DUKE ENERGY®

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April 17, 2013

U.S. Nuclear Regulatory Commission
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Subject: Duke Energy Carolinas, LLC
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 Technical Specification 5.5.14, "Technical Specifications (TS) Bases Control Program."

Any questions regarding this information should be directed to Larry Rudy, Regulatory Affairs, at (803) 701-3084.

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

Kelvin Henderson

Attachment

A001
NRR

xc: V. M. McCree, Regional Administrator
U. S. Nuclear Regulatory Commission
Region II
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, GA 30303-1257

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NRC Project Manager (CNS)
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G. A. Hutto, Senior Resident Inspector
Catawba Nuclear Station

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York, SC 29745

April 17, 2013

Re: Catawba Nuclear Station
Technical Specifications Bases

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

REMOVE THESE PAGES	INSERT THESE PAGES
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If you have any questions concerning the contents of this Technical Specification update, contact Kristi Byers at (803)701-3758.

Randy Hart
Manager, Regulatory Compliance

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B 3.1.7-3	Revision 2	1/08/04
B 3.1.7-4	Revision 2	1/08/04
B 3.1.7-5	Revision 2	1/08/04
B 3.1.7-6	Revision 2	1/08/04
B 3.1.8-1 thru B 3.1.8-6	Revision 2	5/05/11
B 3.2.1-1 thru B 3.2.1.-11	Revision 4	5/05/11
B 3.2.2-1 thru B 3.2.2-10	Revision 3	5/05/11
B 3.2.3-1 thru B 3.2.3-4	Revision 2	5/05/11
B 3.2.4-1 thru B 3.2.4-7	Revision 2	5/05/11
B 3.3.1-1 thru B.3.3.1-55	Revision 6	5/26/11
B 3.3.2-1 thru B 3.3.2-49	Revision 9	5/05/11
B 3.3.3-1 thru B.3.3.3-16	Revision 5	08/02/12
B 3.3.4-1 thru B 3.3.4-5	Revision 2	5/05/11

B 3.3.5-1 thru B 3.3.5-6	Revision 2	5/05/11
B 3.3.6-1 thru B 3.3.6-5	Revision 6	08/02/12
B 3.3.9-1 thru B 3.3.9-5	Revision 2	5/05/11
B 3.4.1-1 thru B 3.4.1-5	Revision 3	5/05/11
B 3.4.2-1	Revision 0	9/30/98
B 3.4.2-2	Revision 0	9/30/98
B 3.4.2-3	Revision 0	9/30/98
B 3.4.3-1 thru B 3.4.3-6	Revision 2	5/05/11
B 3.4.4-1 thru B 3.4.4-3	Revision 2	5/05/11
B 3.4.4-2	Revision 1	1/13/05
B 3.4.4-3	Revision 0	9/30/98
B 3.4.5-1 thru B 3.4.5-6	Revision 3	5/05/11
B 3.4.6-1 thru B 3.4.6-5	Revision 4	5/05/11
B 3.4.7-1 thru B 3.4.7-5	Revision 5	5/05/11
B 3.4.8-1 thru B 3.4.8-3	Revision 3	5/05/11
B 3.4.9-1 thru B 3.4.9-5	Revision 3	08/02/12
B 3.4.10-1	Revision 1	3/4/04
B 3.4.10-2	Revision 0	9/30/98
B 3.4.10-3	Revision 1	3/4/04
B 3.4.10-4	Revision 2	10/30/09
B 3.4.11-1 thru B 3.4.11-7	Revision 4	5/05/11
B 3.4.12-1 thru B 3.4.12-13	Revision 4	5/05/11
B 3.4.13-1 thru B 3.4.13-7	Revision 6	5/05/11
B 3.4.14-1 thru B 3.4.14-6	Revision 3	5/05/11

