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SUBJECT: Provides response to NRC RAI re TS amend for Keowee voltage & frequency protection mod TS Change 99-07.Revised TS pages included in attachment 2.

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A Duke Energy Company

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October 7, 1999

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

Attention: Document Control Desk

Subject: Oconee Nuclear Station
Docket Numbers 50-269, 270, and 287
Request For Additional Information regarding
Technical Specification Amendment for Keowee
Voltage and Frequency Protection Modification
Technical Specification Change (TSC) Number 99-07

In a letter dated July 27, 1999, Duke Energy Corporation (Duke) submitted a proposed license amendment to add a Surveillance Requirement to verify the Keowee out of tolerance logic trips and blocks closure of the appropriate overhead or underground power path breakers. In a letter dated August 30, 1999, the NRC requested additional information concerning the proposed surveillance requirement.

The information contained in Attachment 1 provides Duke's response to the NRC's request for additional information. The revised Technical Specification pages are included in Attachment 2. Attachment 3 contains the markup of the Technical Specification pages. The attached supplemental technical specification pages do not impact the No Significant Hazards Consideration Evaluation or the Environmental Impact Analysis.

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The original submittal of the license amendment was in a word perfect format. This submittal has converted all pages of the proposed technical specifications to the Word format.

Approval of this proposed Technical Specification Amendment is requested by December 31, 1999. The Voltage and Frequency Protection Modification is currently scheduled to be completed in March of 2000. Implementation is dependent upon completion of the modification. Therefore, Duke Energy requests that implementation of the proposed license amendment be allowed to be completed no later than June 30, 2000. This date will account for potential schedule changes.

If there are any additional questions, please contact Reene' Gambrell at (864)885-3364.

Very truly yours,

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

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W. R. McCollum, Jr., being duly sworn, states that he is Vice President, Oconee Nuclear Site, 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 revision to the Facility Operating License Nos. DPR-38, DPR-47, DPR-55; and that all the statements and matters set forth herein are true and correct to the best of his knowledge.

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

Subscribed and sworn to before me this 7th day of October, 1999

Notary Public

My Commission Expires:
My Commission Expires 9-20-2009

bcc: w/attachments

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ATTACHMENT 1

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Question 1

Either provide an explanation for not including an upper and lower limit for each allowable value or revise the submittal to include such allowable values. Without such limits, the out of tolerance protection could trip Keowee when the tests have shown that the voltage and frequency are not out of tolerance.

Response:

The submittal was revised to include the upper and lower limit for each allowable value. Revised and marked-up pages are included in attachments 2 and 3, respectively. Revisions include converting the technical specification to the Word format.

Question 2

Provide an explanation or revise the submittal to include a requirement to test the allowable value of the timers.

Response:

The submittal was revised to include testing of the allowable values of the timers. Revised and marked-up pages are included in attachments 2 and 3, respectively. Revisions include converting the technical specification to the Word format.

Duke is pursuing additional changes to shorten the timers. Additional testing will be necessary to revise the allowable values of the timers. Duke will revise the amendment accordingly and submit to the Staff.

Question 3

It is the staff's understanding that the tests may not, in fact, cause the breakers to open if closed or ensure that they cannot be closed if open. Please discuss this aspect of the testing process and how the tests ensure that the SR is satisfied.

Response:

The test procedure to satisfy the surveillance requirement will verify that the appropriate overhead and underground breakers will close when the voltage and frequency move into the allowable values. It will also verify that the breakers do not close while the voltage or frequency is out of the allowable values. The procedure will ensure the overhead and underground breakers open when the voltage and frequency is out of the allowable values.

Along with the above functional testing, the relay setpoints for voltage, frequency and time delays will be tested to ensure they are within allowable values.

Question 4

Provide a discussion of how the analytical value was chosen for the frequency and voltage out of tolerance protection. Also, provide a discussion of the uncertainties that were used to derive the allowable values.

Response:

Existing circuitry at Keowee associated with load rejection scenario's uses overfrequency relays set at 10% above nominal. The high setpoint is based on acceptable overfrequency which Oconee and Keowee loads can tolerate when connected to an overspeeding generator, but decelerating Keowee generator. This frequency has been established at 110%. This circuitry was evaluated as acceptable in Amendment Nos. 210, 210, and 207.

One factor in the design of the Keowee out of tolerance (OOT) logic was to minimize the number of new components added to the Keowee Units logic. Duke accomplished this by using the existing circuitry described above and adding voltage relays.

Electrical equipment is manufactured to operate normally within ± 10% of nominal voltage. Therefore, setpoints were established at 90% and 110% on the new and existing relays.

If a Keowee Unit overspeeds as a result of load rejection, it can be demonstrated that if Keowee and Oconee auxiliaries are energized when speed decreases to 110%, the resultant current/time parameters are such that the actuation of QA-1 protective devices will not occur and that the required motors will start and perform their design functions during all Design Basis Events which require their automatic operation.

The basis for settings is also relative to various industry standards, which establish threshold values of voltage and frequency at which various motors shall continuously operate. Industry documentation provides discussion on the effects of ±5% and ±10% voltage variations.

Equipment can operate outside these values without damage for short periods of times. In anticipation of out of tolerance frequency problems, a computer alarm is added with this modification which will alarm when the frequency is out of tolerance by ±5%. This will allow the operator to respond prior to the out of tolerance condition to return the unit to nominal values.

After loading, should the units get out of tolerance, the respective units overhead or underground breaker will trip after a time delay. The basis for the time delay is to allow time to override transients and normal expected speed overshoots on emergency start. The time delay is also minimized to limit the exposure of Oconee loads to out of tolerance conditions.

The loop uncertainty calculation for the over/under voltage relays took into consideration repeatability over a constant voltage and temperature, repeatability over an allowable DC voltage range of 90 to 140 VDC, repeatability over a temperature range of 0 to 44°C, PT accuracy and test equipment tolerance.

The over/under frequency setpoint tolerance is ±.008 Hz at -20° C to +55°C (-4°F to 131°F). Relay drift maximum ± values will have negligible effects on design logic. The relays are mounted in the Keowee Control Room, which is an air-

conditioned space. There is no intentional hysteresis (dead band) between reset and setpoints of the relay, therefore the set and reset points are considered the same. The adjustable cutoff feature blocks operation of the relay when AC input is below the factory setpoint of 60 V. This is satisfactory because in this application, 60V (50% generator voltage) is well below the operating point of any voltage relays used for Oconee auxiliary power switching.