspection, Revision 6.2

Procedure 84008-C, RCS Alloy 600 Material Inspection Program, Revision 4.1

Procedure 85060-C, Visual Examination for Leakage, Revision 11.1

Procedure 14300-C, Containment Type B & C Leakage Totalization, Revision 1.1

Procedure 24904-C, Modes 1-4 Containment Leakage Totalization, Revision 5.2

Procedure 84400-1, Containment Integrated Leak Rate Test, Revision 4

Procedure 20411-C, Control of Lubricants, Revision 13

Procedure 30025-C, Periodic Analysis Scheduling Program, Revision 55.1

Procedure 30080-C, Diesel Fuel Chemistry Control, Revision 36.1

Procedure 30090-C, Chemistry Technical Specification Surveillance Performance Coordination, Revision 21.1

Procedure 32525-C, Determination of Particulate Contamination of Diesel Fuel Oil, Revision 5.1

Procedure 32527-C, Determination of Mercaptan Content of Oil, Revision 6.2

Procedure 37080-C, Sampling of Diesel Fuel Trucks, Revision 2.2

Procedure 37082-1/2, Sampling of Unit 1/2 Emergency Diesel Fuel Storage Tanks, Revision 2.2

Procedure 30201-C, Primary water Chemistry Strategic Plan, Revision 4

Procedure 30202-C, Secondary Water Chemistry Strategic Plan, Revision 6

Procedure 30025-C, Periodic analysis Scheduling Program, Revision 59

Procedure XXXXX-C, One Time Inspection Program for Selective Leaching, (draft)

Procedure 5XXXX-C, One Time Inspection Program, draft

Procedure 5YYYY-C, One Time Inspection Program Visual Examination Procedure

Procedure 00152, Federal and State Reporting Requirements, Revision 39

Procedure 16701-1, Boric Acid Storage Tank Bladder Inspection, Revision 1.1

Procedure 27918-C, Removal and Testing of the NSCW Cooling Tower Fill Test Specimens, Revision 0

Procedure 27919-C, NSCW ACB Test Specimen Evaluations, Revision 0

Procedure 28711-C, Diesel Fuel Oil Storage Tank Cleaning, Revision 9

Procedure 54056-1, Control Building Control Room HVAC System HEPA Filters and Carbon Adsorber Test

Procedure 1-1531-N7-001 1-1531-N7-002, Revision 6

Procedure 83320-C, Heat Exchanger Maintenance Inspection Program for Non-Safety-Related Heat Exchangers, Revision 5.0

Procedure 83321-C, Non-Safety-Related Heat Exchanger Inspection, Revision 2.1

Procedure 84008-C, RCS Alloy 600 Material Inspection Program, Revision 4.1

NMP-ES-006, Preventive Maintenance Implementation and Continuing Equipment Reliability Improvement, Version 4.0

NMP-ES-006-GL03, Preventive Maintenance Feedback, Version 1.0

NMP-ES-029, SNC Alloy 600 Program, Version 3

NMP-ES-029-GL01, Alloy 600 Program Strategic Plan, Version 2

NMP-ES-030, Reactor Coolant System Materials Management Program (RCS MMP), Version 1

Procedure 50026-C, ESD Operating Experience Program, Revision 6.4

Procedure 14956C, Fire suppression system – 5 year diesel FP2, Revision 6, 7/6/07, 9/6/07, 1/10/08

Procedure 14959-301, Hydrant hose house visual inspection, Revision 0, 1/6/06, 2/6/06, 3/9/06, 4/7/06

Procedure 14952-303, 12 month fire suppression system – Annual system pump test, 10/3/06, 7/12/07

Procedure 29144-101 Fire area boundaries and fire rated penetration seals 18 month visual inspection, 12/19/06, 1/7/08

Procedure 29145-C Cable and raceway fire barrier and radiant energy shield assemblies 18 month visual inspection, 4/16/07

Procedure 83101-C, VEGP Fatigue and Cycle Monitoring Program Procedure, 83101-C

Procedure SIR-95-075, VEGP Fatigue Management Procedures

WPS No: GTSM-11-O-1, Revision 4

Procedure 17061-1, Annunciator Response Procedures For ALB 61 on Process Control Panel, Revision 19.2

