Duke Power®
A Duke Energy Company

R. A. JONES
Vice President

Duke Power
29672 / Oconee Nuclear Site
7800 Rochester Highway
Seneca, SC 29672

864 885 3158
864 885 3564 fax

December 15, 2003

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

Attention: Document Control Desk

Subject: Oconee Nuclear Station
Docket Numbers 50-269, 270, and 287
Technical Specification Bases (TSB) Change

Please see attached revisions to Tech Spec Bases 3.8.8, Distribution Systems Operating, which were implemented on December 2, 2003.

Attachment 1 contains the new TSB pages and Attachment 2 contains the markup version of the Bases pages.

If any additional information is needed, please contact Larry E. Nicholson, at(864-885-3292).

Very truly yours,

Bruce Hamilton /for

R. A. Jones, Vice President
Oconee Nuclear Site

A001

cc: Mr. L. N. Olshan
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mr. L. A. Reyes, Regional Administrator
U. S. Nuclear Regulatory Commission - Region II
Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, Georgia 30303

Mel Shannon
Senior Resident Inspector
Oconee Nuclear Station

Mr. Henry Porter Director
Division of Radioactive Waste Management
Bureau of Land and Waste Management
Department of Health & Environmental Control
2600 Bull Street
Columbia, SC 29201

Attachment 1

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.8 Distribution Systems – Operating

BASES

BACKGROUND

The onsite AC, DC, and AC vital electrical power distribution systems are divided into redundant and independent AC, DC, and AC vital electrical power distribution buses and panelboards.

The electrical power distribution system consists of two 4.16 kV main feeder buses each connected to three 4.16 kV Engineered Safeguards (ES) power strings, and secondary 600 V load centers; and 600 V and 208 V motor control centers. Both main feeder buses can be connected to the offsite sources or the emergency power sources. Upon a loss of power to the normal unit auxiliary transformer, the main feeder buses are transferred to the startup transformer powered from either the offsite sources through the 230 kV switchyard or the overhead emergency power path. If power is not available from the startup transformer, the main feeder buses are transferred to the standby buses powered from either the underground emergency power path or a Lee combustion turbine using a 100 kV transmission line separated from the system grid and offsite loads. Control power for the 4.16 kV breakers is supplied from the 125 VDC Vital I&C batteries. Control power for the circuit breakers in the 230 kV switchyard is provided from the 230 kV Switchyard 125 VDC batteries. Additionally, power to grid voltage protection circuits are also provided from the 230 kV switchyard 125 VDC batteries. Additional description of this system may be found in the Bases for LCO 3.8.1, "AC Sources – Operating," and the Bases for LCO 3.8.3, "DC Sources – Operating."

The 120 VAC Vital Instrumentation panelboards are normally powered from the inverters. The alternate power supply for the vital panelboards is a regulated voltage source and its use is governed by LCO 3.8.6, "Inverters – Operating." Each regulated voltage source is powered from a non-safety related non-load shed source.

There are four 125 VDC Vital I&C panelboards supplying power to DC loads. Each 125 VDC I&C panelboard is connected to two 125 VDC Vital I&C sources through isolating transfer diodes. Upon a loss of power from either source, power is supplied to the panelboard through the redundant source. There are two 230 kV switchyard 125 VDC sources each supplying power to three required DC panelboards.

BASES (continued)

APPLICABLE SAFETY ANALYSES

The initial conditions of accidents and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume ES systems are OPERABLE. The AC, DC, and AC vital electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ES systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The OPERABILITY of the AC, DC, and AC vital electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining power distribution systems OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC electrical power; and

b. A worst-case single failure.

The distribution systems satisfy Criterion 3 of the 10 CFR 50.36 (Ref. 4).