B 3.4.15-1 thru B 3.4.15-10	Revision 6	5/05/11
B 3.4.16-1 thru B 3.4.16-5	Revision 4	10/23/12
B 3.4.17-1 thru B 3.4.17-3	Revision 2	5/05/11
B 3.4.18-1	Revision 0	1/13/05
B 3.4.18-2	Revision 0	1/13/05
B 3.4.18-3	Revision 1	3/18/08
B 3.4.18-4	Revision 0	1/13/05
B 3.4.18-5	Revision 0	1/13/05
B 3.4.18-6	Revision 0	1/13/05
B 3.4.18-7	Revision 0	1/13/05
B 3.4.18-8	Revision 1	3/18/08
B 3.5.1-1 thru B 3.5.1-8	Revision 3	5/05/11
B 3.5.2-1 thru B 3.5.2-10	Revision 3	5/05/11
B 3.5.3-1	Revision 0	9/30/98
B 3.5.3-2	Revision 1	4/29/04
B 3.5.3-3	Revision 1	4/29/04
B 3.5.4-1 thru B.3.5.4-6	Revision 4	5/05/11
B 3.5.5-1 thru B 3.5.5-4	Revision 1	5/05/11
B 3.6.1-1	Revision 1	7/31/01
B 3.6.1-2	Revision 1	7/31/01
B 3.6.1-3	Revision 1	7/31/01
B 3.6.1-4	Revision 1	7/31/01
B 3.6.1-5	Revision 1	7/31/01
B 3.6.2-1 thru B 3.6.2-8	Revision 2	5/05/11
B 3.6.3-1 thru B 3.6.3-14	Revision 4	5/05/11
B 3.6.4-1 thru B 3.6.4-4	Revision 2	5/05/11

B 3.6.5-1 thru B 3.6.5-4	Revision 2	5/05/11
B 3.6.6-1 thru B 3.6.6-7	Revision 6	5/05/11
B 3.6.8-1 thru B 3.6.8-5	Revision 3	5/05/11
B 3.6.9-1 thru B 3.6.9-5	Revision 6	5/05/11
B 3.6.10-1 thru B 3.6.10-6	Revision 2	5/05/11
B 3.6.11-1 thru B 3.6.11-6	Revision 5	5/05/11
B 3.6.12-1 thru B 3.6.12-11	Revision 5	5/05/11
B 3.6.13-1 thru B 3.6.13-9	Revision 4	5/05/11
B 3.6.14-1 thru B 3.6.14-5	Revision 1	5/05/11
B 3.6.15-1 thru B 3.6.15-4	Revision 1	5/05/11
B 3.6.16-1 thru B 3.6.16-4	Revision 3	5/05/11
B 3.6.17-1	Revision 1	3/13/08
B 3.6.17-2	Revision 0	9/30/98
B 3.6.17-3	Revision 0	9/30/98
B 3.6.17-4	Revision 0	9/30/98
B 3.6.17-5	Revision 1	3/13/08
B 3.7.1-1	Revision 0	9/30/98
B 3.7.1-2	Revision 0	9/30/98
B 3.7.1-3	Revision 0	9/30/98
B 3.7.1-4	Revision 1	10/30/09
B 3.7.1-5	Revision 1	10/30/09
B 3.7.2-1	Revision 0	9/30/98
B 3.7.2-2	Revision 0	9/30/98
B 3.7.2-3	Revision 2	6/23/10
B 3.7.2-4	Revision 1	9/08/08
B 3.7.2-5	Revision 3	10/30/09

B 3.7.3-1	Revision 0	9/30/98
B 3.7.3-2	Revision 0	9/30/98
B 3.7.3-3	Revision 0	9/30/98
B 3.7.3-4	Revision 0	9/30/98
B 3.7.3-5	Revision 1	9/08/08
B 3.7.3-6	Revision 2	10/30/09
B 3.7.4-1 thru B 3.7.4-4	Revision 2	5/05/11
B 3.7.5-1 thru B 3.7.5-9	Revision 3	5/05/11
B 3.7.6-1 thru B 3.7.6-3	Revision 4	08/02/12
B 3.7.7-1 thru B 3.7.7-5	Revision 2	5/05/11
B 3.7.8-1 thru B 3.7.8-7	Revision 3	5/05/11
B 3.7.9-1 thru B 3.7.9-4	Revision 3	5/05/11
B 3.7.10-1 thru B 3.7.10-9	Revision 9	5/05/11
B 3.7.11-1 thru B 3.7.11-4	Revision 2	5/05/11
B 3.7.12-1 thru B 3.7.12-7	Revision 6	1/09/13
B 3.7.13-1 thru B 3.7.13-5	Revision 4	5/05/11
B 3.7.14-1 thru B 3.7.14-3	Revision 2	5/05/11
B 3.7.15-1 thru B 3.7.15-4	Revision 2	5/05/11
B 3.7.16-1	Revision 2	9/27/06
B 3.7.16-2	Revision 2	9/27/06
B 3.7.16-3	Revision 2	9/27/06
B 3.7.16-4	Revision 0	9/27/06
B 3.7.17-1 thru B 3.7.17-3	Revision 2	5/05/11
B 3.8.1-1 thru B.3.8.1-29	Revision 4	5/05/11