Procedure 17004-1, Annunciator Response Procedures For ALB 04 on Panel 1A1 on MCB, Revision 22

Procedure 17004-2, Annunciator Response Procedures For ALB 04 on Panel 2A1 on MCB, Revision 18

Procedure 14000-1, Operations Shift and Daily Surveillance Logs, Revision 77

Procedure 14000-2, Operations Shift and Daily Surveillance Logs, Revision 63

Procedure 17061-2, Annunciator Response Procedures For ALB 61 on Process Control Panel, Revision 18

Procedure 11881-1, Auxiliary Building Rounds Sheets, Revision 54

Procedure 11881-2, Auxiliary Building Rounds Sheets, Revision 49

Procedure NMP-ES-002, System Monitoring and Health Reporting, Version 5.0

Procedure 85060-C, Visual Examination For Leakage, Revision 11.1

Procedure NMP-ES-002, System Monitoring and Health Reporting, Version 5.0

Draft Procedure 5XXXX-C, External Surfaces Monitoring Program Implementation

Procedure 10001-C, Log-keeping, Revision 43

NMP-GM-008, Operating Experience Program, Version 3.0

Procedure 50026-C, EDS Operating Experience Program, Revision 6.4

GEN-23, Bolting/Torquing Manual, Version 6.1

Procedure 00262-C, Control of Chemicals/Fluids, Revision 26

Procedure 11882-1, Outside Area Round Sheets, Revision 71

Procedure 11882-2, Outside Area Round Sheets, Revision 66.1

Procedure 11887-1, Control Building Round Sheets, Revision 53

Procedure 11887-2, Control Building Round Sheets, Revision 41

NMP-ES-024-202, Visual Examination (VT-2), Version 1.0

Procedure NMP-ES-024-201, Visual Examination (VT-1)," Version 1.0

Procedure NMP-ES-024-504, "Manual Ultrasonic Examination of Bolts and Studs (Appendix VIII) Version 2.0

ENG-008, General Engineering Guidance, Version 7.0

NMP-ES-011, Flow Accelerated Corrosion (FAC) Program, Version 3.0

NMP-ES-011-001, Flow-Accelerated Corrosion Program Implementation, Version 2.0

NMP-ES-024-510,Ultrasonic Flow Accelerated Corrosion Examination Procedure, Version 3.0

Procedure EX-EAE-002, Chemical Product Reviews, Version 3.0

Procedure 93240A-C, Reactor Vessel Disassembly Instructions, Revision 23

Procedure NMP-ES-030, Reactor Coolant System Materials Management Program (RCS MMP), Version 1.0

NMP-ES-004-GL01, Steam Generator Program Strategic Plan, Version 4.0, April 2008

NMP-ES-004, Steam Generator Program, Version 6.0

NMP-ES-004-001, Steam Generator Program Implementation, Version 1

NMP-ES-004-002, Steam Generator Primary-Side Inspections, Version 2.0

VEGP Procedure 35311-C, Chemical Control of Closed Cooling Water Systems, Revision 39.3

Plant Drawings

1X4DB133-1, P & I Diagram, Nuclear Service Cooling Water System, System No. 1202, Version 51.0

1X4DB133-2, P & I Diagram, Nuclear Service Cooling Water System, System No. 1202, Version 58.0

1X4DB134, P & I Diagram, Nuclear Service Cooling Water System, System No. 1202, Version 31.0

1X4DB135-1, P & I Diagram, Nuclear Service Cooling Water System, System No. 1202, Version 29.0

1X4DB135-2, P & I Diagram, Nuclear Service Cooling Water System, System No. 1202, Version 34.0

Drawing 1X4DB138-1, P&I Diagram Auxiliary Component Cooling Water System, Version 30.0

Drawing 1X4DB138-2, P&I Diagram Auxiliary Component Cooling Water System, Version 19.0

Drawing 1K1-1304-021-01-FAC, Feedwater Heater Drains FAC Inspection Isometric No. 4B Heater Drain to Heater Drains Tank B, Revision 0