LCO

The AC, DC, and AC vital electrical power distribution systems are required to be OPERABLE. To be considered OPERABLE the AC Distribution System must include two energized main feeder buses capable of being automatically powered by a Keowee Hydro Unit. Each main feeder bus is considered OPERABLE if it is energized and connected to at least two ES power strings. Each of the three ES power strings is required to be energized. The three ES power Strings consist of the following:

1A) Switchgear TC	1B) Switchgear TD	1C) Switchgear TE
2A) Load Center X8	2B) Load Center X9	2C) Load Center X10
3A) 600V MCC XS1, XS4 (Units 1 & 2 only when supplying safety related loads), and 1, 2, 3XSF	3B) 600V MCC XS2, and XS5 (Units 1 & 2 only when supplying safety related loads)	3C) 600V MCC XS3, and XS6 (Units 1 & 2 only when supplying safety related loads)
4A) 208V MCC XS1 and 1, 2, 3XSF	4B) 208V MCC XS2	4C) 208V MCC XS3

BASES

LCO (continued)

Each string is considered OPERABLE if it is energized by at least one main feeder bus except when MCC 1, 2, or 3XSF is powered from load center OXSF. These MCCs would not be available during a DBA when powered from load center OXSF and therefore are considered inoperable.

An OPERABLE 125 VDC Vital I&C Distribution System must include energized 125 VDC Vital I&C panelboards DIA, DIB, DIC, and DID. Additionally, for Units 2 and 3 only, Vital I&C panelboards 1DIC and 1DID shall be energized.

To be considered OPERABLE, 230 kV switchyard 125 VDC panelboards DYA, DYB, DYC, DYE, DYF, and DYG must be energized.

An OPERABLE 120 VAC Vital Instrumentation Distribution System must include energized 120 VAC Vital Instrumentation panelboards KVIA, KVIB, KVIC, and KVID.

These distribution systems ensure the availability of AC, DC, and AC vital electrical power for the systems required to shut down the reactor and maintain it in a safe condition after a transient or accident.

Maintaining the AC, DC, and AC vital electrical power distribution systems OPERABLE ensures that the redundancy incorporated into the design of ES is not defeated. Therefore, a single failure within any system or within the electrical power distribution systems will not prevent safe shutdown of the reactor.

An OPERABLE AC electrical power distribution system requires the associated buses, ES power strings, load centers, and motor control centers to be energized to their proper voltages. OPERABLE 125 VDC Vital I&C panelboards require the panelboards to be energized to their proper voltage from either a battery or charger. OPERABLE 120 VAC Vital Instrumentation panelboards require the panelboards to be energized to their proper voltage from the associated inverter via inverted DC voltage or alternate regulated voltage source.

APPLICABILITY

The electrical power distribution systems are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of accident or transients; and

BASES

APPLICABILITY (continued)

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Electrical power distribution system requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.9, "Distribution Systems – Shutdown."

ACTIONS

The ACTIONS are modified by a Note indicating that the Completion Times for Required Actions A through F are reduced when in Condition L of LCO 3.8.1. Condition L limits the Completion Time for restoring inoperable power sources to 4 hours when emergency power source(s) or offsite power source(s) are inoperable for extended time periods or for specific reasons.

A.1 and B.1

With one Main Feeder bus inoperable or not connected to two ES power strings or one ES power string inoperable, the remaining portion of the AC electrical power distribution system is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining portion of the power distribution systems could result in the minimum required ES functions not being supported. Therefore, the required AC buses, ES power strings, load centers, and motor control centers must be restored to OPERABLE status within 24 hours.

Condition A and B's worst scenario is one main feeder bus and one ES power string without AC power. In this Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operator's attention be focused on minimizing the potential for loss of power to the remaining bus or ES power strings by stabilizing the unit, and on restoring power to the affected bus or ES power string. The 24 hour time limit before requiring a unit shutdown in this Condition is acceptable because of:

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train to the actions associated with taking the unit to shutdown within this time limit; and

b. The potential for an event in conjunction with a single failure of a redundant component.

