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SUBJECT: Forwards response to NRC 980923 RAI re licensee proposed license amend,converting tech specs to Improved Tech Specs, dtd 971028.Response specifically contains addl info on LCOs re sections 3.8.3 & 3.8.4.

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October 21, 1998

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

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
Improved Technical Specification
Amendment Request
TAC No: 99912, 99913, 99914

In a submittal dated October 28, 1997, Duke Energy Corporation (Duke) proposed the conversion of the Oconee Nuclear Station Technical Specifications to the Improved Technical Specifications. During the review process for the Improved Technical Specifications, the NRC requested additional information in a letter dated September 23, 1998 concerning the Limiting Conditions for Operation that are associated with Sections 3.8.3 and 3.8.4. The information contained in Attachment 1 provides Duke's response to the NRC's request for additional information.

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

1/1

A001

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ATTACHMENT 1

REQUEST FOR ADDITIONAL INFORMATION
OCONEE NUCLEAR STATION CONVERSION TO
IMPROVED TECHNICAL SPECIFICATIONS
(TAC NOS. 99912/99913/99914)

Request for Additional Information #1

Limiting Condition for Operation (LCO) 3.8.3, Note 3 states:

> The additional 125 VDC (volts direct current) Vital I&C [instrumentation and control] sources required by LCO 3.8.3 Part b, or Part c are not required to be connected to the Unit's Distribution System.

Oconee Unit 1 requires three of the four Unit 1 and 2 125 VDC Vital I&C Sources to be operable. If one Unit 1 or Unit 2 source were inoperable, the additional sources required by LCO 3.8.3 Part b would be both Unit 3 sources. The application of Note 3 is that the Unit 3 sources need not be connected to the Unit's (Unit 3) Distribution system which, as identified in LCO 3.8.8, is the unit's panelboards. If Unit 3 were shutdown with all panelboards required by LCO 3.8.9 supplied power from Unit 1 sources, then one could argue that the Unit 3 sources need not be connected to any panelboard as stated in the note. Nevertheless, this condition would not satisfy LCO 3.8.4, which presumably would require one required operable source to be connected to something (at least one required panelboard) in the shutdown unit. If Unit 3 were operating, Note 3 is contrary to the requirement that a required source shall not be the only source to two or more panelboards, which would be the case for both Unit 1 sources that supply backup power to Unit 3 panelboards.

On the other hand, assume that a Unit 3 source is inoperable and that both Unit 1 and Unit 2 sources are operable. In this scenario, one might elect to classify either a Unit 1 or a Unit 2 source as a nonrequired source, and thereby apply Note 3 as to not require that source to be connected to the Unit's (Unit 1, not the Unit of the source which could be Unit 2) panelboards. But if a Unit 1 or Unit 2 source is not connected to any Unit 1 panelboard, this alone should constitute a condition where that source is not operable with respect to the three of four sources operable requirement for an operating unit.

Question:

1. In light of the above discussion and Note 3, what establishes what a source must be connected to, in order to satisfy the five of six and four of six operability requirements?

Response to RAI #1

Note 3 to LCO 3.8.3 indicates that the additional 125 VDC Vital I&C sources required by Part B or Part C of the LCO are not required to be connected to the unit's distribution system. Note 3 is necessary to clarify that connection of the Unit 3 125 VDC Vital I&C sources to Unit 1 is not necessary since the connection is not physically possible. This note only applies to Oconee units that are in MODES 1, 2, 3, or 4. The first example cited in the NRC's RAI incorrectly indicates that the intent of Note 3 is "that the Unit 3 sources need not be connected to the unit's (Unit 3) distribution system." In the NRC's example, the unit distribution system that Note 3 applies to is Unit 1 and not Unit 3. Thus, the application of Note 3 is correct and is not contrary to any of the other LCOs contained within the Improved Technical Specifications. LCO 3.8.4 must be met for any unit in MODES 5 or 6 and when not met the applicable ACTIONS of LCO 3.8.4 are entered. There are no appropriate ACTIONS in LCO 3.8.3.

In the second example, a scenario is postulated where Note 3 is used to indicate that a nonrequired Unit 2 source need not be connected to the Unit 1 distribution system. In this scenario, a Unit 3 source is postulated to be inoperable and both Unit 1 and Unit 2 sources are postulated to be operable. The NRC's example does not indicate the operating status of any of the Oconee Units. For this response, Duke has assumed that Unit 1 is operating. With regard to Units 2 and 3, Duke has postulated the scenarios for the various operating conditions for Units 2 and 3 in an attempt to address the 125 VDC Vital I&C system configurations that were being reviewed by the NRC.