Drawing AX1D45LL01, Revision 1.0, License Renewal Boundary drawing

Test and Inspection Results

Final Surveillance Report for Tendon Surveillance Unit 1 and 2, by PSC Corporation, dated Dec. 15, 2005

SC Letter dated June 14, 2006, 2005-Tendon Surveillance and Concrete Inspection

Vogtle SMP Inspection Reports: Walk-down Inspections 2000 - 2003, PS-0302615; PS-04-1043; PS-04-1413; PS-04-2469; PS-05-1011; PS-05-2157; PS-06-2668; PS-07-20081.

Documentation of Engineering Judgment, DOEJ-SC-04-0057-001, Structural Evaluation HVAC Duct Support

Repetitive Task 84008-101, Effective Degradation Years Calculation, Revision 0

Repetitive Task 84008-201, Effective Degradation Years Calculation, Revision 0

Repetitive Task 84008-102, RPV Head Inspection, Revision 0

Repetitive Task 84008-202, RPV Head Inspection, Revision 0

Repetitive Task 84008-103, 60-Day Report to NRC Documenting Results of RPV Head Inspection, Revision 0

Repetitive Task 84008-203, 60-Day Report to NRC Documenting Results of RPV Head Inspection, Revision 0

Repetitive Task 84008-104, 60-Day Report to NRC Documenting Inspection Results of Pressure Retaining Components Above the RPV Insulation, Revision 0

Repetitive Task 84008-204, 60-Day Report to NRC Documenting Inspection Results of Pressure Retaining Components Above the RPV Insulation, Revision 0

Repetitive Task 84008-105, Perform VT-2 Examination of All Accessible Portions of RPV Head Above Insulation for Evidence of Boric Acid and Any Active Leakage, Revision 0

Repetitive Task 84008-205, Perform VT-2 Examination of All Accessible Portions of RPV Head Above Insulation for Evidence of Boric Acid and Any Active Leakage, Revision 0

Trend information, particulates, U-1 and U-2 fuel oil storage tanks, Jan. 2006 – April 2008

Trend information, neutrality number, U-1 and U-2 fuel oil storage tanks, Jan.2006 – April 2008

Trend information, mercaptan sulfur, U-1 and U-2 fuel oil storage tanks, Jan. 2006 – April 2008

NEETRAC Project Number 03-040, Vogtle NSCW ACB Panel Tests for Sample Sets P1R10, P1R11, P2R9, and P2R10, 12/03

Completed Action Items for Material Inspections: AI 2004250629, AI 2005203650, AI 2005203668, AI 2005203670, AI 2006200287, AI 2006200289, AI 2006200293, AI 2007201426, AI 2007201450, AI 2007201460, AI 2008201298, AI 2004250619, and AI 2006200325

Flow Accelerated Corrosion Data for Vogtle Unit 1 – Refueling Outage 14

Flow Accelerated Corrosion Data for Vogtle Unit 2 – Refueling Outage 2R12

UT Report No: S07V2U065, Unit 2 Outage 2VR12

UT Report No: S06V1U059, Unit 1 Outage 1VR13

SG-CDME-08-2, Steam Generator Degradation Assessment for Vogtle Unit1 March-April 2008 Outage (1R14)

SG-CDME-07-9, Steam Generator Degradation Assessment for Vogtle Unit 2, 2R12 Refueling Outage, March 2007

SG-CDME-08-17, Vogtle Unit 1R14 Refueling Outage Steam Generator Condition Monitoring and Preliminary Operational Assessment, April 15, 2008

SG-CDME-07-13, Vogtle Unit 2R12 Refueling Outage Condition Monitoring and Operational Assessments Based on Final Eddy Current Inspection Data, April 2007

ESR 9800010, Results of the Fuel Oil Tanks Inspections During RFO 7, 1/19/98

ESR 99-00380, Security Diesel Underground Storage Tank Replacement, Rev. 1

In-Service Inspection Summary, 1st Interval, 1st Period, 1st RFO, 10/14/88

Audit, Inspections, and Self Assessments

Assessment of Vogtle Electric Generating Plant ISI Program, developed by the Electric Power Research Institute (EPRI), dated 2003

