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SUBJECT: Forwards correction to 980618 RAI on Oconee emergency power sys. Ltr contains no new commitments. Util apologizes for any inconvenience resulting from oversight.

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March 15, 1999

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Oconee Nuclear Station, Units 1, 2, and 3
Docket Nos. 50-269, 270, and 287
Correction to June 18, 1998 Response to Request
for Additional Information on the Oconee Emergency
Power System

In a letter dated April 6, 1998, the NRC requested additional information regarding their ongoing examination of the Oconee Nuclear Station (ONS) Emergency Electrical Distribution System. Duke Energy Corporation (Duke) provided the requested information in a letter dated June 18, 1998. Duke has subsequently determined that the response to question B.6(a) mischaracterized how motor impedance is handled within the CYME program for non-60 hertz operation. A revised response is attached which replaces, in its entirety, the existing response to question B.6(a) contained on page 22 of Attachment 1 to the June 18, 1998, Duke letter.

During Duke's initial use of the CYME program, Duke requested CYME International to modify the motor model for use in studies being performed with source frequencies other than 60 hertz. CYME International provided a revised copy of the CYME program which Duke understood corrected the motor model for non-60 hertz operation. While the revised CYME program corrected slip and adjusted motor loads for operation at other than 60 hertz frequencies, it did not correct motor impedance for operation at other than 60 hertz frequencies. A major contributor to this misunderstanding was the fact that the CYME International employee who

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revised the program had left the company at about the time the revision was issued and was not available for questions.

Since becoming aware of this misunderstanding with the vendor, Duke has completed a review of calculations which could have been impacted as a result of the CYME program not adjusting the motor impedance for frequency. This review determined that the conclusions contained in the existing calculations were not impacted. Duke also conducted a review of all docketed Duke correspondence relating to the CYME program. The response to question B.6(a) in the June 18, 1998, Duke letter was identified as the only item requiring correction. CYME International has been requested to develop a motor model that considers motor impedance changes with frequency.

This letter contains no new commitments.

Duke apologizes for any inconvenience resulting from this oversight. Inquiries on this matter should be directed to J. E. Burchfield, Jr. at (864) 885-3292.

Very truly yours,



W. R. McCollum, Jr., Site Vice President
Oconee Nuclear Site

Attachment

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March 15, 1999
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xc w/attachment:

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Attachment 1

Correction to June 18, 1998 Response to Request for
Additional Information on the Oconee Emergency Power System

6. The discussion in the report for Figure 3-5 indicates that the CYME program cannot begin its analysis at a frequency different from 60 Hz.

Question:

- a. When the frequency of the power source shifts from 60 Hz, such as following a load rejection or load application, does the CYME program calculate the connected system impedances and motor characteristics using the non-60 Hz frequencies seen over the course of the transient? For example, in Figures 1-5 and 2-5, is CYME calculating the connected Oconee electrical system impedances and motor starting currents using the Keowee output frequencies shown in those figures?

Response:

The CYME program can perform both frequency dependent modeling and non-frequency dependent modeling. In modeling of the Keowee supply to Oconee, frequency dependent modeling is used. When frequency dependent modeling is selected, frequency dependent modeling of the network (transformers, cables, circuit impedances) and type 3 and 5 synchronous machines is performed. Keowee is modeled as a type 3 synchronous machine. In induction motor modeling, the CYME internal type 2 motor model is used. This motor model adjusts motor slip and load torques based on the non-60 hertz frequencies, but motor impedance is not adjusted. In the modeling that was performed comparing the January 1997 ESF test and the program results, the program results have generally correlated well with the test results.