With three Oconee units operating and a Unit 3 125 VDC Vital I&C source inoperable, five operable 125 VDC Vital I&C sources would be required. Therefore if one of the Unit 1 or Unit 2 sources are inoperable, entry into Required Action B would be required on all three Oconee units. In this case, the units are in ACTION B for not meeting LCO 3.8.3.a and b requirements.

With Units 1 and 2 operating, Unit 3 shutdown, and a Unit 3 source inoperable, five operable 125 VDC Vital I&C sources would be required. With one of the Unit 1 or Unit 2 sources inoperable entry into applicable ACTIONS for each unit is required. In this case, if a Unit 1 source becomes inoperable, entry into ACTION B for Unit 1 is required due to LCO 3.8.3.b not being met and entry into ACTION B for Unit 2 is required due to LCO 3.8.3.a and b not being met.

With Unit 1 operating, Units 2 and 3 shutdown, and a Unit 3 125 VDC Vital I&C source inoperable, only four operable 125 VDC Vital

I&C sources would be required to be operable. This requirement would be satisfied by the three of four required 125 VDC Vital I&C sources for Unit 1 and the required Unit 3 125 VDC Vital I&C source. Thus, a nonrequired 125 VDC Vital I&C source on Unit 1 or 2 could be removed from service for maintenance or test without entry into an action statement since the DC capacity requirements and single failure requirements are satisfied.

Clarification of requirements of the 125 VDC Vital I&C power system and operability of the associated 125 VDC Vital I&C power sources

The 125 VDC Vital I&C power system is designed with the DC sources interconnected by isolating transfer diodes. Thus, each Oconee unit does not need both of its unit specific 125 VDC Vital I&C sources (i.e. Unit 1 - 1CA and 1CB) to be operable in order to mitigate an accident.

When two or more units are operating, only four of the six 125 VDC Vital I&C sources are required to meet the DC capacity requirements for an Oconee unit to mitigate an accident. In order to meet the DC capacity requirements while considering a single failure, five of six 125 VDC Vital I&C sources are required to be operable.

With only one unit operating, three sources must be operable from a DC capacity standpoint to mitigate an accident at Oconee. In order to meet the DC capacity requirements while considering a single failure, four of six 125 VDC Vital I&C sources are required to be operable. Each Oconee unit, including the units which are shutdown, is required to have one 125 VDC Vital I&C source operable so that the capacity requirements can be meet. If one additional source from a unit in shutdown is not connected to energized panelboards on a shutdown unit, it will draw power from the backup Oconee unit which could prevent the DC system from being able to mitigate an accident.

The interconnection of the 125 VDC Vital I&C power system is designed such that Unit 1 power sources (1CA, 1CB) are connected as a backup to Unit 3, Unit 2 power sources (2CA, 2CB) are connected as a backup to Unit 1, and Unit 3 power sources (3CA, 3CB) are connected as a backup to Unit 2. As can be seen from the interconnections listed above, Unit 3 DC power sources are not physically connected to Unit 1. Thus, Note 3 to LCO 3.8.3 is required to ensure that the five of six and four of six operability requirement is not literally interpreted to require connection of each operable 125 VDC Vital I&C source to the distribution system of the unit(s) in MODES 1, 2, 3 or 4 (e.g.

connection of Unit 3 125 VDC Vital I&C sources to Unit 1 panelboards).

As for connection of the 125 VDC Vital I&C power sources to the associated unit's panelboards, the requirements of LCO 3.8.3 and 3.8.8 provide the requirements for the operability of the DC sources and associated panelboards. LCO 3.8.8 indicates that four 125 VDC Vital I&C panelboards on any operating unit be operable. This requires that the operable panelboards be energized to their proper voltage from either a battery or charger. LCO 3.8.3 contains two requirements, which are listed below, for the operability of the 125 VDC Vital I&C sources.

1) An operating unit is required to have three of four 125 VDC Vital I&C sources operable and aligned such that no power source is the only source of power to two or more of the unit's panelboards. This requirement ensures that a single failure of a 125 VDC Vital I&C source will not result in the loss of power to more than one 125 VDC Vital I&C panelboard. Thus, connection of the 125 VDC Vital I&C sources to the unit's panelboards must be established in a manner that satisfies LCO 3.8.3. The normal mode of operation is that four operable 125 VDC Vital I&C power sources are interconnected with the four operable 125 VDC Vital I&C panelboards. This provides the maximum amount of redundancy, is the design of the plant 125 VDC Vital DC power system, and exceeds the requirements of the Oconee Technical Specifications. During periods when 125 VDC Vital I&C source problems are encountered, changes in the connection of the Vital DC sources can be performed while the problem is being corrected. The appropriate Technical Specification Action Statements are entered, as necessary, based on the changes to the connection of the 125 VDC Vital I&C sources.

