

January 15, 2004

Mr. J. T. Gasser
Vice President
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 RE: ISSUANCE
OF CORRECTED PAGES FOR AMENDMENT NOS. 130 AND 108 (TAC NOS.
MB7933 AND MB7934)

Dear Mr. Gasser:

On January 12, 2004, the Nuclear Regulatory Commission issued Amendment Nos. 130 and 108 to Facility Operating Licenses Nos. NPF-68 and NPF-81 for the Vogtle Electric Generating Plant, Units Nos. 1 and 2. However, your staff informed us that Amendment No. 108 for Unit 2 should have been issued as Amendment No. 109.

Enclosed are the corrected pages for Unit 2 in its entirety. We regret any inconvenience this may have caused.

Sincerely,

/RA/

Steve Bloom, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-424 and 50-425

Enclosure: As stated

cc w/encl: See next page

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Vogtle Electric Generating Plant

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SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

VOGTLE ELECTRIC GENERATING PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 109
License No. NPF-81

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 2 (the facility) Facility Operating License No. NPF-81 filed by the Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the owners), dated February 26, 2003, as supplemented by letter dated July 25, 2003, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-81 is hereby amended to read as follows:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 109, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION
/RA/

John A. Nakoski, Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification
Changes

Date of Issuance: January 12, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 130

FACILITY OPERATING LICENSE NO. NPF-68

DOCKET NO. 50-424

AND

TO LICENSE AMENDMENT NO. 109

FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 50-425

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove

5.5-20

5.5-21

5.5-22

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Insert

5.5-20

5.5-21

5.5-22

5.5-23

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 130 TO FACILITY OPERATING LICENSE NPF-68
AND AMENDMENT NO. 109 TO FACILITY OPERATING LICENSE NPF-81
SOUTHERN NUCLEAR OPERATING COMPANY, INC., ET AL.
VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2
DOCKET NOS. 50-424 AND 50-425

1.0 INTRODUCTION

By letter dated February 26, 2003, as supplemented by letter dated July 25, 2003, Southern Nuclear Operating Company, Inc., et al. (the licensee) proposed license amendments to change the Technical Specifications (TS) for the Vogtle Electric Generating Plant (Vogtle), Units 1 and 2. The proposed changes would 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). The 10-year interval between ILRTs is to be extended to 15 years from the previous ILRTs that were completed in March 2002 for Unit 1 and March 1995 for Unit 2.

The supplemental letter dated, July 25, 2003, provided clarifying information that did not change the scope of the February 26, 2003, application nor the initial proposed no significant hazards consideration determination.

2.0 REGULATORY EVALUATION

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix J was revised, effective October 26, 1995, to allow licensees to perform containment leakage testing in accordance with the requirements of Option A, "Prescriptive Requirements," or Option B, "Performance-Based Requirements." 10 CFR Part 50, Appendix J, Option B requires that a Type A test be conducted at a periodic interval based on historical performance of the overall containment system. Vogtle TS 5.5.17 requires that leakage rate testing be performed as required by 10 CFR Part 50, Appendix J, Option B, as modified by approved exemptions, and in accordance with the guidelines contained in Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, with certain exceptions listed in the TS. This RG endorses, with certain exceptions, Nuclear Energy Institute (NEI) report NEI 94-01, Revision 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 26, 1995.

A Type A test is an overall (integrated) leakage rate test of the containment structure. NEI 94-01 specifies an initial test interval of 48 months, but allows an extended interval of 10 years, based upon two consecutive successful tests. There is also a provision for extending

the test interval an additional 15 months in certain circumstances. The most recent two Type A tests at both Vogtle units have been successful, so the current interval requirement is 10 years.

The licensee is requesting a change to TS 5.5.17, "Containment Leakage Rate Testing Program," which would add an exception from the guidelines of RG 1.163 regarding the Type A test interval, for each unit. Specifically, the proposed TS states that the next Type A test, after the March 2002 test for Unit 1 and the March 1995 test for Unit 2, which are the dates of the latest tests, shall be performed within 15 years. With the requested extension of the ILRT interval, the next overall verification of the containment leak-tight integrity will be performed by March 2017 for Unit 1 and March 2010 for Unit 2.

The local leakage rate tests (Type B and Type C tests), including their schedules, are not affected by this request. The extended testing interval will not affect any Code requirements or Code acceptance criteria.