VEGP Team Self Assessment of Primary Chemistry (2006106678)

Assessment AR 110791, Effectiveness of Spent Fuel Program, 4/27/04

Review of Vogtle Flow Accelerated Corrosion Program, September 27, 2000

Assessment of Vogtle Electric Generating Plant ISI Program, November 2002

VEGP SG Program Health Report – August 2007

VEGP Team Self Assessment Report, Chemistry, Closed cooling Water Program, Jan. 18-20, 2005

VEGP Self Assessment Report, Closed Cooling Water Systems, (CR 2006102555), March 6-8, 2006

Quarterly ACCW System Health Reports from 1st Quarter of 2005 to 1st Quarter of 2008

Work Orders

WO A0300994, Leak on the East Side of Unit 2 Cooling Tower

WO C0300098, Tap Fire Water Line to TPCW per 99-VAN0070

WO 10301229, The Diaphragm in the BAST needs to be Inspected, 08/15/03

WO 10301796, CBCR Filt Unit, 08/18/04

WO 1051736801, SGBD Trim Heat Exchanger, 12/02/06

WO 1060316601, CBCR Filt Unit, 07/20/06

WO 2030197401, Replace Unit 2 BAST Diaphragm, 12/21/04

WO 2061160601, SG Blwdn Trim Heat Exch, 08/17/06

Corrective Action Documents

CR 2008102852, Containment moisture barrier pulled up and examinations performed to assess condition of liner plate underneath

CR 2004002051; Code Inspections not being performed as required by site procedures.

CR 2004001772; Engineering evaluation of containment anomolies.

CR 1999001448; Corrosion Identified in Multiple areas around moisture seal between base mat and containment liner plate.

CR 1999000670; Corrosion on Containment Liner Plate

CR 1999000153; Significant Corrosion on Containment Liner Plate

CR# 2004003535; Missing Anchor Bolt Nuts on Ceiling Mounted Base Plate

CR# 2004003550; Deterioration of the Grout Pad for Heater Drain Pumps

CR# 2004003551; Expensive Cracks in Concrete Walls at CIV Supports and Anchors

CR# 2004003552; Extensive Cracks in Grout Rings for Clean Turbine Building Drain Tank

CR# 2005002701; Missing Structural Member on Pipe Support Assembly for PS#V1-1204-148-H605

CR# 2005104021; Deterioration of Concrete in Footings for EDG Silencers, 1-24-3-G4-002-F02,2-2403-G4-002-F01, and 2-24-3-G4-002–F02

CR# 2005104023; Evidence of Corrosion on Pressurizer Compartment Support Beam

CR# 2005104025; Corrosion on Electrical Raceway at Unit 1 Containment Building Upper Level

CR# 2005104027; Corrosion of Flexible Conduit and Support at Unit 1 reactor Cavity, El. 154'

CR# 2005110864; Large Cracks in Foundation Pad for Heater Drain Pump 1–13-4-P4-001

CR# 20061132241; Corrosion on Embedded Plates in Control Building at Level A, ,Room No. R-A04

CR 1998000558, Debris discovered in the NSCW inlet side during eddy current testing

CR 2002002406, Unit 1 NSCW “A” and “B” Ryzars Stability Index (RSI) out of specification low

CR 2003002046, Corrosion of rebar “chairs” are corroding, resulting in spalled concrete

CR 2004002397, Growth/Hard Scale on spray ring header piping of all NSCW towers is peeling and flaking off

CR 2005101592, Address blockage of NSCW system orifices

CR 2008101719, Suggestions to clarify a procedure due to confusion on part of a vendor in its use

CR 2008101750, Trend CR to evaluate acceptability risk of foreign material in the NSCW system

CR 1999000700, Underground fire water line C-2301-L1-515-12" has developed a leak

CR 2001000010, Seq.01 of DCP 98-VAN0055 Required a Modification to the Site Storm Drainage System

CR 2001001982, An underground fire protection pipe near the construction warehouse broke while performing fire hydrant flow testing

CR 2002002289, Suspected water leak underground in the northeast corner of the high voltage switchyard

CR 2003000679, Leakage exists on the fire water system which requires two jockey pumps to be run continuously

CR 2004003901, Fire system header breakage occurred causing approximately 300000 gallons of fire water to leak

CR 2006101117, Long-term strategies do not address known vulnerabilities for buried piping, raw water systems, or closed cooling water piping

CR 2006106336, Wrong type of piping installed between the 6" Utility Water Header and the Neutralization Transfer Pumps

CR 2006205224, Develop an Underground Piping Monitoring Program to provide guidance in initiating, providing requirements, and implementing underground pipe monitoring

CR 2002000495, Personnel Hatch Door Failed to Meet Tech Spec Leakage Requirements

CR 2007111866, To Document an Informal Benchmarking Trip to the Robinson Nuclear Plant

CR 2004150307, Atmospheric Relief Valve (ARV) 2PV3030 hydraulic oil particulate out of spec.

CR 2004151300, ARV 2PV3020 actuator oil particulate oil out of spec
.
CR 2005100112, ARV 1PVARV actuator oil particulate oil out of spec

CR 2007111704, EDG lube oil sample increase in water and sodium values

CR 2007109614, Oil sample ins 1B MDAFW pump and motor show signs of oxidation and contamination

CR 2006109304, Identify plant best practices used in lubrication programs at each site

CR 2008106075, Inconsistent in reference documents related to coating material of EDG fuel oil tanks

CR 2004000243, New diesel fuel shipment Failed flashpoint criteria

CR 2005102897, Increased particulate trend in U-2 Train A EDG fuel oil storage tank

CR 2006113272, Increased particulate in U-1 diesel storage tank A

CR 2007100386, Coating degradation indentified in U-1 B-train diesel fuel oil storage tank

CR 2008101222, Diesel fuel oil shipment rejected due to out-of-spec. neutrality number

CR 2008104901, U-1 RCS hydrogen concentration at action level 1

CR 2008105029, U-1 SG above specification on cation conductivity and chloride concentration

CR 2008104912, U-1 feedwater at action level 2 for dissolved oxygen

C R 2007107299, U-1 hydrazine at action level 1

CR 2008103084, Flux thimble tube eddy current test identified tube which exceed acceptance criteria

CR2008103642, Westinghouse identified that eddy current test calibration standard used in 2R12 was incorrect

CR 2008106309 Vogtle calculation X4CPS.0075.477 initially issued 5/30/95 concerning Westinghouse Hard Line Potting Adapter/Cable Splice Assemblies inconsistent with EQ Vogtle central files

CR 2005104189, During EQ self-assessment walkdown 2 Rosemount pressure transmitters found with electronics package rotated

CR 2008101061, Leak in underground fire protection piping near construction warehouse

CR 2008106127, Fire water header rupture on 5/28/08 near construction warehouse

CR 2008106156, Evaluation needed of fire protection system to determine if actuation surges could cause pipe breaks

CR 2008106165, Evaluate 1) if temporary construction fire water piping should be connected to the permanent fire water header and 2) has a trend of component failures resulted from the effect of all 3 fire water pump starting events

CR 1998000627, The Diaphragm Located In The North Unit 2 CST Is Torn, 05/30/98

CR 2002000589, A Significant Amount of Water on Top of the Bladder in CST, 02/25/02

CR 2003001441, During Inspection of the Unit 1 BAST, there was Evidence of Boric Acid Residue, 06/03/03

CR 2005110970, Steam Leak on Piping of Feedwater Heater 6A, 11/25/2005

CR 2006109982, Steam Leak on line 2-1301-101-1, 9/15/2006

CR 2004001810, Pitting identified on Unit 2 RV nuts and washers during inspection, 4/27/04

CR 2002002939, Pitting identified on Unit 2 RV nuts and washers during inspection, 10/19/02

