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March 22, 2004

U.S. Nuclear Regulatory Commission
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Subject: Duke Energy Corporation
Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413 and 50-414
Technical Specification Bases Changes

Pursuant to 10CFR 50.4, please find attached changes to the Catawba Nuclear Station Technical Specification Bases. These Bases changes were made according to the provisions of 10CFR 50.59.

Any questions regarding this information should be directed to L. J. Rudy, Regulatory Compliance, at (803) 831-3084.

I certify that I am a duly authorized officer of Duke Energy Corporation and that the information contained herein accurately represents changes made to the Technical Specification Bases since the previous submittal.

Dhiaa M. Jamil

Attachment

A001

xc: L. A. Reyes, Regional Administrator
U.S. Nuclear Regulatory Commission, Region II

S. E. Peters, Project Manager
U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation, Mail Stop 0-8-G9

E. G. Guthrie
Senior Resident Inspector
Catawba Nuclear Station

DUKE ENERGY CORPORATION
Catawba Nuclear Station
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March 22, 2004

Re: Catawba Nuclear Station
Technical Specifications (TS) Manual

Please replace the corresponding pages in your copy of the Catawba Technical Specifications Manual as follows:

REMOVE THESE PAGES	INSERT THESE PAGES
List of Effective Pages	
Pages 31 & 32	Pages 31 & 32
Tab 3.8.7	
B 3.8.7-1 - B 3.8.7-3	B 3.8.7-1 - B 3.8.7-4
Tab 3.8.8	
B 3.8.8-1 – B 3.8.8-2	B 3.8.8-1 – B 3.8.8-2

If you have any questions concerning the contents of this Technical Specification update, contact Jill Ferguson at (803) 831-3938.

FOR

Lee Keller
Manager, Regulatory Compliance

Page Number	Amendment	Revision Date
B 3.8.4-2	Revision 1	2/26/99
B 3.8.4-3	Revision 0	9/30/98
B 3.8.4-4	Revision 1	4/27/99
B 3.8.4-5	Revision 1	2/18/02
B 3.8.4-6	Revision 2	11/5/03
B 3.8.4-7	Revision 5	11/5/03
B 3.8.4-8	Revision 3	11/5/03
B 3.8.4-9	Revision 4	11/5/03
B 3.8.4-10	Revision 0	11/5/03
B 3.8.5-1	Revision 0	9/30/98
B 3.8.5-2	Revision 2	7/29/03
B 3.8.5-3	Revision 1	7/29/03
B 3.8.6-1	Revision 0	9/30/98
B 3.8.6-2	Revision 0	9/30/98
B 3.8.6-3	Revision 0	9/30/98
B 3.8.6-4	Revision 0	9/30/98
B 3.8.6-5	Revision 0	9/30/98
B 3.8.6-6	Revision 0	9/30/98
B 3.8.6-7	Revision 0	9/30/98
B 3.8.7-1	Revision 0	9/30/98
B 3.8.7-2	Revision 1	3/15/04
B 3.8.7-3	Revision 2	3/15/04
B 3.8.7-4	Revision 0	3/15/04
B 3.8.8-1	Revision 0	9/30/98
B 3.8.8-2	Revision 1	3/15/04
B 3.8.8-3	Revision 2	7/29/03
B 3.8.8-4	Revision 0	7/29/03
B 3.8.9-1	Revision 0	9/30/98
B 3.8.9-2	Revision 0	9/30/98
B 3.8.9-3	Revision 0	9/30/98
B 3.8.9-4	Revision 0	9/30/98
B 3.8.9-5	Revision 0	9/30/98
B 3.8.9-6	Revision 0	9/30/98

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B 3.8.9-7	Revision 0	9/30/98
B 3.8.9-8	Revision 0	9/30/98
B 3.8.9-9	Revision 1	2/26/99
B 3.8.9-10	Revision 1	2/26/99
B 3.8.10-1	Revision 0	9/30/98
B 3.8.10-2	Revision 0	9/30/98
B 3.8.10-3	Revision 2	7/29/03
B 3.8.10-4	Revision 1	7/29/03
B 3.9.1-1	Revision 0	9/30/98
B 3.9.1-2	Revision 1	7/29/03
B 3.9.1-3	Revision 1	7/29/03
B 3.9.2-1	Revision 1	5/16/02
B 3.9.2-2	Revision 1	7/29/03
B 3.9.2-3	Revision 1	7/29/03
B 3.9.2-4	Revision 1	7/29/03
B 3.9.2-5	Revision 1	7/29/03
B 3.9.3-1	Revision 2	4/23/02
B 3.9.3-2	Revision 1	4/23/02
B 3.9.3-3	Revision 1	4/23/02
B 3.9.3-4	Revision 1	4/23/02
B 3.9.3-5	Revision 1	4/23/02
B 3.9.4-1	Revision 0	9/30/98
B 3.9.4-2	Revision 2	7/29/03
B 3.9.4-3	Revision 1	7/29/03
B 3.9.4-4	Revision 1	7/29/03
B 3.9.5-1	Revision 0	9/30/98
B 3.9.5-2	Revision 2	7/29/03
B 3.9.5-3	Revision 1	7/29/03
B 3.9.5-4	Revision 1	7/29/03
B 3.9.6-1	Revision 0	9/30/98
B 3.9.6-2	Revision 0	9/30/98
B 3.9.6-3	Revision 0	9/30/98