B 3.8.2-1	Revision 0	9/30/98
B 3.8.2-2	Revision 0	9/30/98
B 3.8.2-3	Revision 0	9/30/98
B 3.8.2-4	Revision 1	5/10/05
B 3.8.2-5	Revision 2	5/10/05
B 3.8.2-6	Revision 1	5/10/05
B 3.8.3-1 thru B 3.8.3-8	Revision 4	5/05/11
B 3.8.4-1 thru B3.8.4.10	Revision 10	5/05/11
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 thru B 3.8.6-7	Revision 4	5/05/11
B 3.8.7-1 thru B 3.8.7-4	Revision 3	5/05/11
B 3.8.8-1 thru B 3.8.8-4	Revision 3	5/05/11
B 3.8.9-1 thru B 3.8.9-10	Revision 2	5/05/11
B 3.8.10-1 thru B 3.8.10-4	Revision 3	5/05/11
B 3.9.1-1 thru B 3.9.1-4	Revision 3	5/05/11
B 3.9.2-1 thru B 3.9.2.4	Revision 4	5/05/11
B 3.9.3-1 thru B 3.9.3-5	Revision 4	5/05/11
B 3.9.4-1 thru B 3.9.4-4	Revision 4	5/05/11
B 3.9.5-1 thru B 3.9.5-4	Revision 3	5/05/11
B 3.9.6-1 thru B 3.9.6-3	Revision 2	5/05/11
B 3.9.7-1 thru B 3.9.7-3	Revision 1	5/05/11

B 3.7 PLANT SYSTEMS

B 3.7.12 Auxiliary Building Filtered Ventilation Exhaust System (ABFVES)

BASES

BACKGROUND

The ABFVES consists of two independent and redundant trains. Each train consists of a heater demister section and a filter unit section. The heater demister section consists of a prefilter/moisture separator (to remove entrained water droplets) and an electric heater (to reduce the relative humidity of air entering the filter unit). The filter unit section consists of a prefilter, an upstream HEPA filter, an activated carbon adsorber (for the removal of gaseous activity, principally iodines), a downstream HEPA, and a fan. The downstream HEPA filter is not credited in the accident analysis, but serves to collect carbon fines. Ductwork, valves or dampers, and instrumentation also form part of the system. Following receipt of a safety injection (SI) signal, the system isolates non safety portions of the ABFVES and exhausts air only from the Emergency Core Cooling System (ECCS) pump rooms.

The ABFVES is normally aligned to bypass the system HEPA filters and carbon adsorbers. During emergency operations, the ABFVES dampers are realigned to the filtered position, and fans are started to begin filtration. During emergency operations, the ABFVES dampers are realigned to isolate the non-safety portions of the system and only draw air from the ECCS pump rooms, as well as the Elevation 522 pipe chase, and Elevation 543 and 560 mechanical penetration rooms.

The ABFVES is discussed in the UFSAR, Sections 6.5, 9.4, 14.4, and 15.6 (Refs. 1, 2, 3, and 4, respectively) since it may be used for normal, as well as post accident, atmospheric cleanup functions. The heaters are not required for OPERABILITY, since the laboratory test of the carbon is performed at 95% relative humidity, but have been maintained in the system to provide additional margin (Ref. 9).

BASES

APPLICABLE SAFETY ANALYSES

The design basis of the ABFVES is established by the large break LOCA. The system evaluation assumes a constant leak rate of 0.5 gpm in the ECCS pump rooms and a constant leak rate of 0.5 gpm outside the ECCS pump rooms throughout the accident. In such a case, the system limits radioactive release to within the 10 CFR 50.67 (Ref. 6) limits. The analysis of the effects and consequences of a large break LOCA is presented in Reference 4.