3.0 TECHNICAL EVALUATION

3.1 TS 5.5.17, "Containment Leakage Rate Testing Program"

The revision to TS 5.5.17 would add a one-time deferral of the Type A ILRT. The 10-year interval between ILRTs would be extended to 15 years from the previous ILRTs for each unit, which were completed in March 2002 (Unit 1) and March 1995 (Unit 2). As a result, the Type A containment test required by 10 CFR Part 50, Appendix J will be performed during the refueling outage 1R20 (currently scheduled for March 2017) for Unit 1 and during the refueling outage 2R14 (currently scheduled for March 2010) for Unit 2. According to the licensee, this one-time exception will avoid unnecessary personnel radiation exposure (estimated at 750 mrem) by deferring the Type A test for an additional 5 years.

3.2 Mechanical Evaluation

Vogtle, Units 1 and 2 are Westinghouse pressurized-water reactors with a large, prestressed, reinforced-concrete, primary containment structure. The containment pressure boundary consists of the steel liner, containment access penetrations, and process piping and electrical penetrations. The integrity of the penetrations is verified through Type B and Type C local leak rate tests (LLRTs) as required by 10 CFR Part 50, Appendix J, and the overall integrity of the containment structure is verified through an ILRT. These tests are performed to verify the essentially leak-tight characteristics of the containment structure at the peak calculated containment pressure. As stated in the request, Vogtle, Unit 1 has performed three ILRTs during the period of its operating license. These tests were completed in March 1990, March 1993, and March 2002. Vogtle, Unit 2 has performed two ILRTs during the period of its operating license—April 1992 and March 1995. Based on these successful Type A tests, the 10 CFR Part 50, Appendix J, Option B requires the current ILRT interval to be 10 years for both Units 1 and 2. With the requested extension of the ILRT interval, the licensee proposed that the next overall verification of the containment leak-tight integrity be performed by March 2017 for Unit 1 and by March 2010 for Unit 2.

The leak rate testing requirements (ILRT and LLRTs) of Option B of 10 CFR Part 50, Appendix J and the containment inservice inspection (ISI) requirements mandated by 10 CFR 50.55a complement each other in ensuring the leak-tightness and structural integrity of the

containment. Accordingly, from its review of Type A test interval extension application of other plants, the U.S. Nuclear Regulatory Commission (NRC) staff has identified several general issues related to the ISI of the containment and potential areas of weaknesses in the containment that need to be addressed when assessing licensees' requests for extending the ILRT interval. The licensee for Vogtle, Units 1 and 2 has addressed these issues in its submittals dated February 26, and July 25, 2003.

Regarding the ISI program performed on the containment and the schedule for implementation, the licensee stated that the containment leak tight integrity is verified through ISIs conducted in accordance with the requirements of the 1992 Edition of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI, Subsections IWE and IWL. NRC regulations in 10 CFR 50.55a(b)(2)(ix)(E), require licensees to conduct visual inspections of accessible surface areas of the containment three times every 10 years. These requirements will not be changed as a result of the extended ILRT interval. In addition, no changes are proposed to the frequency of Appendix J, Type B and C tests. They will continue to be performed to verify the leak-tight integrity of containment penetration bellows, airlocks, seals, and gaskets, and containment isolation valves. Because the containment ISI and related LLRT programs are not affected by the requested extension of the ILRT interval (up to 15 years), the NRC staff finds that those programs will continue to provide a high degree of assurance that any degradation of the containment structure is identified and corrected before a containment leakage path is introduced.

For the issue related to the application of any augmented examination (as required by the ASME Code, Section XI, IWE Table-2500-1, Examination Category E-C), the licensee stated that based on the results of the previous inspections, there are no areas of the Vogtle, Units 1 and 2 containment liners that require augmented examinations per IWE-1240.

With regard to the issue related to the ISI of seals, gaskets and the pressure retaining bolting, the licensee stated that the one-time extension applies only to the Type A ILRT that is currently on a 10-year interval pursuant to Appendix J, Option B, performance-based requirements. Appendix J, Type B and Type C tests are performed at the intervals required by Appendix J, Option B and will be tested at least once in the 10-year interval. The periodic testing of seals, gaskets and containment pressure-retaining bolting will provide reasonable assurance of the integrity of the containment pressure boundary over the period of the extension. On the basis discussed above, the NRC staff finds that the licensee's ISI program for seals, gaskets and bolted connections provides reasonable assurance that the integrity of the containment pressure boundary will be maintained during the extended ILRT interval.

