



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 37 TO FACILITY OPERATING LICENSE NPF-68
AND AMENDMENT NO. 17 TO FACILITY OPERATING LICENSE NPF-81
GEORGIA POWER COMPANY, ET AL.
DOCKETS NOS. 50-424 AND 50-425
VOGTLÉ ELECTRIC GENERATING PLANT, UNITS 1 AND 2

1.0 INTRODUCTION

By letter dated December 14, 1990, and application dated December 20, 1990, Georgia Power Company (the licensee) proposed amendments to the Technical Specifications (TSs) appended to Facility Operating Licenses NPF-68 and NPF-81 for operation of the Vogtle Electric Generating Plant, Units 1 and 2. These proposed amendments would revise TS Surveillance Requirement 4.7.7.d.4 by adding a footnote that allows surveillance of the heaters in the Piping Penetration Area Filtration and Exhaust Systems (PPAFES) to be conducted by verifying that heater capacity is sufficient to maintain the relative humidity of the airstream through the filters at 70% or less under design basis accident conditions when tested in accordance with Section 14 of ANSI N510-1980. This footnote would be applicable until restart following the fourth refueling outage for Unit 1 and until restart following the second refueling outage for Unit 2.

The licensee requested that these amendments be treated as an emergency because insufficient time exists for the Commission's usual 30-day notice without resulting in the unnecessary shutdown for Unit 2 and a delay in the startup of Unit 1. Consequently, a temporary waiver of compliance from the requirements of TS 4.7.7.d.4 was granted on December 13, 1990, and confirmed by letter dated December 17, 1990.

2.0 BACKGROUND

The PPAFES is a subsystem of the Auxiliary Building Emergency Ventilation System and ensures that, following a loss of coolant accident (LOCA), potential radioactive materials leaking from the containment mechanical penetration rooms and Emergency Core Cooling System equipment within the pump room are filtered prior to reaching the environment. Each Vogtle unit contains two independent PPAFESs and each PPAFES includes a moisture eliminator, an electric heating coil, two High Efficiency Particulate Air (HEPA) filter banks, a carbon adsorber (also called filter), and a fan. The heating coil is located upstream of the carbon adsorber and functions to reduce the relative humidity of the air through

the adsorber so as to preserve the adsorber's radioiodine removal efficiency. Doses for a postulated design basis LOCA at Vogtle have been based upon iodine removal efficiencies associated with the heaters maintaining the air entering the adsorbers at a relative humidity of 70% or less.

Surveillance Requirement 4.7.7.c.4 requires that each PPAFES be periodically demonstrated operable by verifying that the heaters dissipate 80 +/- 4 kW when tested in accordance with ANSI N510-1980. During a recent audit of TS surveillances, the licensee discovered that the heater output had not been properly corrected for voltage in accordance with ANSI N510-1980. When properly corrected for voltage, the heater outputs for one PPAFES on Unit 2 and both PPAFESSs on Unit 1 were found to be less than the minimum value of 76 kW allowed by the TS. However, the licensee's calculations showed that the measured heater outputs, properly corrected for voltage, met the required functional design requirements regarding maintaining acceptable relative humidities at the carbon adsorbers at the measured air flow rates.

3.0 EVALUATION

The NRC staff reviewed the assumptions and results of the licensee's calculations which demonstrate that the actual heater output, properly corrected for voltage, meets the required functional design requirements. The revised analyses account for the minimum voltage expected at the heaters, the worst-case inlet air temperature and humidity, and the measured flow through the heaters, rather than the bounding TS flow limit of 15,500 cfm +/-10%. Conservatism in the analyses include the following:

(1) Actual voltages experienced at the plant have been found by the licensee to be consistently higher than expected. The licensee is conducting engineering evaluations in anticipation of reducing the actual plant voltages. The minimum voltage used in the calculations is based on the setpoint of the low voltage relays used to isolate the plant from the offsite electrical power system. The allowable value of the second level undervoltage relays (i.e., setpoint minus 1.51% tolerance) was used for this calculation. The switchyard voltage was assumed to be 94.7%, which is below the Vogtle present Final Safety Analysis Report (FSAR) value of 98% for normal operating switchyard voltage.

(2) The measured flow is a realistic value that is determined by the fixed configuration of the adsorber and ventilation system. The configuration of the filtration system is not expected to change. The licensee notes that it is committed to reverify heater performance following any change to the system that could alter the flow through the adsorbers. This reverification ensures proper heater performance to limit the relative humidity to 70%.

(3) The initial room temperatures assumed in the analyses were calculated using conservative methods.

The proposed change to Surveillance Requirement 4.7.7.d.4 does not change the functional requirement of the heaters to adequately control the relative humidity to the air flowing to the carbon adsorber. Rather, the change includes

a specific statement of that functional requirement (i.e., "to maintain the relative humidity of the airstream through the filters at 70 percent or less under design basis accident conditions") and, as before, requires the periodic verification of that heater capacity using tests in accordance with Section 14 of ANSI N510-1980. Details of the associated surveillance methodology, including acceptance criterion, are being added to the FSAR. The licensee calculated the acceptance criterion to be used in the surveillance of the heaters based on assumed worst-case conditions of (1) air temperature and relative humidity to each heater, (2) degraded voltage supplied to each heater, and (3) minimum heater power required to assure that the air downstream of each heater would be maintained at a relative humidity of 70% or less. The criterion determined to apply to all of the heaters conservatively bounds the worst-case assumptions of air temperature and relative humidity and degraded voltage for each heater. The resultant criterion is that the minimum heater power shall be 4.44 kW (corresponding to a referenced voltage of 460 volts) per 1000 cfm of measured air flow at the heater in question.

