

Docket File



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 26, 1993

Docket No. 50-424

Mr. C. K. McCoy
Vice President - Nuclear
Vogtle Project
Georgia Power Company
P. O. Box 1295
Birmingham, Alabama 35201

Dear Mr. McCoy:

SUBJECT: ISSUANCE OF EXEMPTION TO 10 CFR PART 50, APPENDIX J,
SECTION III.D.3, TYPE C TESTS - VOGTLE ELECTRIC GENERATING PLANT,
UNIT 1 (TAC NO. M87783)

By letter dated September 30, 1993, Georgia Power Company, et al. (GPC), requested an exemption from the schedule requirements of 10 CFR Part 50, Appendix J, Section III.D.3, for the auxiliary component cooling water supply and return containment isolation valves 1HV-1974 (and associated check valve 1-1217-U4-113), 1HV-1975, 1HV-1978, and 1HV-1979 at the Vogtle Electric Generating Plant (Vogtle), Unit 1. The regulation requires that Type B and C local leak rate tests be conducted at intervals no greater than 24 months. GPC requested the exemption to avoid a Vogtle Unit 1 outage solely for the purpose of performing these tests.

The Nuclear Regulatory Commission has granted the requested schedule exemption until prior to entry into Mode 4 from the next scheduled refueling outage (or the next forced outage requiring entry into Mode 5), but no later than November 1, 1994. The NRC staff finds that the increased confidence in containment integrity following testing is not sufficient to offset increased personnel radiation exposure and other risks associated with performing these tests at power, or the undue burden of a forced outage to perform the testing while shut down. The staff believes there is a high degree of confidence that the components affected by this exemption will not degrade to an acceptable extent during their extended operating interval between tests.

The NRC staff finds that granting the exemption from the requirements of 10 CFR Part 50, Appendix J, Section III.D.3, is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The staff further finds that special circumstances justify the exemption; namely, that application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the Rule.

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Mr. C. K. McCoy

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A copy of the exemption and the supporting Safety Evaluation by the staff is enclosed. The exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by:

Robert A. Hermann, Acting Project Director
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosures:

- 1. Exemption to 10 CFR Part 50, Appendix J
- 2. Safety Evaluation

cc w/enclosures:
See next page

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Georgia Power Company

Vogtle Electric Generating Plant

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Section III.D.3 of Appendix J to 10 CFR Part 50 requires that Type C leak rate tests be performed during each reactor shutdown for refueling but in no case at intervals greater than 2 years. Type C tests are intended to measure containment isolation valve leakage rates for certain containment isolation valves.

III.

By letter dated September 9, 1993, the licensee requested a one-time exemption from the requirements of Appendix J, Section III.D.3, from 24 months to prior to entry into Mode 4 following the next scheduled refueling outage (or the next forced outage requiring entry into Mode 5), but no later than November 1, 1994, for the Unit 1 auxiliary component cooling water (ACCW) supply and return containment isolation valves 1HV-1974 (and associated check valve 1-1217-U4-113), 1HV-1975, 1HV-1978, and 1HV-1979. In their request, the licensee provided the date when the leak tests had last been performed and the date when the current leak test will expire.

The leak tests for which the licensee has requested schedular exemption were last conducted during the fall 1991 refueling outage, based on the information provided in the licensee's application. The licensee has stated that, in the absence of the proposed relief, Unit 1 would have to be placed in Mode 5 sufficiently prior to October 28, 1993, so that the required testing could be performed.

IV.

The licensee presented information in support of their request for an extension of the Type C test intervals. The Appendix J leakage limit for all penetrations subject to Type B and C testing ($0.6L_p$) at Vogtle is 228,273 sccm. The current total for Type B and C test leakage at Vogtle as of

September 10, 1993, is 14,398.8 sccm. As of the last Type C local leak rate test (LLRT), the leakage for each of these four valves was as follows: IHV-1974 - 152 sccm (this includes leakage past check valve 1-1217-U4-113 in parallel with IHV-1974); IHV-1975 - 11.6 sccm; IHV-1978 - 9.3 sccm; and IHV-1979 - 11.4 sccm.