CR 2007103580, Wear on Unit 2 CRDM thermal sleeves, 3/22/07

CR 2008105183, U-1 BTRS chiller chloride in action level 2

CR 2008102379, U-1 BTRS chiller in nitrite action level 2

CR 2008102322, U-1 CCW-A fluoride in action level 1

CR 2007105316, U-2 ACCW nitrites in action level 1

Condition Reports written as a result of this inspection

CR 2008104461, White residue in containment possibly masking boric acid leaks

CR 2008105868, Water in electrical cable pull boxes

CR 2008106355, NRC Walkdown: Insufficient thread engagement on valve 1-1202-U4-149 (valve body to bonnet)

CR 2008106354, Documentation issue on RPV stud ISI examinations performed during 1R13 and 2R12 outages

CR 2008106309, Potential inadequate Environmental Qualification of hard line potting adapter/cable splice assemblies

CR 2008106339, Motor driven fire pump has outboard packing leak

CR 2008106338, Motor driven fire pump has discharge pressure relief valve leaking through

CR 2008106075, FSAR says Fuel Oil Tank has inorganic zinc internal protective coating but specification says its organic polymer

CR 2008102859, North fire water storage tank level control valve leaking small water stream

Miscellaneous Documents

NUREG/ CR-6598, An Investigation of Tendon Sheathing Filler Migration Into Concrete

Intracompany Correspondence dated June 24, 2004, Plant Response to NRC Information Notice (IN) 2004-09, “Corrosion of Steel Containment and Containment Liner”.

Request for Engineering Review, RER No. 2003-V0383

VEGP License Renewal Audit Requests and Responses: No. 28, 29, 85, and 86.

Vogtle Electric Generating Plant, Unit 1, Second 10 -Year Interval Inservice Inspection Plan, Revision 8, dated 1/17/05

Vogtle Electric Generating Plant, Unit 2, Second 10 -Year Interval Inservice Inspection Plan, Revision 8, dated 1/3/06

Vogtle Electric Generating Plant, Units 1 and 2, Inservice Inspection Plan for Class 1, 2, and 3 Components for Vogtle-1, Third Inspection Interval, Volume 2, Version 1.0

Vogtle Electric Generating Plant, Units 1 and 2, Inservice Inspection Plan,, Third Inspection Interval, Volume 1, Version 1.0

Vogtle Electric Generating Plant, Units 1 and 2, Inservice Inspection Plan for Class 1, 2, and 3 Components for Vogtle-2, Third Inspection Interval, Volume 4, Version 1.0

NRC Letter to SNOC, Vogtle Electric Generating Plant, Units 1 and 2 RE: Relief Request for Risk-Informed Inservice Inspection Program (TAC Nos. MB6118 and MB6119), dated 9/30/03 Inservice Inspection Program, Second 10-Year Interval, Vogtle Electric Generating Plant Units 1 and 2, Revision 3

VEGP FSAR Section 3.6, Protection Against the Dynamic Effects Associated with the Postulated Rupture of Piping, Revision 14

Checklist SCL00394, Maintenance Requirements and Special Instructions, Revision 2 Generic Letter 89-13 Program Manual, GEN-XXX, Version 1.0

Quarterly System Health Reports for Nuclear Service Cooling Water System from 3rd Quarter 2003 through 4th Quarter 2007

NRC Inspection Report Nos. 50-424/95-21 and 50-425/95-21

VEGP-LR-CGR-G201, Commodity Group Review: Carbon Steel Pipeline Components Exposed to Soil, Version 1.0

ANSI/AWWA C203-02, American Water Works Association Standard for Coal-Tar Protective Coatings and Linings for Steel Water Pipelines - Enamel and Tape - Hot Applied, effective date 8/1/2002

RER A054393001, Susceptibility of the Buried River Water Makeup Lines

RER A061256201, Develop a LT Strategy for Monitoring Underground Piping

Specification No. X1AJ14, Field Coatings During Operational Phase for Vogtle Electric Generating Plant Units No. 1 & 2, Revision 8

Specification No. X4AH03, Field Erected Atmospheric Tanks Built to Section III of the ASME Boiler and Pressure Vessel Code, Revision 10

Specification No. X4AZ01, Field Installation of Welded Steel Buried Piping, Revision 8