2) Additional sources beyond the three of four requirement listed above are specified in LCO 3.8.3 Part b and Part c. These additional sources result in a five of six 125 VDC Vital I&C source operability requirement with two or more operating units and a four of six 125 VDC Vital I&C source operability requirement with only one operating unit. The requirement is necessary to ensure that the DC capacity requirements are meet in conjunction with a coincident single failure. Additional information on the DC capacity and single failure requirements is provided in the discussion of the DC system design which is mentioned above. To satisfy this requirement, an operable 125 VDC Vital I&C source requires that required batteries, respective chargers, and distribution centers

be operating and connected to the required DC panelboard(s). If a unit is not operating and the 125 VDC Vital I&C source is required for an operating unit, the 125 VDC Vital I&C source must be connected to any of the shutdown units energized panelboards to be considered operable for the operating unit requirement. Per LCO 3.8.3 Bases, a power source must be connected to required panelboards to be considered operable. Duke will further clarify the Bases to state that power sources connected to shutdown units must be connected to energized panelboards, since in some cases, these may not be required panelboards.

As can be seen from the discussion above of the interconnections and the DC capacity requirements for the Oconee 125 VDC Vital I&C system, the Oconee design includes additional redundancy that exceeds the requirements of the Oconee Technical Specifications. Thus, removal of a single 125 VDC Vital I&C source or changes in the connections of the 125 VDC Vital I&C sources can be performed without impacting the ability of the Oconee 125 VDC Vital I&C system to satisfy the Oconee Technical Specifications. These potential scenarios are covered by the current approved Oconee Technical Specifications which are being converted to the Improved Technical Specifications without any changes to the technical requirements.

Request for Additional Information #2

LCO 3.8.4 states:

> 125 VDC Vital I&C power source(s) shall be OPERABLE to support the 125 VDC Vital I&C power panelboard(s) required by LCO 3.8.9, "Distribution Systems—Shutdown" and shall include at least one of the unit's 125 VDC power sources.

Questions:

2. If one of the shutdown unit's sources were inoperable:

   a. Would cross tying the unit's distribution centers be an acceptable means to support all the panelboards required by LCO 3.8.9, to satisfy LCO 3.8.4? If not, what Technical Specification (TS) provision prohibits it?

   b. What is the maximum and minimum number of panelboards that could be required to be operable to satisfy LCO 3.8.9?

c. Could a cross-tied unit source be the only source to all panelboards required by LCO 3.8.9? If not, what TS precludes this configuration.

d. Can a source from another Unit be the only source to a panelboard required to be operable per LCO 3.8.9?

e. If both panelboards associated with the operable shutdown unit's source are required to be operable per LCO 3.8.9, must they both be connected to that operable source, or could one be provided power only from another unit's source.

f. If the shutdown unit's operable source is a required source for an operating unit, is there any limit on the number of panelboards in the shutdown unit that are connected to that source and have no backup from another unit? If so, what is that limit and what TS enforces this limit.

Response to Request for Additional Information #2a

Yes, the shutdown loading requirements of the 125 VDC Vital I&C system can be satisfied by cross tying the distribution centers and supplying the load from a single battery or battery charger. This does not exceed the capacity requirements of the single battery or battery charger which is supplying the 125 VDC Vital I&C panelboards on the shutdown unit.

Response to Request for Additional Information #2b

The maximum number of panelboards that could be required to be operable to satisfy LCO 3.8.9 is four. The minimum number of panelboards that could be required to be operable to satisfy LCO 3.8.9 is one.

Response to Request for Additional Information #2c

Yes, see response to 2a.

Response to Request for Additional Information #2d

Yes, however, the operable 125 VDC Vital I&C power source on the shutdown unit must be connected to the shutdown unit's energized panelboards to be considered operable for an operating unit. The Technical Specification Bases for Section 3.8.3 will be revised in Supplement 4 to indicate this requirement.

Response to Request for Additional Information #2e

See response to 2d.

Response to Request for Additional Information #2f

There is no limit on the number of panelboards in the shutdown unit which can be connected to the operable 125 VDC Vital I&C source that is credited for the operability requirements for an operating unit. The shutdown loading requirements of the 125 VDC Vital I&C system can be satisfied by cross tying the distribution centers and supplying the load from a single battery or battery charger. This does not exceed the capacity requirements of the single battery or battery charger which is supplying the Vital I&C panelboards on the shutdown unit.