The licensee stated that, based on the past leakage test history of these valves, there is reasonable assurance that extending the test interval to no later than November 1, 1994 (or the next forced outage that requires entry into Mode 5), will not adversely affect the ability of these valves to perform their isolation function.

V.

Based on the above, the staff finds there is reasonable assurance that the containment leakage-limiting function will be maintained and that a forced outage to perform Type C tests is not necessary. Therefore, the staff finds the requested temporary exemption, to allow the Type C test interval for the ACCW supply and return containment isolation valves to be extended to prior to entry into Mode 4 following the next scheduled refueling outage (or the next forced outage requiring entry into Mode 5), but no later than November 1, 1994, to be acceptable. The exemption request has been evaluated in a safety evaluation dated October 26, 1993.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the requested exemption is authorized by law, will not present an undue risk to public health and safety, and is consistent with the common defense and security. The Commission finds that the special circumstances as required by 10 CFR 50.12(a)(2) are present. As specified in 10 CFR 50.12(a)(2)(ii), special circumstances are present whenever the application of

the regulation in the particular circumstance would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule. The underlying purpose of the rule is to ensure that the components comprising the primary containment boundary are maintained and leak tested at periodic and appropriate intervals. The 24-month maximum interval was originally expected to bound the typical operating cycle, including a limited amount of mid-cycle outage time. Strict adherence to the 24-month maximum interval is not necessary to meet the underlying purpose of the rule in that, taking into consideration the requested extension, the components that comprise the primary containment boundary will still be tested at a frequency that is appropriate to those components and their application.

Therefore, the staff finds the requested temporary exemption, to allow the Type C test interval for the ACCW supply and return containment isolation valves, as described in the licensee's September 30, 1993, to be extended to prior to entry into Mode 4 following the next scheduled refueling outage (or the next forced outage requiring entry into Mode 5), but no later than November 1, 1994, to be acceptable.

An exemption is hereby granted from the requirements of Section III.D.3 of Appendix J to 10 CFR Part 50, which requires that Type C tests be performed during each reactor shutdown for refueling but in no case at intervals greater than 2 years, to prior to entry into Mode 4 following the next scheduled refueling outage (or the next forced outage requiring entry into Mode 5), but no later than November 1, 1994, for the subject valves.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this Exemption will have no significant impact on the quality of the human environment (58 FR 54606 dated October 18, 1993)

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by:

Steven A. Varga, Director
 Division of Reactor Projects - I/II
 Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland
 this 26th day of October 1993

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UNITED STATES
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WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

TEMPORARY EXEMPTION FROM APPENDIX J INTERVAL

FOR LOCAL LEAK RATE TESTING OF CONTAINMENT PENETRATIONS

VOGTLE ELECTRIC GENERATING PLANT, UNIT 1

DOCKET NO. 50-424

1.0 INTRODUCTION

By letter dated September 30, 1993, Georgia Power Company, et al. (the licensee), requested a license amendment to change the Vogtle Electric Generating Plant, Unit 1 (Vogtle), Technical Specification (TS) surveillance requirement 4.6.1.2d. The requested change adds a footnote that extends the surveillance interval for the next required Type C leakage test of the auxiliary component cooling water (ACCW) supply and return containment isolation valves 1HV-1974 (and associated check valve 1-1217-U4-113), 1HV-1975, 1HV-1978, and 1HV-1979, to prior to entry into Mode 4 following the next scheduled refueling outage (or the next forced outage requiring entry into Mode 5), but no later than November 1, 1994. The amendment provides a one-time only extension of the surveillance interval for the subject valves. As presently written, TS 4.6.1.2d requires that 10 CFR Part 50, Appendix J, Section III.D.3, Type B and C tests for the subject valves be conducted at intervals no greater than 24 months.

