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SOUTHERN COMPANY
Energy to Serve Your World℠

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50-425

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Vogtle Electric Generating Plant
Response to Request for Additional Information Regarding
Technical Specification Revision Request
Integrated Leakage Rate Testing Interval Extension

Ladies and Gentlemen:

On February 26, 2003, Southern Nuclear Operating Company (SNC) submitted a proposed change to the Vogtle Electric Generating Plant (VEGP) Unit 1 and Unit 2 Technical Specifications (TS). This proposed change will revise TS section 5.5.17, "Containment Leakage Rate Testing Program," to reflect a one-time deferral of the Type A Containment Integrated Leak Rate Test (ILRT). This proposed change is based on and has been evaluated using the "risk informed" guidance in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

On June 3, 2003, SNC received a Request for Additional Information (RAI) containing 3 questions from the staff concerning the VEGP Integrated Leakage Rate Testing Interval Extension Submittal. SNC responses to these questions are enclosed.

This letter contains no NRC commitments. If you have any questions, please advise.

Sincerely,

Jeffrey T. Gasser

JTG/DRG

Enclosure: VEGP Response to RAI Regarding ILRT Interval Extension

A017

cc: Southern Nuclear Operating Company
Mr. J. D. Woodard, Executive Vice President
Mr. W. F. Kitchens, General Manager – Plant Vogtle
Mr. M. Sheibani, Engineering Supervisor – Plant Vogtle
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U. S. Nuclear Regulatory Commission
Mr. L. A. Reyes, Regional Administrator
Mr. F. Rinaldi, NRR Project Manager – Vogtle
Mr. J. Zeiler, Senior Resident Inspector – Vogtle

State of Georgia
Mr. L. C. Barrett, Commissioner – Department of Natural Resources

Enclosure

Vogtle Electric Generating Plant
Response to Request for Additional Information Regarding
Integrated Leakage Rate Testing Interval Extension

Vogtle Electric Generating Plant
Response to Request for Additional Information Regarding
Integrated Leakage Rate Testing Interval Extension

NRC Request 1

Southern Nuclear Operating Company states that containment leak tight integrity is verified through periodic inservice inspections (ISI) conducted in accordance with the requirements of the 1992 Edition through the 1992 Addenda of the ASME Code Section XI. Provide a detailed summary of ISI and related containment testing activities including inspection/testing dates, findings, corrective actions, and maintenance/repair as well as containment modifications that may or may not be a result of the required ISIs.

SNC Response

In compliance with the rulemaking actions which revised 10CFR50.55a to invoke the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsections IWE and IWL (61FR41303; August 8, 1996 and 64FR51370; September 22, 1999), SNC has performed examinations of the Unit 1 and Unit 2 containments in accordance with the 1992 Edition through 1992 Addenda of the ASME Boiler and Pressure Vessel Code.

ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE Examinations

VEGP-1 IWE Examinations

The first period IWE examinations for Unit 1 were conducted during refueling outage 1R9 which occurred during September and October of 2000. A general visual examination of the VEGP-1 containment liner, a Category E-A (Containment Surfaces) component as defined in Subsection IWE to the Code, was performed by SNC personnel during the outage. The examination was performed using VEGP procedure 84303-C, Revision 0, "Containment Liner General Visual Examination." Personnel performing the general visual examination of the containment liner plate were qualified in accordance with VEGP procedure 85001-C, Revision 9, "Qualification of Inspection, Examination, and Testing Personnel." The examination was performed under the guidance of a Registered Professional Engineer. Optical aids such as flashlights and binoculars were used when performing the general visual examination that included both direct and indirect (i.e., remote) visual examination methods.

Three-hundred seventy-five anomalies were identified during 1R9 and were recorded on an Anomaly Data Sheet as required by procedure 84303-C. That procedure defines an anomaly as a deviation or departure from the normal or common order, form, or rule with evidence of degradation that may affect either the containment structural integrity or leak tightness. The VEGP-1 containment liner was examined for evidence of flaking, blistering, peeling, discoloration, cracking, wear, pitting, excessive corrosion, arc strikes, gouges, surface discontinuities, dents, and other signs of surface irregularities and distress. Of these anomalies, four indications of paint missing or flaking was noted, 51 indications of surface rust, 194 indications of bare metal, six indications of depressions, 104 indications of arc strikes, and 16 indications of bowing in the liner plate were observed. Repairs were performed on 32 of the areas observed to have arc strikes. These repairs consisted of a blending of the area containing the arc strikes and recoating the

VEGP-1 IWE Examinations (continued)

affected areas. Seventy of the arc strikes identified were evaluated and dispositioned for repair during the following refueling outage (1R10). All other anomalies were evaluated as cosmetic in nature only and not affecting the structural integrity of the containment liner plate. A small area of the moisture barrier was removed following the identification of surface rust at the mating surface of the moisture barrier and the containment liner plate. The liner plate was examined following the removal of the moisture barrier and no liner plate damage was found.

One hundred percent of the accessible Category E-G (Pressure-Retaining Bolting) containment boundary and pressure-retaining bolting are to be examined during the interval using a VT-1 examination method. All visible surfaces are required to be examined. Approximately 32% of the Category E-G penetration bolting listed in Table 2.2 of the VEGP Containment Inservice Inspection Program Plan was examined during 1R9. All examinations of the bolting for these penetrations were completed with satisfactory results. Three mechanical penetrations were also examined because their bolting had been disassembled during the outage. All examinations of these three mechanical penetrations were completed with satisfactory results.

All VEGP-1 IWE examinations that were required by the rulemaking to 10CFR50.55a to be completed by September 9, 2001, were completed during the September 2000 through October 2000 timeframe.

During the VEGP-1 spring (March through April) 2002 maintenance/refueling outage, 1R10, containment examinations were performed in response to the NRC rulemaking to 10 CFR 50.55a in which the requirements of Subsections IWE and IWL to the 1992 Edition of ASME Section XI with 1992 Addenda were invoked. A general visual examination of the VEGP-1 containment liner, a Category E-A (Containment Surfaces) component as defined in Subsection IWE to the Code, was performed in February and March 2002 by SNC and contractor personnel prior to the Integrated Leak Rate Test performed during the outage. The examination was performed using VEGP procedure 84303-C, Revision 0, "Containment Liner General Visual Examination." Personnel performing the general visual examination of the containment liner plate were qualified in accordance with VEGP procedure 85001-C, Revision 11, "Qualification of Inspection, Examination, and Testing Personnel." The examination was performed under the guidance of a Registered Professional Engineer. Optical aids such as flashlights and binoculars were used when performing the general visual examination that included both direct and indirect (i.e., remote) visual examination methods.

One hundred and twenty-two anomalies were identified during 1R10 and were recorded on an Anomaly Data Sheet as required by procedure 84303-C. That procedure defines an anomaly as a deviation or departure from the normal or common order, form, or rule with evidence of degradation that may affect either the containment structural integrity or leak tightness. The VEGP-1 containment liner was examined for evidence of flaking, blistering, peeling, discoloration, cracking, wear, pitting, excessive corrosion, arc strikes, gouges, surface discontinuities, dents, and other signs of surface irregularities and distress. The following anomalies were observed: 12 indications of missing or flaking paint, 49 indications of surface rust, 32 indications of bare metal, nine indications of

VEGP-1 IWE Examinations (continued)

depressions, 19 indications of welding arc strikes, and one indication of moisture barrier degradation. All anomalies were evaluated as cosmetic in nature only and did not affect the structural integrity of the containment liner plate.

During the 1R9 maintenance/refueling outage, 70 arc strikes were dispositioned to be repaired during 1R10. Prior to 1R10, Southern Company Services (SCS) letter SG-18218 dated February 28, 2001, which provided a partial response to REA 01-VAA014, was issued. That letter provided guidance for evaluating Containment liner arc strikes as either requiring repair or being acceptable "as-is" based on physical characteristics of the arc strike. During the 1R10 visual examination, each of the anomalies (including arc strikes) identified during 1R9 were re-examined. All 70 of the 1R9-identified arc strikes dispositioned for repair during 1R10 were evaluated using the guidance of SCS letter SG-18218 and were found to be acceptable "as-is" thereby eliminating any need for repair.

During the outage, approximately eight linear feet of the basemat moisture barrier was removed following the identification of surface rust at the mating surface of the moisture barrier and the containment liner plate. The liner plate was examined following the removal of the moisture barrier and no liner plate degradation of significance was found.

Five mechanical penetrations received a VT-1 visual examination during 1R10 because their Category E-G, Pressure-Retaining bolting had been disassembled during the outage. All VT-1 examinations of these mechanical penetrations were completed with satisfactory results.

VEGP-2 IWE Examinations

Containment examinations were performed on VEGP-2 during the 2R7 maintenance / refueling outage in October and November 1999 in response to the NRC rulemaking to 10CFR 50.55a in which the NRC invoked the requirements of Subsections IWE and IWL of the 1992 Edition of the ASME Section XI Code with 1992 Addenda.

During the outage, a general visual examination of the containment liner plate, a Subsection IWE, Category E-A Containment Surfaces component, was conducted by SNC personnel during the outage. The examination was performed using VEGP procedure 84303-C, Revision 0, "Containment Liner General Visual Examination." Personnel performing the general visual examination of the containment liner plate were qualified in accordance with VEGP procedure 85001-C, Revision 9, "Qualification of Inspection, Examination, and Testing Personnel." The examination was performed under the guidance of a Registered Professional Engineer. Optical aids such as flashlights and binoculars were used when performing the general visual examination that included both direct and indirect (i.e., remote) visual examination methods.

Seventy-five anomalies were identified during 2R7 and were recorded on an Anomaly Data Sheet as required by procedure 84303-C. That procedure defines an anomaly as a deviation or departure from the normal or common order, form, or rule with evidence of degradation that may affect either the containment structural integrity or leak tightness. The VEGP-2 containment liner was examined for evidence of flaking, blistering, peeling,

discoloration, cracking, wear, pitting, excessive corrosion, arc strikes, gouges, surface discontinuities, dents, and other signs of surface irregularities and distress. Of these anomalies, 17 arc strikes were identified during 2R7 and were repaired. The repairs performed consisted of blending of the area containing the arc strikes and recoating the affected areas. The remaining 58 anomalies consisted of paint degradation, marks on the containment liner plate, moisture barrier degradation, and other various findings, e.g., water stains, writing, and tape residue. During the outage, two quadrants of the containment basemat were recoated. The moisture barrier was removed at this time following the identification of surface rust at the mating surface of the moisture barrier and the containment liner plate. Thickness measurements were taken ultrasonically following the cleanup of the identified anomalies, and no wall thicknesses were found to be below minimum wall thickness. To help ensure that no significant degradation of the containment liner plate had occurred below the interface between the basemat and the containment liner plate, a boroscopic examination was performed with no unacceptable indications being observed.

There were two anomalies identified as gouge marks on the liner plate. The marks were removed by blending the affected areas, and the containment liner plate was ultrasonically measured for thickness. Both of these anomalies were found to be below the acceptable design nominal wall thickness of 0.250 in. for the affected locations and each measured 0.200 in. An engineering evaluation was completed for the two anomalies by SCS and was documented in their letter SG-17271 dated October 29, 1999, to SNC. The SCS response stated that these two anomalies were determined to not affect the design function of the containment liner plate nor the margins of safety associated with the design of the containment building and were found acceptable to use "as-is." SCS further noted that the results of the structural integrity test would not be affected. No containment leakage rate testing was required since there were no modifications or repairs to the containment liner plate due to these two anomalies. A 10 CFR 50.59 safety evaluation was provided by SCS and it was noted that the engineering evaluation provided satisfies the requirements of ASME Section XI, IWE-3512.3 (1992 Edition with 1992 Addenda). As part of their evaluation, SCS recommended that the areas having the anomalies be examined using surface means such as liquid penetrant testing and then recoated. The affected areas were examined using liquid penetrant and no relevant indications were observed. The affected areas were then recoated. Anomalies including surface discoloration and minor pitting were also identified on the containment equipment hatch. These anomalies were identified as cosmetic.

During the VEGP-2 spring (April through May) 2001 maintenance/refueling outage, 2R8, containment examinations were performed in response to the NRC rulemaking to 10 CFR 50.55a in which the requirements of Subsections IWE and IWL to the 1992 Edition of ASME Section XI with 1992 Addenda were invoked. A general visual examination of the VEGP-2 containment liner, a Category E-A, Containment Surfaces component as defined in Subsection IWE to the Code, was performed by SNC personnel during the outage. The examination was performed using VEGP procedure 84303-C, Revision 0, "Containment Liner General Visual Examination." Personnel performing the general visual examination of the containment liner plate were qualified in accordance with VEGP procedure 85001-C, Revision 10, "Qualification of Inspection, Examination, and Testing Personnel." The examination was performed under the guidance of a Registered

VEGP-2 IWE Examinations (continued)

Professional Engineer. Optical aids such as flashlights and binoculars were used when performing the general visual examination that included both direct and indirect (i.e., remote) visual examination methods.

One hundred thirty-five anomalies were identified during 2R8 and were recorded on an Anomaly Data Sheet as required by procedure 84303-C. That procedure defines an anomaly as a deviation or departure from the normal or common order, form, or rule with evidence of degradation that may affect either the containment structural integrity or leak tightness. The VEGP-2 containment liner was examined for evidence of flaking, blistering, peeling, discoloration, cracking, wear, pitting, excessive corrosion, arc strikes, gouges, surface discontinuities, dents, and other signs of surface irregularities and distress. Of these anomalies, there were 26 indications of surface rust, 48 indications of bare metal, 12 indications of depressions, and 49 indications of arc strikes were observed. All anomalies were evaluated as cosmetic in nature only and not affecting the structural integrity of the containment liner plate. SCS letter SG-18218 dated February 28, 2001, provided an "Engineering Evaluation" as allowed by the ASME Section XI Code. That letter, which is available at the plant site for review upon request, provides the justification for evaluation of arc strike areas that meet specific thickness criteria from the inspection and repair requirements referenced in section 1.9.94 of the updated VEGP FSAR.

One hundred percent (100%) of the accessible Category E-G (Pressure Retaining Bolting) containment boundary and pressure-retaining bolting (bolts and studs) are to be examined during the interval using a VT-1 examination method. All of the visible surfaces are required to be examined when the bolting is not disassembled. Approximately 34% of the penetration bolting listed in Table 2.2 of the VEGP Containment Inservice Inspection Program Plan was examined during the outage (2R8). All examinations of the bolting for these 21 penetrations were completed with satisfactory results.

All VEGP-2 IWE examinations that were required by the rulemaking to 10CFR50.55a to be completed by September 9, 2001 were fulfilled during April and March of 2001.

During the VEGP-2 fall (October through November) 2002 2R9 maintenance/refueling outage, containment examinations were performed in response to the NRC rulemaking to 10 CFR 50.55a in which the requirements of Subsections IWE and IWL to the 1992 Edition of ASME Section XI with 1992 Addenda were invoked. VT-3 examinations were attempted for each of the Residual Heat Removal and Containment Spray sumps. A 4" ring of metal Containment pressure boundary surrounds the process pipe and is flush with the bottom of these sumps. This surface is normally inaccessible due to obstruction by permanent plant equipment (the concentric sump cages and mesh screens). During 2R9, the tops of the sump cages were removed to perform a modification of the sump cage bolting. As the Containment pressure boundary may have then become visually accessible due to this work, a VT-3 visual examination was attempted of each sump. However, as documented by QC inspection reports, the ring could not be visually examined due to permanent metal grating that covers the bottom of the sumps, including the metal ring, within the inner cage. This area remains inaccessible. In addition, the areas of bare metal caused by rubbing Containment lighting equipment identification tags identified by

VEGP-2 IWE Examinations (continued)

Containment Liner General Visual Examination Anomaly Data Sheets 99-R-3-4 and 99-R-3-5 were cleaned and coated during 2R9 to prevent future degradation. Four of the 32 identified anomalies were found to be surface stains only during cleaning. The remaining 28 locations were coated using the VEGP-qualified coating system. As the surface preparation and film thickness could not be verified due to the physical location (Containment dome above the polar crane), the 15.5 square feet of coatings applied were unqualified. A VT-3 visual examination was performed to document the pre-service condition of the newly applied coatings. The areas identified by 99-R-3-4 and 99-R-3-5 have been coated satisfactorily and no anomalies were identified by the pre-service examination. Optical aids such as flashlights and binoculars were used when performing the visual examinations that included both direct and indirect (i.e., remote) visual examination methods.

One hundred percent (100%) of the Category E-G pressure retaining bolting within the scope of IWE that was disassembled during 2R9 was examined. The bolting and sealing surfaces of each penetration were visually examined (VT-1) upon reassembly. All examinations of these mechanical penetrations were completed with satisfactory results.

Regulatory Guide 1.35 Inservice Inspections

Prior to the rulemaking invoking the requirements of ASME Section XI, Subsection IWL for concrete containment inspections, SNC performed inspections and testing of the VEGP-1 and VEGP-2 post-tensioning systems and concrete containment structures in accordance with Regulatory Guide 1.35, Revision 2, 1976, "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containments," with approved exceptions.

The VEGP-1 first-year inspection occurred from September 1987 to December 1987. All parameters requiring inspection or testing per Regulatory Guide 1.35 were found to be acceptable. The sheathing filler samples tested had acceptable results for levels of water-soluble ions (chlorides, nitrates, and sulfides), water content, melting point, and neutralization number. One VEGP-1 horizontal tendon was missing its grease can plug and was found to have three ounces of observable moisture inside of the grease can. The grease plug was replaced, and water was not found in any other surveillance tendon during removal of the grease can nor inside it. All anchorage components had no cracks and no visible signs of active corrosion. All concrete cracks in the immediate vicinity of the bearing plates for horizontal tendons were within the allowable tolerance for width. Two areas of chipped concrete near construction joints on a buttress were observed and determined to be from original construction without any structural impact. All tendon liftoff forces were found to be acceptable. All strand samples tested were found to be acceptable in diameter, yield strength, tensile strength, and elongation. No significant conditions were identified during the course of the surveillance. Based on the results of this examination, the conclusion was reached that no abnormal degradation had occurred in the containment structure or post-tensioning system.

The VEGP-1 third-year inspection and VEGP-2 first-year inspection occurred concurrently from September 1989 to November 1989. All parameters requiring inspection or testing per Regulatory Guide 1.35 were found to be acceptable by

inspection, repair, or evaluation. Unless specified, the below inspection and testing results are applicable to both units. Only Unit 1 is equipped with detensionable tendons; therefore, only one vertical or one horizontal tendon is detensioned on Unit 1 each time lift-offs are performed for Unit 2. The concrete surrounding the horizontal tendon's bearing plates was found to be free of open cracks (i.e., crack width greater than 0.01 inches) or signs of excessive stress. The steel form–plate surrounding the vertical tendon's bearing plates was found to be free of any signs of abnormal material behavior. The bearings plates were observed to be free of cracks, deformation, or indications of movement into the concrete. The anchorage assembles, including shims (Unit 1) and bearing plates, were observed to have adequate grease coverage. The exposed sheathing filler was found to be free of discoloration and foreign material. There was no evidence of free water in the sheathing filler. All of the sheathing filler laboratory samples tested had acceptable concentrations of water soluble ions (chlorides, nitrates, sulfides) and water content, plus adequate reserved alkalinity (base numbers). The anchor assemblies, including shims (Unit 1), were found to be free of any cracks, missing wires/strands, or signs of excessive stress. The corrosion level of all the anchorage components was observed at Level 1 (bright metal, no visible oxidation) with the exception of some tendon ends on Unit 1: Horizontal Tendon Ends 18 (Buttress 3) and 83 (Buttress 1) which were observed with corrosion Level 2 (reddish-brown color, no pitting) present on the shims only and Horizontal Tendon End 58 (Buttress 3) which was observed with corrosion Level 2 on the shims and on the anchorhead. The measured lift-off forces were all above the specified lower-bound values. There were no broken, damaged, or improperly seated wires/strands/wedges found during the surveillance. The tendons were resealed with new grease cap o-ring gaskets and filled with Visconcorust 2090P-4 sheathing filler (grease). The replacement volume was greater than the volume of grease removed during the surveillance. There were two as-found voids in the sheathing filler in excess of 5.0% of the Net Duct Volume for Unit 1: Vertical Tendons 31-81 with 5.3% and 33-77 with 8.85%; no voids were identified for Unit 2. The two detensioned tendons (110 and 31-81) were free of any indications of broken, missing, or ineffective wires/strands. The corrosion level of the removed inspection strands was observed as Level 1 (bright metal, no visible oxidation) over their entire lengths. The removed tendon strand laboratory samples exceeded the minimum strength and elongation requirements for tensile testing. Comparison with original tendon installation records and previous surveillance reports presented no evidence of system degradation. Based upon these results, the conclusion was reached that no abnormal degradation of the Containment Structures was indicated for Vogtle Electric Generating Plant Units 1 and 2.

The VEGP-1 fifth-year inspection and VEGP-2 third-year inspection occurred concurrently from September 1991 to October 1991. All parameters requiring inspection or testing per Regulatory Guide 1.35 were found to be acceptable by inspection, repair, or evaluation. Unless specified, the below inspection and testing results are applicable to both units. Only Unit 1 is equipped with detensionable tendons; therefore, only one vertical or one horizontal tendon is detensioned on Unit 1 each time lift-offs are performed for Unit 2. No significant conditions were identified during the course of the general visual inspection of the exposed accessible exterior surfaces of both VEGP-1 and VEGP-2. One concrete void and crack were identified on Unit 1 in the vicinity of Horizontal Tendon 155 (Buttress 2); these locations were satisfactorily repaired by Georgia Power upon discovery. All anchorage components had no cracks and no visible

Regulatory Guide 1.35 Inservice Inspections (continued)

signs of active corrosion. All concrete cracks in the immediate vicinity of the bearing plates for horizontal tendons were within the allowable tolerance for width. The steel form-plate surrounding the vertical tendon's bearing plates were found to be free of any signs of abnormal material behavior. The bearing plates were observed to be free of cracks, deformation, or indications of movement into the concrete. The anchorage assemblies, including shims (Unit 1) and bearing plates, were observed to have adequate grease coverage. The exposed sheathing was found to be free of discoloration and foreign material. There was no evidence of free water in the sheathing filler. All of the sheathing filler laboratory samples tested had acceptable concentrations of water-soluble ions (chlorides, nitrates, and sulfides), water content, plus adequate reserved alkalinity (base numbers). The anchor assemblies, including shims (Unit 1), were found to be free of any cracks, missing wires/strands, or signs of excessive stress. The corrosion level of all the anchorage components were observed to be Level 1 (bright metal, no visible oxidation) or Level 2 (reddish brown color, no pitting). Both conditions were determined acceptable. The measured lift-off forces were all above the specified lower-bound values. There were no broken, damaged, or improperly seated wires/strands/wedges found. The tendons were resealed with new grease cap o-ring gaskets and filled with sheathing filler (grease). In all but one case, the replacement volume was greater than the volume of grease removed during the surveillance. For one vertical tendon, the amount of grease removed could not be replaced entirely. The remaining void of 0.3% was documented. There were two voids in the sheathing filler in excess of 5.0% of the Net Duct Volume for Unit 1: Vertical Tendon 10-102 with 13.2% and Horizontal Tendon 162 with 5.4%; no such voids were found on Unit 2. The detensioned tendon (Unit 1 10-102) was free of any indications of broken, missing, or ineffective wires/strands over the effective tendon length. There were seven wires which were broken at the strand tails during this and previous tensioning operations. These broken wires do not affect the operability of the tendon. The corrosion level of the removed tendon strand was observed as Level 1 (bright metal, no visible oxidation) over its entire length. The strand samples tested were found to be acceptable in diameter, yield strength, tensile strength, and elongation. Comparison with original tendon installation records and previous surveillance reports presented no evidence of system degradation. Based on the results of this examination, the conclusion was reached that no abnormal degradation had occurred in the containment structures or post-tensioning systems.

The VEGP-1 tenth-year inspection and VEGP-2 fifth-year inspection occurred concurrently from June 27, 1995 to August 17, 1995. All parameters requiring inspection or testing per Regulatory Guide 1.35 were found to be acceptable by inspection, repair, or evaluation. Unless specified, the below inspection and testing results are applicable to both units. Only Unit 1 is equipped with detensionable tendons; therefore, only one vertical or one horizontal tendon is detensioned on Unit 1 each time lift-offs are performed for Unit 2. All of the sheathing filler laboratory samples tested had acceptable concentrations of water-soluble ions (chlorides, nitrates, and sulfides) and water content. No tendon was found to contain any water during removal of the grease can, around the tendon anchorage, or during detensioning. All tendons inspected had complete grease coating coverage. No cracks were found on any anchorage components, and the corrosion levels to all components and strand tails were found to be acceptable. No additional broken or missing strands were found on any of the inspected tendons. The lift-off forces for all tendons were found to be acceptable and in excess of the expected and minimum

