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AUTH.NAME AUTHOR AFFILIATION
MCCOLLUM,W.R. Duke Power Co.
RECIP.NAME RECIPIENT AFFILIATION
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SUBJECT: Responds to position amplification & request for addl info issued in 980522 NRC ltr.Submittal contains commitments to include current battery discharge testing program & main feeder bus monitor panel in TS.

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Duke Energy

W. R. McCollum, Jr.
Vice President

Duke Energy Corporation
Oconee Nuclear Station
P.O. Box 1439
Seneca, SC 29679
(864) 885-3107 OFFICE
(864) 885-3564 FAX

August 13, 1998

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
Technical Specification 3.7 Amendment
Request Supplement
TAC No: 86027, 86028, 86029
TSC No: 93-03

In a submittal dated March 11, 1993, Duke Energy Corporation (Duke) proposed changes to Oconee's electrical Technical Specifications, Sections 3.7 and 4.6. These changes will reformat the sections into a single section which is arranged similar to the Babcock and Wilcox (B&W) Standard Technical Specifications. In addition, several technical changes to the electrical Technical Specifications were included in the proposed amendment.

A001

During the review of this amendment, the NRC has raised numerous questions which have been addressed in various Duke submittals. In addition, Duke identified several changes to the Technical Specification 3.7 amendment request as part of the conversion to the Improved Technical Specifications.

The most recent Duke submittal was provided to the NRC in a letter that was dated May 7, 1998. Following a review of Duke's submittal, the NRC issued a letter dated May 22, 1998 that provided a position amplification and request for additional information. In Attachment 1, this letter

responds to the position amplification and request for additional information that the NRC issued in their May 22, 1998 letter. This submittal contains commitments to include the current Oconee battery discharge testing program and main feeder bus monitor panel in the Oconee Technical Specifications during the conversion to the Improved Technical Specifications.

If there are any additional questions, please contact Michael Bailey at (864) 885-4390.

Very truly yours,

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

MEB

Attachment

xc: D. E. LaBarge, ONRR
Project Manager

L. A. Reyes
Regional Administer, Region II

M. A. Scott
Senior Resident Inspector

ATTACHMENT 1

POSITION AMPLIFICATION AND
REQUEST FOR ADDITIONAL INFORMATION
OCONEE NUCLEAR STATION ELECTRICAL SYSTEM
(TAC NOS.: M86027/M86028/M86029)

Position Amplification #1

Battery Discharge Testing

Although not a current requirement in the Oconee Technical Specifications (TS), the staff has expressed concern regarding the lack of a battery performance discharge test requirement in TS 3.7. The licensee's response to this concern has been that battery performance discharge testing is not included in the Oconee licensing bases. However, such testing is performed to assist in predictive maintenance to indicate the need for battery replacement. The response further notes that the results of such testing does not indicate the operability of the batteries and as such should not be included as a TS required surveillance.

In the development of the Improved Technical Specifications (ITS), during which the NRC staff discussed numerous issues with industry, the issue of whether battery performance discharge testing results provided information relating to battery operability was addressed. During these discussions, the NRC staff noted that when battery capacity degrades near the end of its life, the battery may be capable of passing a battery service test but not capable of passing the next scheduled service test due to rapid battery capacity degradation that could occur between the service test interval. Thus, the plant could be operating for a period of time when the battery is unable to meet its design requirements. Within this context, the NRC staff determined that battery performance discharge testing is related to battery operability and, as such, was included as a required surveillance in the ITS. As an additional item, we note that in order to preclude two relatively deep discharges of the batteries within a short period of time, a modified performance discharge test has been previously proposed and accepted, and is presently included as an option within the ITS.

For these reasons, the staff believes battery discharge testing should be included in the Oconee TS.

Response to Position Amplification #1

Duke has reviewed the NRC's position amplification for the battery discharge testing. As a result of this review, Duke commits to the placement of the current Oconee battery discharge testing program in the Oconee Technical Specifications. This

will be accomplished by a supplement to the Improved Technical Specifications conversion submittal.

For your information, the following description of the current Oconee battery discharge testing program is provided. Once a battery is installed at Oconee, the battery is placed in a periodic testing program with the testing frequencies based on IEEE 450-1975. While the battery discharge test results are above 90%, the testing frequency is every five years. Once the battery discharge test results drop below 90 percent, the testing frequency is decreased to annually. If the battery discharge test results drop below 80 percent, an operability evaluation is performed to review the current operating conditions and determine if the battery can meet the licensing basis requirements. If the battery can meet the licensing basis requirements, actions are taken to increase the battery performance to above 80%. If the battery cannot meet the licensing basis requirements, the appropriate Technical Specification action statement is entered.

At Oconee, the DC batteries are sized based on several parameters which include battery loading, capacity, electrolyte level, battery cell temperature, and jumpered cells. Oconee battery sizing calculations have made conservative assumptions in regards to the various battery parameters. The operability evaluation, which is performed once the discharge test results drop below 80 percent, takes into consideration the current battery operating conditions. Thus, some of the conservative assumptions will be updated with actual battery conditions. In addition, the operability evaluation may place conditions on the associated battery parameters (e.g., battery cell temperature) to ensure that the battery remains operable.

Position Amplification #2

Main Feeder Bus Monitoring

For main feeder bus monitoring panel circuitry, the staff has expressed concern regarding not retaining current TS requirements for this system in TS Section 3.7. In essence, the response to this concern has been that this panel circuitry is not within the Oconee licensing bases and that manual operator action is credited for this circuitry function. Criterion 3 and 4 of the Commission's interim and final policy statement as well as 10 CFR 50.36 provide guidance regarding what is to be retained in TS. Criterion 3 notes that it is the Commission's policy to retain in TS a system that is part of the primary success path and which functions to mitigate a transient that presents a challenge to the integrity of the fission product barrier. While it is recognized that manual operator actions could form a part of the primary success path, the intent of this criterion in the

electrical area is to focus on hardware item response, particularly in the initial stage of a need for the function. Criterion 4 of the final policy statement addresses operating experience. Within this context, and on previous occasions for localized plant centered loss of electrical power, the feeder bus monitoring panel circuitry has performed a very useful and necessary function in restoration of power to the main feeder buses. In addition, a localized plant centered loss of power occurrence has been found much more likely than an area wide grid disturbance for which additional hardware has been designed and implemented for power restoration. Thus, measures to ensure a continuing high degree of functional performance for the main feeder bus monitoring panel circuitry are viewed as being necessary.

For these reasons, the staff believes main feeder bus monitoring should be retained in the Oconee TS.

Response to Position Amplification #2

Duke has reviewed the NRC's position amplification for the main feeder bus monitor panel. As a result of this review, Duke believes that the main feeder bus monitor panel does not satisfy the requirements in 10 CFR 50.36 Criterion 3 or 4 for inclusion in the Technical Specifications. However, Duke commits to the placement of the main feeder bus monitor panel in the Oconee Technical Specifications as part of the resolution of this issue. Duke plans to request an increase of the allowed outage time for the main feeder bus monitor panel since the system is not required for the mitigation of an accident. This will be accomplished by a supplement to the Improved Technical Specifications conversion submittal.

Request for Additional Information #1

Second Offsite Power Circuit Questions

The last paragraph on page 8-5 of the UFSAR provides the following. Each unit is provided with two physically independent circuits from the switching station. One is the circuit from the 230 kV switching station through the startup transformer which is designed to be available within a few seconds following a loss of coolant accident. The second circuit is the path from the switchyard through the main step-up transformer, the main generator bus and the unit's auxiliary transformer with the generator disconnected from the main bus. This second circuit is designed to be available in time following a loss of coolant accident to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. With regard to this second circuit, provide responses to the following.

a) Within the context of a loss of coolant accident, explain the intended meaning of the above with regard to the role of the second circuit path being available in time such that specified acceptable fuel design limits and conditions of the pressure boundary are not exceeded.

Response to Request for Additional Information #1a

There are two physically independent circuits, which are described in the UFSAR, from the Oconee station to the 230 kV switchyard. One circuit consists of the startup transformer and would be available within a few seconds following a loss of coolant accident to provide power to Oconee engineered safeguards loads. The second circuit consists of the main step-up transformer through the auxiliary transformer. The UFSAR indicates that the second circuit is designed to be available in time following a loss of coolant accident to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded.

The UFSAR statement concerning the second circuit being available in time following a loss of coolant accident to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded is not in the correct context. A review of the original FSAR indicates that a description of the two physically independent circuits from the offsite power sources was included in the original FSAR. The statement in the original FSAR is restated below:

"Each unit is provided with two physically independent circuits from the offsite power sources. One is the circuit from the switchyard through the startup transformer which is designed to be available within a few seconds following a loss of coolant accident. The second circuit is the path from the switchyard through the main step-up transformer, the main generator bus and the unit's auxiliary transformer with the generator disconnected from the main bus. This second circuit is designed to be available in time following a loss of coolant accident to assure that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded and are consistent with the safety analysis of the unit as described in Section 14.1.2.8.3."

A review of the original FSAR Section 14.1.2.8.3 indicates that the analysis of the fuel design limits and reactor pressure boundary limits is for the hypothetical loss of all

station power except for the station batteries, which is commonly referred to as a station blackout. This analysis of the hypothetical loss of all station power except for the station batteries indicates that the pressurizer relief valves would open and the pressurizer would be filled with reactor coolant in 23 minutes without any emergency feedwater actuation or emergency condenser cooling water gravity flow. The opening of the pressurizer relief valves and filling of the pressurizer with reactor coolant would result in a loss of coolant accident. The analysis indicates that an additional 83 minutes are available before the reactor coolant would boil off to the point of core uncovery. Crediting of the turbine driven emergency feedwater system would increase the amount of time before any core uncovery occurred. The original FSAR indicates that the turbine driven emergency feedwater system and emergency condenser cooling water system would be automatically actuated during the loss of offsite power. Accordingly, core protection is insured for the unlikely condition of total loss of station electric power. Based on the reference in the original FSAR section and the associated FSAR safety analysis, the information on the time requirement for the second circuit to the offsite power sources being available is based on a hypothetical loss of all station power which would lead to a loss of coolant accident.

In the 1982 update of the FSAR, the entire FSAR was updated and reformatted. The information on the two physically independent circuits to the offsite power sources was relatively unchanged. However, the reference to the safety analysis of the hypothetical loss of all station power was removed from the statement about the time requirement for the second circuit. This incorrectly changed the context of the statement concerning the availability of the second circuit to imply that the second circuit was required following all loss of coolant accidents.

In the 1993 UFSAR update, the safety analysis of the hypothetical loss of all station power was replaced with a station blackout analysis for Oconee. The station blackout analysis is contained in the UFSAR Section 8.3.2.2.4 and outlines the use of the Standby Shutdown Facility to mitigate a station blackout while preventing a loss of coolant accident for occurring. Thus, the safety analysis information that was associated with the time requirements for the second circuit to the offsite power sources was removed from the UFSAR since it was replaced by Oconee's response to the NRC's Station Blackout Rule. Therefore, the second circuit to the offsite power sources for Oconee is

not required for mitigation of a loss of all station power and the resulting loss of coolant accident. A Problem Investigation Problem (PIP) report has been initiated to ensure that the UFSAR is updated to correct the statement concerning the requirement for the second circuit to be available following a loss of coolant accident. It should be noted that the second circuit is still available and provides a diverse manual power path for Oconee, although it is not required for any accident mitigation.

b) Describe in detail how and when the capability and capacity of the second circuit path has been demonstrated or analyzed to meet the criteria specified in the UFSAR.

Response to Request for Additional Information #1b

The auxiliary transformer is sized to carry all the auxiliary loads of the associated Oconee Unit during power generation. The main feeder bus normally receives power through the auxiliary transformer during generation to the grid. During refueling outages, the backcharging alignment of the auxiliary transformer to the main feeder buses is performed to supply the refueling shutdown loads. The above activities demonstrate the capability and capacity of the second circuit path. Following a loss of coolant accident, the Oconee engineered safeguards loads, which would be less than loads required for power generation, are supplied by offsite power through the startup transformer or by the Keowee Hydro units through the associated emergency power paths. During the recovery from a loss of coolant accident, the Oconee loads could be manually transferred to the auxiliary transformer, if necessary. The alignment of the second circuit to the main feeder buses to supply post accident loads during the recovery from a loss of coolant accident has been analyzed and determined to be an adequate power source. Again, it should be noted that the second offsite power path is not required for accident mitigation at Oconee.

c) The second circuit path is not addressed in the current TS or TS Section 3.7. In addition the Bases to TS Section 3.7 states that, once the 230 kV lines enter the switchyard, an electrical pathway must exist through operable PCBs and disconnects such that both sources are available to energize the Unit's startup transformer; and once within the switchyard the electrical pathway may be the same for both independent offsite circuits. This description of two independent 230 kV offsite circuits ending in a single unit startup transformer appears to be in conflict with the UFSAR description of an offsite circuit through a unit startup

transformer, and a second offsite circuit through the second circuit path. Please address this discrepancy, and explain why the second circuit path is not included in the current TS or TS Section 3.7.

Response to Request for Additional Information #1c

The Technical Specifications are addressing the requirements for offsite power sources which supply the Oconee switchyard, ie. Dacus, Oconee, Calhoun, etc. Two of these sources are required to be available to meet the TS requirement to consider offsite power available. In addition, the Technical Specifications require the startup transformer to be operable which will ensure that offsite power is available to the Oconee unit during an accident.

The UFSAR describes two independent power circuits from Oconee to the switchyard in Section 8.2.1.3 and 3.1.39. The as-built design of Oconee includes the two power circuits from the switchyard to the plant as described in the UFSAR Sections 8.2.1.3 and 3.1.39. The power circuit through the step-up transformer and auxiliary transformer is not required for accident mitigation. The response to the Request for Additional Information #1a indicates the error in the UFSAR statement concerning a time requirement for the second circuit and the requirement of the second circuit for accident mitigation. In addition, the response to the Request for Additional Information #1a states that a PIP report has been initiated to correct the error.

Since only the circuit through the startup transformer is required for accident mitigation, the second circuit through the auxiliary transformer does not need to be included in the Oconee Technical Specifications.