In February 1992, the licensee prepared and implemented Licensing Document Change Request (LDCR) FS 92-007 under the provisions of 10 CFR 50.59 and in accordance with Vogtle TS 6.4.1.6. The LDCR revised Table 6.2.4-1 of the Vogtle Final Safety Analysis Report (FSAR), in part, with respect to the ACCW supply and return containment isolation valves. Prior to the change, Table 6.2.4-1 stated that these valves were subject to 10 CFR Part 50, Appendix J, Section III.D.3, Type C leakage testing requirements, and that they were normally open during operation but closed under post-accident conditions. However, as noted in footnote "g" to Table 6.2.4-1, ACCW flow should be maintained to the reactor coolant pumps (RCPs) under most post-accident conditions, if possible. Therefore, the LDCR changed the leakage testing requirements from Type C to Type A and changed the post-accident position of the valves to "open." In addition, the associated penetrations were added to FSAR Table 6.2.6-1 as penetrations that are not vented or drained during Type A testing. As a result of this LDCR, these valves were not Type C tested during the Vogtle Unit 1 spring 1993 refueling outage, although they had been tested during previous outages on both units.

The licensee's basis for the LDCR was that the subject valves do not receive a containment isolation signal (they are remote manually operated), and the associated penetrations are needed to maintain cooling water to the RCPs. The

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licensee thought that the ACCW was a closed system because it does not communicate directly with the containment atmosphere or primary coolant. Thus, when approving the LDCR, the licensee had concluded that Type A testing was sufficient for these penetrations.

However, during a recent document review, the licensee discovered that the safety evaluation for the LDCR was flawed. The evaluation failed to consider that, while the ACCW system is seismic category 1 and the hard piping is fabricated of ASME Section III, Class 3 materials, the system had been installed in accordance with ANSI B31.1 and no N-stamp was affixed. In addition, some components, such as motor coolers and flexible piping, are not composed of Class 3 materials. Therefore, the ACCW system does not meet the ANSI standard criteria for a closed system. Consequently, the supply and return isolation valves must be considered to perform an isolation function and should be subject to Type C testing.

2.0 EVALUATION

The subject valves have been Type C tested during all previous refueling outages with the exception of the Unit 1 Spring 1993 outage. The licensee reviewed the maintenance work order (MWO) history of the ACCW containment isolation valves. This review found MWOs for seat leakage, packing leaks, flange leaks, preventive maintenance, and several inspections, but found no "as found" Type C local leak rate test (LLRT) failures after the initial entry into Mode 4 on either Vogtle unit.

The licensee also reviewed the LLRT history of the valves after initial Mode 4 entry and found this history to demonstrate the reliability and low leakage trends of these valves. Listed below are the maximum values, taken from six refueling outages between the two units, for both the "as found" and "as left" LLRTs performed after initial Mode 4 entry. The below values indicate the "worst case" leakage. Penetration 28 is the ACCW supply line and penetration 29 is the ACCW return line.

<u>PENETRATION 28</u> <u>MAXIMUM LEAKAGES</u>	<u>PENETRATION 29</u> <u>MAXIMUM LEAKAGES</u>
1HV-1978 = 20.5 sccm	1HV-1974 = 152 sccm*
1HV-1979 = 40.4 sccm	1HV-1975 = 62.0 sccm
2HV-1978 = 49.2 sccm	2HV-1974 = 99.6 sccm*
2HV-1979 = 90.6 sccm	2HV-1975 = 136.3 sccm

* Includes leakage through associated check valve 1-1217-U4-113

The Vogtle Inservice Inspection Program currently specifies a maximum allowable leakage of 1000 sccm for each butterfly valve and 1500 sccm for the check valve. The leakage limit for the combination of valve 1HV-1974 and check valve 1-1217-U4-113 would be 2500 sccm. These limits were not based on Appendix J requirements, but were established based on the low leakage history of these valves and define the point at which repair would be required. The Appendix J leakage limit for all penetrations subject to Type B and C testing ($0.6L_a$) at Vogtle is 228,273 sccm. The current total for Type B and C test leakage at Vogtle, as of September 10, 1993, is 14,398.8 sccm. As of the last

LLRT, the leakage for each of these four valves was as follows: 1HV-1974 - 152 sccm (this includes leakage past check valve 1-1217-U4-113 in parallel with 1HV-1974); 1HV-1975 - 11.6 sccm; 1HV-1978 - 9.3 sccm; and 1HV-1979 - 11.4 sccm. The test pressure, P_a , was 45 psig at the time these numbers were obtained. The test pressure has since been reduced to 37 psig in accordance with previous license Amendments 63 (Unit 1) and 42 (Unit 2), and the leakage would be less at this lower pressure.