Maintenance Work Order 20303258, Replace Underground Diesel Fuel Oil Lines for the Unit 2 "A" Train Diesel Generator

Electrical Power Research Institute (EPRI) Boric Acid Corrosion Guidebook, Revision 1

GEN-96, Revision 9, 10 CFR 50 Appendix J Program Manual,

Appendix J Gap Analysis Recommendations (Proposals to improve the Appendix J Program at VEGP based on study of all three nuclear plants in the Southern Company fleet)

Interim Thermal Fatigue Management Guideline (MRP-24), Final Report, January 2001

Materials Reliability Program: Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines (MRP-146), final Report, June 2005

Nuclear Management Instruction, NMP-ES-024-202, Visual Examination (VT-2), Version 2

Inservice Inspection Plan for Class 1, 2, and 3 Components for vogtle-1, Third Inspection Interval, Volumes 2, and 4, dated June 1, 2007

Letter, Southern Company to USNRC, Response to Bulletin 88-08, Piping Thermal Stresses, dated Sept. 21, 1988

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Trend data, U-1, Primary Chloride and Fluoride, July 2006 – April 2008

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Evaluation of Thermal Aging Embrittlement for Cast Austenitic Stainless Steel Components in LWR Reactor Coolant Systems, Final Report, September 1997

WCAP-10551-P Addendum 1, Technical Basis for Eliminating Large Primary Loop Pipe Rupture for Vogtle Units 1 and 2 for the License Renewal Program, revision 0

Letter, Westinghouse to VEGP, Flux Thimble Eddy Current Examinati9on Results and Projected Wear – 2R12 Outage, Unit 2, dated March 28, 2007

Letter, Westinghouse to VEGP, Vogtle Unit 2 Flux Thimble Eddy Current Data Evaluation for Incorrect Standard Use During 2R12, dated April 2, 2008

Calculation X4CPS.0075.477, Rev. 1, 10/3/2000 concerning Westinghouse Hard Line Potting Adapter/Cable Splice Assemblies

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REA 01-VAA655, Water Encroachment, 9/25/2002

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WCAP-16382-NP, Analysis of Capsule from the Southern Nuclear Company, Vogtle Unit 2 Reactor Vessel Radiation Surveillance Program, July 2005.

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U.S. Nuclear Regulatory Commission, Proposed Generic Communication, Fatigue Analysis of Nuclear Power Plant Components, April 23, 2008, ML081080562.

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Action Item 2008202539, Review Implementation Package and implement changes to procedures and processes

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Sample Operator Logs per Procedure 14000-1 (May 12, 14, 17) 2008.

ACCW System Monitoring Plan

Action Item 2008202539, Implement the ACCW System Carbon Steel Components Program as described in the VEGP LRA

VEGP-LR-CGR-S102, Commodity Group Review: Carbon Steel, Galvanized Steel, and Alloy Steel Exposed to an Accessible Air Environment, Version 2

Action Item 2008202540, Review the license renewal Bolting Integrity Program implementation package and implement changes to procedures and processes as needed to satisfy the commitments referenced in the implementation package.

NMP-ES-004-GL01, Steam Generator Program Strategic Plan, Version 4.0

Unit 1 Second 10-Yr Interval Inservice Inspection Plan

Unit 2 Second 10-Yr Interval Inservice Inspection Plan

Inservice Inspection Plan for Class 1, 2, and 3 Components for Vogtle-1, Third Inspection Interval, Volume 2

Inservice Inspection Plan for Class 1, 2, and 3 Components for Vogtle-2, Third Inspection Interval, Volume 4

Applicant Response to NRC Bulletin 82-02

Action Item 2008202540 – Implementation of Bolting Integrity Program

Action Item 2008202541 (U1) and -42(U2), Bolting Integrity Program, Replace SG Secondary Handhole Bolts

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AX4DR001, Piping Material Classifications, Version 46.0

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Data Base of Lines Susceptible to FAC

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Action Item 2007204983, Flow-Accelerated Corrosion – MUR uprate fluid conditions to be input to FAC predictive models

Material Safety Data Sheet for Lubricant LOCTITE N-5000

Attachment A to LTR-ARIDA-06-24, Vogtle Unit 1 Reactor Internals Materials Summary Table

Attachment A to LTR-ARIDA-06-8, Vogtle Unit 2 Reactor Internals Materials Summary Table

Action Item 2008202621, Reactor Vessel Internals Program.

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NL-05-0299, Vogtle Electric Generating Plant Revised Response to Generic Letter 97-06, February 24, 2005

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NMP-CH-001, ASNC Closed Cooling Water Program, Version 2.

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NMP-CH-001-GL04, SNC Closed Cooling Water Strategic plan NMP Plant Vogtle Closed Cooling Water Chemistry Performance Indicators, Version 1

EPRI Closed Cooling Water Chemistry Guideline, Revision 1 to TR-107396, Final Report, April 2004

AGING MANAGEMENT PROGRAMS SELECTED FOR REVIEW

ACCW System Carbon Steel Components Program
Bolting Integrity Program
Boric Acid Corrosion Control Program
Buried Piping and Tanks Inspection Program
CASS RCS Fitting Evaluation Program
Closed Cooling Water Program
Diesel Fuel Oil Program
External Surfaces Monitoring Program
Fire Protection Program
Flow-Accelerated Corrosion Program
Flux Thimble Tube Inspection Program
Generic Letter 89-13 Program
Inservice Inspection Program
Nickel Alloy Management Program for Non-Reactor Vessel Closure Head Penetration Locations
Nickel Alloy Management Program for Reactor Vessel Closure Head Penetrations
Oil Analysis Program
One-Time Inspection Program
One-Time Inspection Program for ASME Class 1 Small Bore Piping
One-Time Inspection Program for Selective Leaching
Overhead and Refueling Crane Inspection Program
Periodic Surveillance and Preventive Maintenance Activities
Piping and Duct Internal Inspection Program
Reactor Vessel Closure Head Stud Program
Reactor Vessel Internals Program
Reactor Vessel Surveillance Program
Steam Generator Tube Integrity Program
Steam Generator program for Upper Internals
Water Chemistry Control Program
10CFR50 Appendix J Program
Inservice Inspection Program-IWE
Inservice Inspection Program-IWL
Structural Monitoring Program
Structural Monitoring Program-Masonry walls
Non-EQ Cables and Connections Program
Non-EQ Inaccessible Medium-Voltage Cables Program
Non-EQ Cable Connections One-Time Inspection Program
Environmental Qualification Program
Fatigue Monitoring Program

LIST OF ACRONYMS USED

ACCW	Auxiliary Component Cooling Water
ACRS	Advisory Committee on Reactor Safeguards
AI	Action Item
AMP	Aging Management Program
ASME	American Society of Mechanical Engineers
CASS	Cast Austenitic Stainless Steel
CR	Corrective Action
ECT	Eddy Current Inspection
EFPY	Effective Full Power Years
EDG	Emergency Diesel Generator
EPRI	Electric Power Research Institute
EQ	Environmental Qualification Program
FAC	Flow Accelerated Corrosion
FP	Fire Protection
GALL	Generic Aging Lessons Learned document - NUREG-1801
GL	Generic Letter
ILRT	Integrated Leak Rate Test
IMP	Aging Management Implementation Package
IN	Information Notice
ISI	Inservice Inspection
LR	License Renewal
LRA	License Renewal Application
NDE	Non Destructive Examination
NRR	NRC Office of Nuclear Reactor Regulation
NSCW	Nuclear Service Water Cooling
OE	Operating Experience
PWR	Pressurized Water Reactor
RCS	Reactor Coolant System
RG	Regulatory Guide
RHR	Residual Heat Removal System
RV	Reactor Vessel
SBO	Station Blackout Event
PWSCC	Primary Water Stress Corrosion Cracking
SFP	Spent Fuel Pool
SMP	Structures Monitoring Program
SSC	Systems, Structures, and Components
TLAA	Time Limited Aging Analysis
UFSAR	Updated Final Safety Analysis Report
VEGP	Vogtle Electric generating Plant
WO	Work Order