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Inverters—Operating

BASES

BACKGROUND

The inverters are the preferred source of power for the AC vital buses because of the stability and reliability they achieve. The function of the inverter is to provide AC electrical power to the vital buses. The inverters can be powered from a station battery charger or from the station battery. The station battery provides an uninterruptible power source for the instrumentation and controls for the Reactor Protective System (RPS) and the Engineered Safety Feature Actuation System (ESFAS). Specific details on inverters and their operating characteristics are found in the UFSAR, Chapter 8 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, Chapter 6 (Ref. 2) and Chapter 15 (Ref. 3), assume Engineered Safety Feature systems are OPERABLE. The inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the RPS and ESFAS instrumentation and controls 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 inverters is consistent with the initial assumptions of the accident analyses and is based on meeting the design basis of the unit. This includes maintaining required AC vital buses OPERABLE during accident conditions in the event of:

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

b. A worst case single failure.

Inverters are a part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36 (Ref. 4).

BASES

LCO

The inverters ensure the availability of AC electrical power for the systems instrumentation required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA.

Maintaining the required inverters OPERABLE ensures that the redundancy incorporated into the design of the RPS and ESFAS instrumentation and controls is maintained. The four inverters (two per train and one for each channel) ensure an uninterruptible supply of AC electrical power to the AC vital buses even if the 4.16 kV safety buses are de-energized.

Two swing inverters (one per train) are available to replace a channel-related inverter and supply Class 1E power to its associated channel-related AC vital bus.

Operable inverters require the associated vital bus to be powered by the inverter with output voltage and frequency within tolerances, and power input to the inverter from a 125 VDC station battery.

APPLICABILITY

The inverters 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 AOOs or abnormal transients; and

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

Inverter requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.8, "Inverters—Shutdown."

ACTIONS

A.1

With a required inverter inoperable, its associated AC vital bus becomes inoperable until it is manually re-energized from its voltage regulated transformer, or the swing inverter associated with its train.

For this reason a Note has been included in Condition A requiring the entry into the Conditions and Required of LCO 3.8.9, "Distribution Systems—Operating." This ensures that the vital bus is re-energized within 2 hours.

BASES

ACTIONS (continued)

Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24 hour limit is based upon engineering judgment, taking into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability. This has to be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems such a shutdown might entail. When the AC vital bus is powered from its voltage regulated transformer, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC vital buses is the preferred source for powering instrumentation trip setpoint devices.

If the channel-related inoperable inverter is replaced by its train's swing inverter, the 24 hour limit does not apply (unless the swing inverter is also inoperable).

B.1 and B.2

If the inoperable devices or components cannot be restored to OPERABLE status within the required Completion Time, 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 6 hours and to MODE 5 within 36 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 plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital bus energized from the inverter. The verification of proper indicated voltage output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital buses. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

REFERENCES

1. UFSAR, Chapter 8.

2. UFSAR, Chapter 6.

3. UFSAR, Chapter 15.

4. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.8 Inverters—Shutdown

BASES

BACKGROUND

A description of the inverters is provided in the Bases for LCO 3.8.7, "Inverters—Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the UFSAR, Chapter 6 (Ref. 1) and Chapter 15 (Ref. 2), assume Engineered Safety Feature systems are OPERABLE. The DC to AC inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the Reactor Protective System and Engineered Safety Features Actuation System instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum inverters to each AC vital bus during MODES 5 and 6 ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is available to mitigate events postulated during shutdown, such as a fuel handling accident.

The inverters were previously identified as part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36 (Ref. 3).

LCO

The inverters ensure the availability of electrical power for the instrumentation for systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. At least two AC vital buses on one train energized

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BASES

LCO (continued)

by their associated battery powered inverters provide uninterruptible supply of AC electrical power to associated loads even if the 4.16 kV safety buses are de-energized. OPERABILITY of the inverters requires that the AC vital bus be powered by its channel-related inverter, or swing inverter. When the redundant train of Class 1E AC vital bus electrical power distribution subsystem is required by LCO 3.8.10, the power source for these AC vital buses may consist of 1) the associated channel-related inverter powered by its associated battery; 2) the constant voltage source transformer; or 3) a swing inverter powered by the channel-related inverter's battery. This ensures the availability of sufficient power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

APPLICABILITY

The inverters required to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

Inverter requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.7.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

If two trains are required by LCO 3.8.10, "Distribution Systems—Shutdown," the remaining OPERABLE Inverters may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for positive reactivity additions. By the allowance of the option to declare required features inoperable with the associated inverter(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances,