January 19, 1996

Mr. J. W. Hampton
Vice President, Oconee Site
Duke Power Company
P.O. Box 1439
Seneca, SC 29679

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION RELATING TO TENDON SURVEILLANCE REPORT, OCONEE NUCLEAR STATION, UNIT 3 (TAC NO. M93942)

Dear Mr. Hampton:

On October 11, 1995, you submitted report entitled, "Unit 3 Reactor Building Post-tensioning System Sixth Surveillance." During our review of this report, the NRC staff has determined that additional information is needed. The specific details of the staff's request for this additional information is provided in the enclosure to this letter. Your response to this request for additional information is requested by February 23, 1996.

This requirement affects nine or fewer respondents and, therefore, it is not subject to the Office of Management and Budget review under P.L. 96-511.

If you have questions regarding this matter, contact me at (301) 415-1495.

Sincerely,
Original signed by:

Patrick D. Milano, Sr. Project Manager
Project Directorate II-2
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Docket No. 50-287

Enclosure: As stated

cc w/encl: See next page

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

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REQUEST FOR ADDITIONAL INFORMATION

OCONEE NUCLEAR STATION, UNIT 3

TENDON SURVEILLANCE REPORT

1. In the Summary section of report, "Unit 3 Reactor Building Post-tensioning System Sixth Surveillance," it was stated that the mean lift-off force for each surveillance tendon group (hoop, vertical and dome) exceeded required values. In Table 3 the report appears to indicate that, for tendons which were detensioned and retensioned, the "as-left" forces are larger than "as-found" forces. However, Section 3.5 states that "(f)ollowing wire removal the relaxed tendons were retensioned, as closely as possible to the same stress level indicated by the lift-off force data obtained during this surveillance." If the "as-left" forces are larger than the "as-found" forces, the tendon prestress losses are either reduced or eliminated and the lift-off forces in the associated subsequent tendon surveillances will probably not be below the required values. While there is no mention of the required value for each group of tendons, the force-time plots in the report indicate that 7.00 kips per wire is the required values for all tendons. Each tendon in each group has undergone 2 detensionings and retensionings and 4 lift-offs during the 6 surveillances performed to date.

   Based on its observations, the NRC staff requests that:

   a. A re-analysis of the lift-off data from all the surveillances be performed that modifies, if applicable, each lift-off force by the difference between "as-found" and "as-left" values obtained from preceding surveillances.

   b. All lift-off force data be plotted on a graph similar to that shown in Figure 2 of Regulatory Guide (RG) 1.35.1 and including the minimum required value (MRV) identified for each group of tendons. The values to be plotted are the individual data obtained without averaging or taking mean values. On the basis of the plotted data, a regression analysis should be performed for each group of tendons to establish the trend of the prestress force.

   c. Indicate how the MRV is determined for each group of tendons.

   d. Provide all the data used in the above regression analysis.

2. The analysis of the data indicated above may remedy some of the deficiencies resulting from using pre-selected tendons for surveillance. Although the Technical Specifications requirement for using the pre-selected tendons was approved by the NRC, the staff has found that, by using randomly selected tendons for each surveillance, the lift-off forces obtained are more representative of the actual tendon force. In view of this fact, the NRC staff encourages licensees to use the randomly selected tendons for surveillance as proposed in RG 1.35, Revision 3. Indicate whether you plan to adopt such an approach for the next scheduled tendon surveillance at Oconee.

Enclosure

3. In Table 2 of the report, the shim thicknesses at both ends of a tendon are listed. Discuss the significance of this information. Were the tendon elongations recorded during the retensioning along with the force measurements? If so, provide them. Elongations can be used to check the corresponding force measurement, especially if the retensioning is accomplished in two or more steps.

4. In Table 1 of the report, grease in the amounts of 18 and 15 gallons was shown to have been added for tendons 23V14 and 45V16, respectively. The NRC staff does not completely agree with the explanation given for these excessive amounts. Therefore, provide the rational as to why it occurs only in vertical tendons. The voids in the grease give rise to two concerns: (1) the tendon may be subjected to corrosion and (2) the voids may result from the leakage of the grease into the concrete which may affect the concrete strength.