In its response to the issue regarding the integrity of two-ply stainless steel bellows (Information Notice (IN) 92-20, "Inadequate Local Leak Rate Testing"), the licensee stated that Vogtle does not have such bellows as a part of its containment pressure boundary. Therefore, the concern related to NRC IN 92-20 is not applicable to the bellows installed at Vogtle, Units 1 and 2.

The licensee stated that the containment liner is concrete backed at all locations, no portion of the liner are visually inspectable from both sides of the liner, and that 84.72 percent of the liner is accessible for visual inspection from the inside of the containment building. With regard to the inaccessible areas of the containment liner for which degradations cannot be found by visual examinations, the licensee performed an ILRT extension risk assessment considering the potential age-related corrosion effects on the integrity of containment liner and a series of

parametric sensitivity studies. The results of the risk assessment indicated that the ILRT interval extension has a minimal impact on plant risk. From its review of the licensee's submittals, the NRC staff finds that the increase in predicted risk due to the proposed TS change is within the acceptance guidelines while maintaining the defense-in-depth philosophy of RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions On Plant-Specific Changes to the Licensing Basis" and is, therefore, acceptable. The details of the NRC staff's evaluation regarding the risk assessment performed by the licensee is described in Section 3.3 of this Safety Evaluation.

On the basis of its review of the information provided by the licensee in its TS amendment request and responses to NRC staff's request for additional information, the NRC staff finds that (1) the structural integrity of the containment vessel is adequately verified through periodic inservice inspections as required by the ASME Code, Section XI, Subsections IWE and IWL and (2) the integrity of the penetrations and containment isolation valves are periodically verified through Type B and Type C tests as required by 10 CFR Part 50, Appendix J. In addition, the system pressure tests for containment pressure boundary (i.e., Appendix J tests, as applicable) are required to be performed following repair and replacement activities in accordance with Article IWE-5000 of the ASME Code, Section XI. Serious degradation of the primary containment pressure boundary is required to be reported under 10 CFR 50.72 and 10 CFR 50.73.

3.3 Risk Assessment Evaluation

The licensee has performed a risk impact assessment of extending the Type A test interval to 15 years. The risk assessment was provided in the February 26, 2003, application for license amendment. In performing the risk assessment, the licensee considered the guidelines of NEI 94-01, the methodology used in Electric Power Research Institute (EPRI) TR-104285, "Risk Impact Assessment of Revised Containment Leak Rate Testing," and RG 1.174.

The basis for the current 10-year test interval is provided in Section 11.0 of NEI 94-01, Revision 0, and was established in 1995 during the development of the performance-based Option B of Appendix J. Section 11.0 of NEI 94-01 states that NUREG-1493, "Performance-Based Containment Leak-Test Program," provided the technical basis to revise leakage rate testing requirements contained in Option B to Appendix J. The basis consisted of qualitative and quantitative assessments of the risk impact (in terms of increased public dose) associated with a range of extended leakage rate test intervals. To supplement this basis, industry undertook a similar study. The results of that study are documented in EPRI Research Project Report TR-104285.

The EPRI study used an analytical approach similar to that presented in NUREG-1493 for evaluating the incremental risk associated with increasing the interval for Type A tests. The Appendix J, Option A, requirements that were in effect for Vogtle early in the plant's life required a Type A test frequency of three tests in 10 years. The EPRI study estimated that relaxing the test frequency from three tests in 10 years to one test in 10 years would increase the average time that a leak that was detectable only by a Type A test goes undetected from 18 to 60 months. Since Type A tests only detect about 3 percent of the leaks (the rest are identified during local leak rate tests based on industry leakage rate data gathered from 1987 to 1993), this results in a 10 percent increase in the overall probability of leakage. The risk contribution of pre-existing leakage for the pressurized water reactor and boiling water reactor

representative plants in the EPRI study confirmed the NUREG-1493 conclusion that a reduction in the frequency of Type A tests from three tests in 10 years to one test in 20 years leads to an “imperceptible” increase in risk that is on the order of 0.2 percent and a fraction of one person-rem per year in increased public dose.