To demonstrate the adequacy of the latest (1990) surveillance results, the licensee calculated, for each heater, the minimum kW required to maintain relative humidities of the air stream less than 70% at each filter. The calculations used the 1990 surveillance air flow measurements for the filter systems and worst-case conditions of air temperature and relative humidity reaching the heaters. The licensee then calculated the available kW for each heater using the measured voltage and current from the 1990 surveillance, adjusting the power level to the worst degraded voltage condition. By comparing the calculated available kW with the minimum required kW, a minimum safety margin of 2.3% is found to be available for the heaters.

The licensee notes in the submittal of December 20, 1990, that it is considering additional plant modifications or evaluations that will result in increasing the margin between the actual heater power and the power required to fulfill the heater design function.

The licensee anticipates that this will allow the use of the original or a similarly worded TS. For this reason, the proposed change was requested on an interim basis by adding a footnote that will apply until the end of the second refueling outage for Vogtle Unit 2 (presently estimated to occur about April 13, 1992) and until the end of the fourth refueling outage for Unit 1 (estimated to occur about April 19, 1993). Thus, the revised TS represents an interim measure that will allow continued operation of the plant until the licensee's plans and reviews are completed and potential improvements can be implemented.

The staff finds that it is unlikely that an accident as severe as a postulated design basis accident will occur during the interim period of applicability of the new footnote. Should such an accident occur during this interim period, it is very unlikely that the filter efficiencies would be significantly less than the efficiencies assumed in the licensing basis dose calculation. Moreover, the change does not alter any assumption used in, or the results of, the calculation of offsite radiation exposure due to postulated design basis accidents. The change involves no increase in the amount or type or effluent

that may be released offsite. Operation of the plant in accordance with the proposed TS change meets 10 CFR Part 100; General Design Criterion (GDC) 19, Control Room; GDC 42, Inspection of Containment Atmosphere Cleanup Systems; and GDC 43, Testing of Containment Atmosphere Cleanup Systems.

Accordingly, the proposed change is acceptable.

4.0 FINDINGS OF EMERGENCY WARRANTING AN AMENDMENT WITHOUT NOTICE

The licensee's application for the TS change has been timely. Following a recent audit of TS surveillance on December 12, 1990, the licensee discovered that the PPAFES heaters' output had not been properly corrected per ANSI N510-1980 requirements. The NRC was promptly informed of this discovery. The licensee also found that the heaters were fully capable of performing their safety function. At the time, Vogtle Unit 2 was operating at full power and Unit 1 had completed a refueling outage. To avoid an unnecessary shutdown of Unit 2 and to avoid delay in the startup of Unit 1, the licensee called the NRC on December 13, 1990, and requested an emergency TS change pursuant to the Commission's authority under 10 CFR 50.91(a)(5). The licensee subsequently confirmed the request for a temporary waiver of compliance by letter dated December 14, 1990. The NRC granted this request on December 13, 1990, and confirmed this action by letter dated December 17, 1990. Subsequently, the licensee has made a formal request for the TS change on December 20, 1990.

The NRC staff agrees with the licensee that failure to grant the proposed TS change in a timely manner would result in a significant increase in outage time for Unit 1 and the unnecessary shutdown of Unit 2. We also find that the licensee could not have reasonably avoided this situation, that the licensee has responded in a timely manner, and has not delayed its application to take advantage of the emergency license amendment provisions of 10 CFR 50.91. Accordingly, the staff concludes that the licensee has satisfied the requirements of 10 CFR 50.91(a)(5), and that a valid emergency exists.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's staff has reviewed the licensee's request for the above described amendments in accordance with 10 CFR 50.92 and finds that do not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated. The surveillance requirement changed by these amendments involves equipment and systems used in the mitigation of an accident and which cannot cause, or have any affect upon, the probability of an accident. The system will continue to perform its safety function since the change does not involve any relaxation of filter system functional requirements and the surveillance requirement, as revised, is consistent with the performance requirements of the heaters. As noted above, the change to this TS does not cause any change to offsite radiological exposure due to postulated design basis accidents.

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated. The change does not introduce new or modified equipment, or increase plant operating and safety limits since it has been demonstrated that the heaters remain operable. No new failure modes will result. Therefore, no new or different kind of accident can be created.

(3) Involve a significant reduction in a margin of safety. The change maintains acceptable safety margins relative to the ability of the filter heaters to perform the required safety function since the revised surveillance requirement continues to show that the heaters will reduce the relative humidity of the incoming air to the values assumed in previous accident analyses. The licensee's assumptions and results have been reviewed by the staff and found acceptable. Carbon filters will continue to function efficiently, if needed after an accident, and no increase in offsite releases will occur.

Accordingly, the Commission finds that the change does not involve a significant hazards consideration.

6.0 STATE CONSULTATION

The State of North Carolina was informed by telephone on January 11, 1991, of the NRC staff's no significant hazards consideration determination. The State representative had no comments on the determination.

7.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in a surveillance requirement. The 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 NRC staff has made a final determination that the amendments involve no significant hazards consideration. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 11.22(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 these amendments.

8.0 CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

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