



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 70 TO FACILITY OPERATING LICENSE NPF-68  
AND AMENDMENT NO. 49 TO FACILITY OPERATING LICENSE NPF-81

GEORGIA POWER COMPANY, ET AL.

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-424 AND 50-425

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 from 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.

Also in the September 30, 1993, letter, the licensee requested an exemption from the schedule requirements of Section III.D.3 to Appendix J of 10 CFR Part 50 for the auxiliary component cooling water supply and return containment isolation valves. The regulation requires that Type B and C local leak rate tests be conducted at intervals no greater than 24 months. By letter dated October 18, 1993, the Commission issued an environmental assessment which determined that the proposed change does not alter any initial conditions assumed for the design basis accidents previously evaluated nor change operation of safety systems utilized to mitigate the design basis accidents, and that there are no significant environmental effects that would result from the proposed actions. By letter dated October 26, 1993, the Commission granted the requested schedule exemption until 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.

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 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

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<sub>a</sub>) 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<sub>a</sub>, 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) of severe accidents. 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 was not considered to be credible by the licensee. 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 to be on the order of  $10^{-7}$  per reactor year. The staff concurs that extending the required Type C test interval for these valves, as proposed, has a negligible impact on that probability.

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 cannot be tested at power. For those penetrations that cannot 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.

Based on the above evaluation, the NRC staff finds the requested one-time only change 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."

### 3.0 EXIGENT CIRCUMSTANCES

The licensee requested in their application dated September 30, 1993, that the proposed amendment be processed as involving exigent circumstances.

The Commission's regulation, 10 CFR 50.91(a)(6), states that an exigent circumstance exists where the Commission finds that the licensee and the Commission must act quickly and that time does not permit the Commission to

publish a Federal Register notice allowing 30 days for prior public comment and it also determines that the amendment involves no significant hazards considerations. The licensee proposed that the license amendment involves exigent circumstances in that the 24-month testing interval, as specified in 10 CFR Part 50, Appendix J, Section III.D.3, and Technical Specification 4.6.1.2d, for the Vogtle Unit 1 ACCW supply and return containment isolation valves, will expire on October 28, 1993, thus, requiring the facility to be shut down and placed into Mode 5 prior to October 28, 1993, in order to perform the Type C test on the subject valves.

The NRC staff has reviewed the licensee's proposed amendment and finds that the licensee did not fail to use its best efforts to make a timely application and avoid creating the exigent circumstances.

In accordance with 10 CFR 50.91(a)(6)(B), the Commission issued a Federal Register notice dated October 12, 1993 (58 FR 52796), which proposed a finding of no significant hazards consideration, provided notice of an opportunity for hearing, and allowed at least two weeks from the date of the notice for prior public comment.

#### 4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 provide that the Commission may make a final determination that a license amendment involves no significant hazards considerations if operation of the facility in accordance with the amendment would not:

- a. Involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change is a one-time only extension of the Type C leakage test interval for the Unit 1 ACCW supply and return containment isolation valves. As such, it has no effect on the probability of any accident previously evaluated. Furthermore, 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. Therefore, the proposed change will not involve a significant increase in the consequences of any accident previously evaluated.

- b. Create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change does not change the configuration or method of operation of any plant equipment, and no new failure modes have been defined for any plant system or component. Furthermore, no new limiting failure has been identified as a result of the proposed change.

- c. Involve a significant reduction in a margin of safety.

There continues to be reasonable assurance that the subject valves will remain capable of performing their isolation function. In addition, the proposed change avoids a plant shutdown solely for the purpose of performing Type C testing of these valves.

Based on the above, the Commission has made a final determination that the proposed amendment involves no significant hazards considerations.

#### 5.0 STATE CONSULTATION

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

#### 6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes surveillance requirements. The NRC staff has determined that the amendment involves 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 made a final determination that the amendment involves no significant hazards considerations. Accordingly, the amendment meets 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 amendment.

#### 7.0 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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

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