Regulatory Guide 1.35 Inservice Inspections (continued)

prestress force limits. All strand samples tested were found to be acceptable in diameter, ultimate strength, and corrosion level. The tendon that was detensioned for strand removal was retensioned, and its elongation and lift-offs found to be acceptable. All tendons were resealed and regreased to an acceptable level. A comparison of the findings of this surveillance to the original installation revealed that the tendons are experiencing normal force losses. Based on the data gathered during these tests and inspections, the conclusion was reached that no abnormal degradation of the VEGP-1 or VEGP-2 concrete containment and post-tensioning system has occurred.

ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWL / Regulatory Guide 1.35 Inservice Inspections

During the VEGP-1 and 2 spring (May and June) 2000 In-Service Tendon Inspection, containment examinations were performed in response to the NRC rulemaking to 10CFR 50.55a in which the requirements of Subsection IWL to the 1992 Edition of ASME Section XI with 1992 Addenda were invoked. The general visual examination of the reinforced concrete and the post-tensioning systems of Class CC components was performed during the tendon surveillance by a vendor qualified under criteria specified by the 1992 Edition and 1992 Addenda of ASME Section XI. The baseline inspection was conducted per IWL to allow on-going monitoring of the containment condition. The IWL general visual inspection was performed under the guidance of a Registered Professional Engineer. Light meters, flashlights, feeler gauges, and an optical comparator were used when performing the general visual examination that included both direct and indirect visual examination methods.

During the visual examination, two conditions on both VEGP-1 and VEGP-2 were noted that required an engineering evaluation from Southern Company Services (SCS). It was necessary for SCS to determine if the conditions would require a detailed inspection. The first condition was an indication of metal exposure, which was later determined to be rebar-chairs, a support used to hold rebar in place while the concrete is being poured. The second concern was the areas of spalling on the edge of the containment buttresses. SCS letter SG-16802 dated May 5, 1999, provided an Engineering Evaluation Report as described in IWL-3300 for two concrete spalls and also included the initial concrete repair procedure for these two areas. Spall is defined as a fragment, usually in the shape of a flake, detached from a larger mass by a blow, by the action of weather, pressure, or expansion within the large mass. The SCS response was documented in their letter SG-17640 dated May 25, 2000, to SNC. It was noted that both indications were non-structural in nature and had no considerable effect on the structural integrity of the containment. A grout repair was also accomplished during these examinations. This repair was completed on the high-head vent packs, which had to be chipped out and re-grouted to expose the high-head tendon conduit vent. Two non-structural grout repairs on VEGP-1 for a minor chip and two minor spalls were completed during refueling outage 1R9 in mid-October 2000.

Several letters were generated by SCS during performance of the tendon surveillance. Letter SG-17682 was issued June 15, 2000, to provide an assessment of VEGP-1 horizontal tendon # 30 actual average anchorage force exceeding the average predicted upper limit. In this letter, SCS concluded that the initial losses and time dependent

losses were less than previously calculated, thereby resulting in a higher lift-off force than predicted. These forces, however, do not have a negative impact on the minimum prestress requirements and the ability of containment to resist design basis accident pressure. Another letter generated during the surveillance was SG-17715 dated June 29, 2000, which requested that SCS provide lock-off force ranges for the retensioning of vertical tendon ends #70 and #116. Letter SG-17740 was subsequently generated on July 11, 2000, after the vendor indicated that two strands in VEGP-1 vertical tendon #70 - #116 broke during retensioning. Based on discussion with SCS, the vendor was instructed to totally detension vertical tendon #70 - #116 at both ends and remove the two damaged tendon strands. Once the strands were removed, the vendor visually examined the strands along their entire length for corrosion, cracks, and damage. The vendor performed tensile testing at both ends of the failure on the damaged tendon strands and provided VEGP a test report of the yield strength of the sample, its ultimate tensile strength, and elongation at the required force. According to the vendor, examination of the broken strands showed no corrosion, the ultimate strength was acceptable, and no deterioration in the physical properties was noted. The broken strands were an isolated incident, as no other strands broke during retensioning and the elongations were acceptable. In letter SG-17740, SCS provided an acceptable range of values for retensioning the tendon to the required force based on the reduced number of strands. The range of lock-off force values that SCS provided for retensioning the vertical tendon was acceptable for the reduced strand tendon and does not constitute a potential indication for abnormal degradation of the containment structure. This range restored the tendon within the design requirements and does not have a negative impact on the minimum prestress requirements and the ability of containment to resist design basis accident pressure.