BASES

ACTIONS (continued)

C.1

With one of the unit's 125 VDC Vital I&C panelboard inoperable, the remaining 125 VDC Vital I&C panelboards are capable of supporting the minimum safety functions necessary to shutdown the reactor and maintain it in a safe shutdown condition, assuming no additional failure. The overall reliability is reduced, however, because an additional failure in the remaining 125 VDC Vital I&C panelboards could result in the minimum required ES functions not being supported. Therefore, the 125 VDC Vital I&C panelboard must be restored to OPERABLE status within 24 hours by powering the bus from a battery or charger.

Condition C represents one of the unit's 125 VDC Vital I&C panelboard without adequate 125 VDC Vital I&C power; potentially with both the batteries significantly degraded and the associated chargers nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all 125 VDC Vital I&C power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining panelboard(s) and restoring power to the affected panelboard(s).

This 24 hour limit is longer than Completion Times allowed for some of the components that are without power. Utilizing the LCO 3.0.6 exception to LCO 3.0.2 for components without adequate 125 VDC Vital I&C power, which would have Required Action Completion Times shorter than 24 hours, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while allowing stable operations to continue;

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions to restore power to the affected panelboard(s); and

c. The potential for an event in conjunction with a single failure of a redundant component.

BASES

ACTIONS (continued)

D.1

If a required 230 kV switchyard 125 VDC panelboard or combination of required panelboards which are not redundant to each other are inoperable, the required panelboard(s) shall be restored to OPERABLE status within 24 hours. Loss of the remaining distribution center or a redundant panelboard could result in failure of the overhead emergency power path. In addition, in the event of grid degradation, the station and onsite emergency power sources could fail to separate from the grid.

Condition D is modified by two Notes. Note 1 indicates that Separate Condition entry is allowed for each 230 kV switchyard 125 VDC power panelboard. Note 2 indicates that Condition D is not applicable to the following loss of function combinations: DYA and DYE, DYB and DYF, and DYC and DYG.

The 24 hour Completion Time is based on engineering judgement taking into consideration the time to complete the required action, the redundancy available in the 230 kV switchyard 125 VDC system, the redundancy available in the emergency power paths, and the infrequency of an actual grid system degradation.

E.1

With either panelboard 1DIC inoperable or panelboard 1DID inoperable, a single failure of the remaining panelboard would result in failure of control power for the S, SK, and SL breakers, standby bus protective relaying, and retransfer to startup logic. Within 24 hours after such a condition arises, the inoperable panelboard shall be restored. The Completion Time is based on engineering judgement taking into consideration the time to complete the required action and the redundancy available in the Vital I&C DC System and AC electrical power system.

This Condition is modified by a Note indicating that it is only applicable to Units 2 and 3. For Unit 1 the appropriate action is specified in ACTION C.

BASES

ACTIONS (continued)

F.1 and F.2

With one 120 VAC Vital Instrumentation power panelboard inoperable, the remaining three OPERABLE 120 VAC Vital Instrumentation power panelboards are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum required functions not being supported. Therefore, the inoperable 120 VAC Vital Instrumentation power panelboard must be restored to OPERABLE status within 4 or 24 hours dependent upon which panelboard is inoperable. The Completion Time for restoring panelboard KVIA or KVIB is limited to 4 hours since these panelboards power the digital Engineered Safeguards Protective System (ESPS) channels and they cannot actuate without power. The Completion Time for restoring KVIC or KVID is 24 hours.

Condition F represents one 120 VAC Vital Instrumentation panelboard without power; potentially both the 125 VDC Vital I&C source and the alternate AC source are nonfunctioning. In this situation the unit is significantly more vulnerable to a complete loss of all 120 VAC Vital Instrumentation panelboards. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining 120 VAC Vital Instrumentation panelboards and restoring power to the affected 120 VAC Vital Instrumentation panelboard.