During the last outage for Unit 1, the licensee performed maintenance on 1HV-1979 that could have affected its leakage, but performed no LLRT since it was not required by the FSAR at the time. The maintenance involved removal of the motor and gearbox and altering the limit switch settings, but no work was done that would have affected the valve seat. The standard work practice for setting limit switches on this type of soft-seated butterfly valve following this type of maintenance is as follows: first, the valve is manually closed using the hand wheel until 0° (fully closed) is reached, and the limit switch is set. Then, the limit switch is tested by manually operating the valve again. Finally, the valve is stroked using the motor until the limit switch actuates. At this point, the hand wheel is used to ensure that the valve is seated properly after the limit switch actuates. As a reference point, in the Spring of 1992 this type of work was performed on Unit 2 valve 2HV-1978 and pre-maintenance and post-maintenance LLRTs were performed. The pre- and post-maintenance leakage was well within the leakage limits for this valve.

The probability of containment isolation failure following a core damage accident is modeled in the Vogtle individual plant examination (IPE). The IPE was submitted by letter dated December 23, 1993. In order to model a more conservative scenario of containment isolation failure than was considered in the base case Vogtle IPE, the licensee assumed that the occurrence of any core damage scenario would cause a break in the ACCW flow path and that the operator would be required to isolate the ACCW system for successful containment isolation. Based on a Type C test interval of 2 years, the frequency of core damage with containment isolation failure was found by the licensee to be on the order of 10^{-7} per reactor year. The licensee has stated that extending the required Type C test interval for these valves beyond the Appendix J 2-year period has a negligible impact on that probability. Thus, the probability of an event that leads to core damage and a failure of the ACCW piping inside containment with a failure to isolate containment is not considered to be credible by the licensee. The staff concurs that the additional operation period, between expiration of the current leak tests to prior to entry into Mode 4 following the next scheduled refueling outage (or the next forced outage requiring entry into Mode 5), but no later than November 1, 1994, is not expected to significantly decrease the margin between expected as-found leak rate and L_a .

The ACCW system is seismic category 1, and the hard piping is fabricated of ASME Section III, Class 3 materials. Some components, such as motor coolers and flexible piping, are not fabricated of Class 3 materials. The licensee concluded that, even though the ACCW does not meet the ANSI standard criteria for a closed system, it can be considered to be highly reliable and that there is reasonable assurance that for most events its integrity would be maintained. The staff concurs with this conclusion.

The NRC staff also finds that the 2-year interval requirement for Type B and C components is sufficient for timely detection of significant deterioration while, at the same time permitting the tests to be performed during plant outages. Leak rate testing of the penetrations during shutdowns is preferable because of the lower radiation exposure to plant personnel. Some penetrations can not be tested at power. For those penetrations that can not be tested during power operation or for which testing at power is inadvisable, the increase in confidence of containment leaktight integrity following a successful test is slight and does not justify a plant shutdown specifically to perform the tests within the 2-year time period, considering the factors discussed above.

3.0 CONCLUSION

Based on the above evaluation, the NRC staff finds the requested one-time only exemption to TS surveillance requirement 4.6.1.2d, is acceptable. As provided in the footnote, the surveillance interval for the next required Type C leakage test of the ACCW supply and return containment isolation valves 1HV-1974 (and associated check valve 1-1217-U4-113), 1HV-1975, 1HV-1978, and 1HV-1979, is extended for Vogtle Unit 1 to "prior to entry into Mode 4 following the next scheduled refueling outage (or the next forced outage requiring entry into Mode 5), but no later than November 1, 1994."

Principal Contributor: C. E. Carpenter, Jr.

Date: October 26, 1993