During the containment concrete examinations, inclusive of tendon testing, and in response to 10CFR50.55a(b)(2)(ix), no adverse conditions were identified during the examination and test of the containment concrete, including tendons, which involve the additional requirements of 10CFR50.55a(b)(2)(ix), Paragraphs A, B, C, and E. With regard to 10CFR50.55a(b)(2)(ix), Paragraph D, there were areas identified where grease leakage was observed on the containment concrete surfaces. A detailed examination was performed by the test vendor and is included in its final report submitted to SNC. That report is available for review upon request at the VEGP plant site. The amount of grease leakage observed was *less than* the *excessive* grease leakage reporting threshold value of seven (7) gallons as specified in Enclosure 2 to SNC letter LCV-1307 dated April 5, 1999, that was submitted to the NRC for review and approval. The subject document requested relief from the regulatory requirements of 10CFR50.55a(b)(2)(ix), Paragraphs A and D, relative to the reporting of grease leakage to the NRC in the "ISI Summary Report," otherwise referred to as the "Owner's Report for Inservice Inspection (Form NIS-1)." *Excessive* grease leakage (i.e., grease leakage in excess of 7 gallons) as it pertains to VEGP is reported to the NRC pursuant to the requirements of VEGP Technical Specification 5.6.9. The NRC reviewed and approved the SNC request for relief pertaining to the reporting of grease leakage and was documented in its June 16, 2000, letter to SNC. Based on the foregoing information, reporting of excessive grease leakage is not required to be addressed in a NIS-1 report due to the NRC approval of the

ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWL / Regulatory Guide 1.35 Inservice Inspections (continued)

SNC request for relief. No report was filed in response to VEGP Technical Specification 5.6.9 since the observed grease leakage was less than 7 gallons. The actual leakage observed during the VEGP-1 containment concrete examination was 71 ounces (0.55 gallons). The actual leakage observed during the VEGP-2 containment concrete examination was 89 ounces (0.70 gallons).

All IWL examinations that were required by the rulemaking to 10CFR50.55a to be completed by September 9, 2001, were completed for both VEGP-1 and VEGP-2 from May to June 2000.

Containment Modifications

No modifications of the VEGP-1 or VEGP-2 containments have been conducted since the start of commercial operation.

NRC Request 2

Provide a schedule of future ISI activities including, if any, planned major repairs and modifications during the ILRT extension period from 10 to 15 years.

SNC Response

Below is the tentative schedule for future Containment ISI activities through the proposed ILRT extension period which concludes March 2017 for VEGP-1 and March 2010 for VEGP-2. This schedule is believed to be true and accurate at the time of submittal; however, the examination activities for a given refueling outage are subject to change due to rulemaking, licensing actions, and licensee outage scheduling or ALARA considerations.

Examination in accordance with the 1992 Edition with 1992 Addenda ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWE, IWE-2500-1, Categories E-B, Pressure Retaining Welds and E-F, Pressure Retaining Dissimilar Metal Welds was made optional per 10 CFR 50.55a(b)(2)(x)(C). SNC has chosen not to perform such examinations at VEGP. Additionally, as of the date of this submittal, no areas of VEGP-1 or VEGP-2 have been identified as requiring examination in accordance with Category E-C, Containment Surfaces Requiring Augmented Examination. If any areas are identified at a later date, examinations will be conducted in accordance with the applicable rulemaking.

Planned examinations to be conducted in accordance with 10 CFR 50, Appendix J (Integrated Leak Rate Testing only), Regulatory Guide 1.35 "Inservice Inspection of Ungrouted Tendons in Prestressed Concrete Containments," ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWL and Subsection IWE (Category E-A, Containment Surfaces; E-D, Seals, Gaskets, and Moisture Barriers; E-G, Pressure-

Retaining Bolting; and E-P, All Pressure-Retaining Components) appear in the two tables below.

No major containment repairs or modifications are anticipated during the extended ILRT interval. Neither steam generator replacement nor reactor vessel head replacement is currently expected to occur during the extended ILRT interval.

VEGP-1

Outage / Date	Planned Containment ISI Activities
1R11 Fall 2003	E-A: None (note: performed 1R10, Spring 2002). E-D: None. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
1R12 Spring 2005	E-A: None. E-D: VT-3 of moisture barrier sufficient to complete examination of at least 50% of accessible moisture barriers per Table IWE-2412-1 Inspection Program B. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
Summer 2005	IWL / RG 1.35: VT-3C visual examination of concrete containment surfaces and testing of post-tensioning (tendon) system.
September 8, 2005	*End of 2nd Inspection Period of 1st Inspection Interval*
1R13 Fall 2006	E-A: None. E-D: None. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
1R14 Spring 2008	E-A: 100% VT-3 visual examination. E-D: VT-3 of moisture barrier sufficient to complete examination of 100% of accessible moisture barriers per Table IWE-2412-1 Inspection Program B. E-G: VT-1 visual examination of 100% of previously unexamined accessible pressure retaining bolting. VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
September 8, 2008	*End of 3rd Inspection Period and 1st Inspection Interval*
1R15 Fall 2009	E-A: None. E-D: None. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
Summer 2010	IWL / RG 1.35: VT-3C visual examination of concrete containment surfaces and testing of post-tensioning (tendon) system.
1R16 Spring 2011	E-A: 100% General Visual examination. E-D: VT-3 of moisture barrier sufficient to complete examination of at least 16% of accessible moisture barriers per Table IWE-2412-1 Inspection Program B. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
September 8, 2011	*End of 1st Inspection Period of 2nd Inspection Interval*
1R17 Fall 2012	E-A: None. E-D: None. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.