Building upon the methodology of the EPRI study, the licensee assessed the change in the predicted person-rem/year frequency. The licensee quantified the risk from sequences that have the potential to result in large releases if a pre-existing leak were present. Since the Option B rulemaking was completed in 1995, the NRC staff has issued RG 1.174 on the use of probabilistic risk assessment (PRA) in evaluating risk-informed changes to a plant’s licensing basis. The licensee has proposed using RG 1.174 guidance to assess the acceptability of extending the Type A test interval beyond that established during the Option B rulemaking.

RG 1.174 defines very small changes in the risk-acceptance guidelines as increases in core damage frequency (CDF) less than 10^{-6} per year and increases in large early release frequency (LERF) less than 10^{-7} per year. Since the Type A test does not impact CDF, the relevant criterion is the change in LERF. The licensee has estimated the change in LERF for the proposed change and the cumulative change from the original frequency of three tests in a 10-year interval. RG 1.174 also discusses defense-in-depth and encourages the use of risk analysis techniques to help ensure and show that key principles, such as the defense-in-depth philosophy, are met. The licensee estimated the change in the conditional containment failure probability for the proposed change to demonstrate that the defense-in-depth philosophy is met.

The licensee provided analyses, as discussed below. The following comparisons of risk from a change in test frequency from three tests in 10 years to one test in 15 years are considered to be bounding for the Vogtle comparative frequencies of one test in 10 years to one test in 15 years. The following conclusions can be drawn from the analysis associated with extending the Type A test frequency:

1. Given the change from a three in 10-year test frequency to a one in 15-year test frequency, the increase in the total integrated plant risk is estimated to be less than 0.1 person-rem per year. This increase is comparable to that estimated in NUREG-1493, where it was concluded that a reduction in the frequency of tests from three in 10 years to one in 20 years leads to an “imperceptible” increase in risk. Therefore, the increase in the total integrated plant risk for the proposed change is considered small and supportive of the proposed change.
2. The increase in LERF resulting from a change in the Type A test frequency from the original three in 10 years to one in 15 years is estimated to be 1.7×10^{-7} per year based on the internal events PRA. However, there is some likelihood that the flaws in the containment estimated as part of the Class 3b frequency would be detected as part of the IWE/IWL visual examination of the containment surfaces (as identified in ASME Code, Section XI, Subsection IWE/IWL). Visual inspections are expected to be effective in detecting large flaws in the visible regions of containment, and this would reduce the impact of the extended test interval on LERF. The licensee’s risk analysis considered the potential impact of age-related corrosion/degradation in inaccessible areas of the containment shell on the proposed change. The increase in LERF associated with corrosion events is estimated to be less than 1×10^{-8} per year.

When the calculated increase in LERF is in the range of 10^{-7} per year to 10^{-6} per year, applications are considered if the total LERF is less than 10^{-5} per year. The licensee estimates that the total LERF for internal and external events, including the impact of extending the Type A test interval, is approximately 6×10^{-7} per year. This is based on judgements concerning the potential contribution from fire events when the current plant configuration is taken into consideration. The NRC staff concludes that increasing the Type A test interval to 15 years results in only a small change in LERF and is consistent with the acceptance guidelines of RG 1.174.

3. RG 1.174 also encourages the use of risk analysis techniques to help ensure and show that the proposed change is consistent with the defense-in-depth philosophy. Consistency with the defense-in-depth philosophy is maintained if a reasonable balance is preserved between prevention of core damage, prevention of containment failure, and consequence mitigation. The licensee estimates the change in the conditional containment failure probability to be an increase of about 1 percentage point for the cumulative change of going from a test frequency of three in 10 years to one in 15 years. The NRC staff finds that the defense-in-depth philosophy is maintained based on the small magnitude of the change in the conditional containment failure probability for the proposed amendment.

3.4 Conclusion

Based on the evaluation in Section 3.3, the NRC staff finds that the increase in predicted risk due to the proposed change is within the acceptance guidelines, while maintaining the defense-in-depth philosophy of RG 1.174, and is acceptable. Therefore, based on the evaluations in Sections 3.2 and 3.3, the NRC staff finds that the one-time extension to 15 years to perform the ILRT, as proposed by the licensee in proposed TS Section 5.5.17, is acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (68 FR 25658). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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Date: January 12, 2004