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U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: License Renewal
Response to NRC Letter dated December 14, 1999
Oconee Nuclear Station
Docket Nos. 50-269, -270, -287

By letter dated July 6, 1998, Duke Energy Corporation (Duke) submitted an Application for Renewed Operating Licenses for Oconee Nuclear Station, Units 1, 2, and 3 (Application). Exhibit A of the Application contains the technical information required by 10 CFR Part 54. The staff reviewed the information provided by Duke Energy in the Application and by several letters identified areas where additional information would be needed to complete its review. In one of these letters (dated November 30, 1998), the staff provided request for additional information (RAI) 2.5.5-2. This RAI concerned insulation on lines containing boric acid solution, and whether the insulation was in the scope of license renewal.

In a letter dated February 17, 1999, Duke provided its response to RAI 2.5.5-2 and provided a basis for the conclusion that the insulation was not within the scope of license renewal. On June 16, 1999, the staff issued its Safety Evaluation Report (SER) related to its review of the Oconee application. On page 2-40 of its SER, the staff indicated its conclusion that the insulation need not be within the scope of license renewal and is not subject to an aging management review.

Several months later, the staff, in its letter dated December 14, 1999, requested Duke provide information to clarify the basis for the conclusion that the insulation on the piping is not in scope. As stated in its letter, the staff believes that "if the insulation fails, boron precipitation will occur inside the tanks and pipes, the required boron concentration in the water will not be maintained and the piping may foul internally because of the deposition of crystalized [sic] boric acid."

On December 16, 1999, a telephone conference call was held between Duke and the staff. During this call, the staff provided additional clarification of its expectations with respect to the December 14, 1999 letter. The staff affirmed that the insulation of concern is that which is located on the emergency core cooling system (ECCS) suction piping from the borated water storage tank (hereafter referred to as the 'ECCS suction piping'). In this

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phone call, the staff requested that Duke respond with (1) clarification concerning the conclusion that the insulation is not within scope, and (2) what aspects of design and operation prevent boron precipitation in the piping if the insulation fails before an accident. The Duke response to the staff request, contained in the December 14, 1999 letter as clarified during the December 16, 1999 telephone call, is provided in the following paragraphs.

- (1) Duke continues to support its original conclusion that the insulation is not within scope because it does not meet any of the scoping criteria. Failure of the insulation during and following a design basis event would not prevent the ECCS suction piping from performing its function during and following a design basis event. No quantitative calculation exists to support this statement outright because a review of boron solubility curves from Chemistry procedures indicate that the temperature at which the boron precipitation may occur is well below the minimum temperature allowed by Technical Specifications. The relatively short period of time that the ECCS suction piping is in use post-accident is simply not long enough to allow boron precipitation, even at winter ambient temperatures.
- (2) A review of the design and operational aspects of the ECCS suction piping and borated water storage tank was performed to provide additional information regarding boron precipitation in the event the insulation were to fail before an event. The design of the 14" diameter ECCS suction piping includes heat tracing that is thermostatically controlled at 50°F. The 20 to 30 feet of piping between the tank and the auxiliary building is routed in a covered yard trench and is insulated. The borated water storage tank heaters are controlled at approximately 60°F. The borated water storage tank boron concentration requirement varies based on core operating limits, but a 3000 ppm limit is used as a bounding, worst-case value. Boron concentration limits are required to be verified every 7 days according to Technical Specifications. According to boron solubility curves in Chemistry procedures, for a concentration of 3000 ppm, boron will not precipitate from solution until water temperature falls below 22°F. It is not considered plausible for the water temperature in the tank or the ECCS suction piping to reach 22°F, primarily because Technical Specifications require that the borated water storage tank borated water temperature be maintained between 45°F and 115°F. When the ambient temperature is less than 45°F or greater than 115°F, the tank temperature is required to be verified every 24 hours using a temperature monitor near the bottom of the tank. If borated water temperature inside the borated water storage tank falls outside the limit, it must be returned to an acceptable temperature within 8 hours in order to continue unit operation.

Notwithstanding the Technical Specifications limit, it is considered physically impractical that the water in the ECCS suction piping would ever reach 22°F. The ambient outside air temperature rarely gets below 22°F, and the tank heaters and heat tracing are thermostatically controlled at 60°F and 50°F, respectively. Even if the heat tracing were to fail and all of the insulation were to fail in a manner that rendered

it completely useless, simple heat transfer equations reveal that it would take several days for the water in a 14" diameter pipe to reach 22°F, assuming the piping is completely exposed to a constant ambient temperature of 20°F. This assumption is conservative because ECCS suction piping is routed below ground level in a covered yard trench that serves as insulation to the ambient temperatures and wind. The temperature of the piping in the trench should be approximately ground temperature, which stays well above 20°F.

An additional operational aspect to consider is that water flows from the borated water storage tank through the ECCS suction piping approximately twice per week for purification purposes, quarterly for low pressure injection pump testing, and every refueling outage to empty the contents of the tank. Therefore, neither the water in the tank nor the water in the ECCS suction piping remains stagnant for long periods of time.

The details provided in the preceding paragraphs should help clarify Duke's basis for concluding that the insulation is not relied upon to ensure that the emergency systems will maintain a safe shutdown condition or mitigate the consequences of design basis events. Based on the above information, Duke reaffirms the accuracy and validity of its response to RAI 2.5.5-2 previously provided in its letter dated February 17, 1999. The information in this letter provides the technical basis for the staff's statements and conclusions contained in its SER.

No commitments are contained in this letter. If there are any questions regarding the contents of this submittal, please contact Bob Gill at 704-382-3339.

Very truly yours,



M. S. Tuckman

M. S. Tuckman, being duly sworn, states that he is Executive Vice President, Nuclear Generation Department, Duke Energy Corporation, that he is authorized on the part of said Company to sign and file with the U. S. Nuclear Regulatory Commission this response to the request for information contained in a staff letter dated December 14, 1999; and that all statements and matters set forth herein are true and correct to the best of his knowledge and belief. To the extent that these statements are not based on his personal knowledge, they are based on information provided by Duke employees and/or consultants. Such information has been reviewed in accordance with Duke Energy Corporation practice and is believed to be reliable.

M. S. Tuckman

M. S. Tuckman, Executive Vice president
Duke Energy Corporation

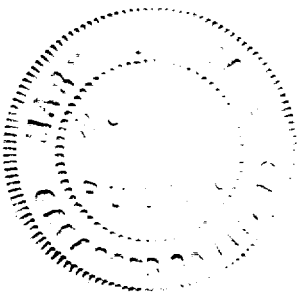
Subscribed and sworn to before me this 7TH day of JANUARY 2000.

Mary F. Nehus

Notary Public

My Commission Expires:

JAN 22, 2001



xc: (w/ attachment)

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