VEGP-1 (continued)	
Outage / Date	**Planned Containment ISI Activities**
1R18 Spring 2014	E-A: 100% General Visual examination. E-D: VT-3 of moisture barrier sufficient to complete examination of at least 50% of accessible moisture barriers per Table IWE-2412-1 Inspection Program B. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
Summer 2015	IWL / RG 1.35: VT-3C visual examination of concrete containment surfaces and testing of post-tensioning (tendon) system.
September 8, 2015	*End of 2nd Inspection Period of 2nd Inspection Interval*
1R19 Fall 2015	E-A: None. E-D: None. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
1R20 Spring 2017	App. J: Integrated Leak Rate Test (subject to NRC approval of ILRT interval extension) E-A: 100% VT-3 visual examination prior to ILRT. E-D: VT-3 of moisture barrier sufficient to complete examination of 100% of accessible moisture barriers per Table IWE-2412-1 Inspection Program B. E-G: 100% VT-1 visual examination of accessible pressure retaining bolting. VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
September 8, 2018	*End of 3rd Inspection Period and 2nd Inspection Interval*

VEGP-2

Outage / Date	**Planned Containment ISI Activities**
2R10 Spring 2004	E-A: 100% General Visual examination E-D: VT-3 of moisture barrier sufficient to complete examination of at least 50% of accessible moisture barriers per Table IWE-2412-1 Inspection Program B. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
Summer 2005	IWL / RG 1.35: VT-3C visual examination of concrete containment surfaces and testing of post-tensioning (tendon) system.
September 8, 2005	*End of 2nd Inspection Period of 1st Inspection Interval*
2R11 Fall 2005	E-A: None. E-D: None. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
2R12 Spring 2007	E-A: 100% VT-3 visual examination. E-D: VT-3 of moisture barrier sufficient to complete examination of 100% of accessible moisture barriers per Table IWE-2412-1 Inspection Program B. E-G: VT-1 visual inspection of 100% of previously unexamined accessible pressure retaining bolting. VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
September 8, 2008	*End of 3rd Inspection Period and 1st Inspection Interval*

VEGP-2 (continued)	
Outage / Date	**Planned Containment ISI Activities**
2R13 Fall 2008	E-A: None. E-D: None. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
2R14 Spring 2010	App. J: Integrated Leak Rate Test (subject to NRC approval of ILRT interval extension) E-A: 100% General Visual examination prior to ILRT. E-D: VT-3 of moisture barrier sufficient to complete examination of at least 16% of accessible moisture barriers per Table IWE-2412-1 Inspection Program B. E-G: VT-1 of any bolted connection that is disassembled. E-P: In accordance with 10 CFR 50 Appendix J, Option B.
Summer 2010	IWL / RG 1.35: VT-3C visual examination of concrete containment surfaces and testing of post-tensioning (tendon) system.
September 8, 2011	*End of 1st Inspection Period of 2nd Inspection Interval*

NRC Request 3

Describe briefly the containment liners areas that can be inspected visually from both sides, inside only, or outside only, and also the areas that are uninspectable from both sides such as imbedded liner or basemat liner. In addition, provide their corresponding percentage of total containment liner area.

SNC Response

VEGP-1 and VEGP-2 are essentially identical containments consisting of a prestressed reinforced concrete cylinder and hemispherical dome supported on a flat, conventionally reinforced concrete basemat with a central cavity and instrumentation tunnel to house the reactor vessel. The inside face of the containment is lined with steel plates welded together to form a leaktight barrier. The liner is typically 1/4 in. thick and is thickened locally around penetrations, basemat anchorages, and large brackets. The liner plate, including the thickened plate areas, is anchored to the concrete. Leak chase channels are provided at seam welds which are inaccessible after construction.

As the liner is concrete backed at all locations, no portions (0.00%) of the liner are visually inspectable from both sides of the liner. The majority (84.72%) of the Containment liner is accessible for visual inspection from the inside of the containment building. This area is comprised of the cylinder from elevation 171-9" to the dome spring line at elevation 327'-9"and the hemispherical dome which extends to an elevation of 397'-9". Permanent plant equipment obstructions within this area include HVAC ductwork (0.74%), fuel transfer tube vault (0.15%), and electrical penetration enclosures (0.10%); an additional 0.20% of obstructed surface area is conservatively assumed for miscellaneous obstructions. The remaining inaccessible portions of the containment liner are those embedded in concrete or permanently lined with stainless steel. Following construction of the concrete basemat and installation of the liner, a protective structural concrete slab was placed above the liner plate to protect it from damage during construction and operation. As a result of the installation of this slab, 0.80% of the liner is inaccessible in a horizontal ring around the circumference of containment between

elevations 169'-0" and 171'-9". The inaccessible embedded liner over the basemat (including reactor cavity floor) represents an additional 10.16% of the total liner surface area. The stainless steel lined reactor cavity and instrumentation tunnel comprise the final 3.15% of the liner which is inaccessible for visual examination.