The 4 hour and 24 hour limits are longer than Completion Times allowed for some of the components that are without adequate vital AC power. Utilizing the LCO 3.0.6 exception to LCO 3.0.2 for components without adequate vital AC power, that would have the Required Action Completion Times shorter than 4 hours or 24 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue;

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without adequate vital AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train; and

c. The potential for an event in conjunction with a single failure of a redundant component.

BASES

ACTIONS

F.1 and F.2 (continued)

The digital ESPS channels are powered from KVIA and KVIB, and cannot actuate without power. The 4 hour Completion Time takes into account the importance to safety of restoring the 120 VAC Vital Instrumentation panelboards to OPERABLE status, the redundant capability afforded by the other OPERABLE 120 VAC Vital Instrumentation panelboards, and the low probability of an accident occurring during this period.

Panelboards KVIC and KVID supply some loads which trip upon loss of power. For example, RPS channels and ES analog channels go to a tripped state upon loss of power. The 24 hour Completion Time takes into account the importance to safety of restoring the 120 VAC Vital Instrumentation panelboards to OPERABLE status, the redundant capability afforded by the other OPERABLE 120 VAC Vital Instrumentation panelboards, and the low probability of an accident occurring during this period.

G.1 and G.2

If the Required Action and associated Completion Time are not met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 5 within 84 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

H.1

Condition H corresponds to a level of degradation in the electrical distribution system that causes a required safety function to be lost. When more than one Condition is entered, and this results in the loss of a required safety function, the plant is in a condition outside the accident analysis. Therefore, no additional time is justified for continued operation.

LCO 3.0.3 must be entered immediately to commence a controlled shutdown.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the main feeder buses are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital electrical power distribution systems, and other indications available in the control room that alert the operator to system malfunctions.

SR 3.8.8.2

This Surveillance verifies that the required AC, DC, and AC vital electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence is maintained, and the appropriate voltage is available to each ES power string and panelboard. The verification of voltage availability on the ES power strings, and panelboards ensures that voltage is readily available for motive as well as control functions for critical system loads connected to the ES power strings, and panelboards. Verification of voltage availability may be accomplished by observing alarm conditions, status lights or by confirming proper operation of a component supplied from each ES power string or panelboard. The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital electrical power distribution systems, and other indications available in the control room that alert the operator to system malfunctions.

REFERENCES

1. UFSAR, Chapter 6.
2. UFSAR, Chapter 15.
3. Regulatory Guide 1.93, December 1974.
4. 10 CFR 50.36.

Attachment 2

BASES (continued)

APPLICABLE SAFETY ANALYSES

The initial conditions of accidents and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume ES systems are OPERABLE. The AC, DC, and AC vital electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ES systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The OPERABILITY of the AC, DC, and AC vital electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining power distribution systems OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC electrical power; and

b. A worst-case single failure.

The distribution systems satisfy Criterion 3 of the 10 CFR 50.36 (Ref. 4).

LCO

The AC, DC, and AC vital electrical power distribution systems are required to be OPERABLE. To be considered OPERABLE the AC Distribution System must include two energized main feeder buses capable of being automatically powered by a Keowee Hydro Unit. Each main feeder bus is considered OPERABLE if it is energized and connected to at least two ES power strings. Each of the three ES power strings is required to be energized. The three ES power Strings consist of the following:

s 1 &

1A) Switchgear TC	1B) Switchgear TD	1C) Switchgear TE
2A) Load Center X8	2B) Load Center X9	2C) Load Center X10
3A) 600V MCC XS1, XS4 (Unit 2 only when supplying safety related loads), and 1, 2, 3XSF	3B) 600V MCC XS2, and XS5 (Unit 2 only when supplying safety related loads)	3C) 600V MCC XS3, and XS6 (Unit 2 only when supplying safety related loads)
4A) 208V MCC XS1 and 1, 2, 3XSF	4B) 208V MCC XS2	4C) 208V MCC XS3