The ABFVES satisfies Criterion 3 of 10 CFR 50.36 (Ref. 7).

LCO

Two independent and redundant trains of the ABFVES are required to be OPERABLE to ensure that at least one is available, assuming that a single failure disables the other train coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ECCS pump rooms exceeding 10 CFR 50.67 limits in the event of a Design Basis Accident (DBA).

ABFVES is considered OPERABLE when the individual components necessary to maintain the ECCS pump rooms filtration are OPERABLE in both trains.

An ABFVES train is considered OPERABLE when its associated:

a. Fan is OPERABLE;

b. HEPA filters and carbon adsorbers are capable of performing their filtration functions; and

c. Ductwork, valves, and dampers are OPERABLE and air circulation can be maintained.

The ABFVES fans power supply is provided by buses which are shared between the two units. A shutdown unit supplying its associated emergency power source (1EMXG/2EMXH) cannot be credited for OPERABILITY of components supporting the operating unit. If normal or emergency power to the ABFVES becomes inoperable, then the Required Actions of this LCO must be entered independently for each unit that is in the MODE of applicability of the LCO.

BASES

LCO (continued)

The LCO is modified by a Note allowing the ECCS pump rooms pressure boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for ECCS pump rooms pressure boundary isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ABFVES is required to be OPERABLE consistent with the OPERABILITY requirements of the ECCS.

In MODE 5 or 6, the ABFVES is not required to be OPERABLE since the ECCS is not required to be OPERABLE.

ACTIONS

A.1

With one ABFVES train inoperable, action must be taken to restore OPERABLE status within 7 days. During this time, the remaining OPERABLE train is adequate to perform the ABFVES function.

The 7 day Completion Time is appropriate because the risk contribution is less than that for the ECCS (72 hour Completion Time), and this system is not a direct support system for the ECCS. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

Concurrent failure of two ABFVES trains would result in the loss of functional capability; therefore, LCO 3.0.3 must be entered immediately.

B.1

If the ECCS pump rooms pressure boundary is inoperable such that the ABFVES trains cannot establish or maintain the required pressure, action must be taken to restore an OPERABLE ECCS pump rooms pressure boundary within 24 hours. During the period that the ECCS pump rooms pressure boundary is inoperable, appropriate compensatory measures (consistent with the intent, as applicable, of GDC 19, 60, 64, and 10 CFR 50.67) should be utilized to protect plant personnel from potential

BASES

ACTIONS (continued)

hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ECCS pump rooms pressure boundary.

C.1 and C.2

If the ABFVES train or ECCS pump rooms pressure boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

D.1 and D.2

With one or more ABFVES heaters inoperable, the heater must be restored to OPERABLE status within 7 days. Alternatively, a report must be initiated per Specification 5.6.6, which details the reason for the heater's inoperability and the corrective action required to return the heater to OPERABLE status.

The heaters do not affect OPERABILITY of the ABFVES filter trains because carbon adsorber efficiency testing is performed at 30°C and 95% relative humidity. The accident analysis shows that site boundary radiation doses are within 10 CFR 50.67 limits during a DBA LOCA under these conditions.

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

Systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing each train once a month provides an adequate check on this system. Monthly heater operations dry out any moisture that may have accumulated in the carbon from humidity in the ambient air. Systems with heaters must be operated from the control room $\geq$ 10 continuous hours with flow through the HEPA filters and

SURVEILLANCE REQUIREMENTS (continued)

carbon adsorbers and with the heaters energized. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.7.12.2

This SR verifies that the required ABFVES testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The ABFVES filter tests are in accordance with Reference 5. The VFTP includes testing HEPA filter performance, carbon adsorbers efficiency, system flow rate, and the physical properties of the activated carbon (general use and following specific operations). The system flow rate determination and in-place testing of the filter unit components is performed in the normal operating alignment with both trains in operation. Flow through each filter unit in this alignment is approximately 30,000 cfm. The normal operating alignment has been chosen to minimize normal radiological protection concerns that occur when the system is operated in an abnormal alignment for an extended period of time. Operation of the system in other alignments may alter flow rates to the extent that the 30,000 cfm $\pm$10% specified in Technical Specification 5.5.11 will not be met. Flow rates outside the specified band under these operating alignments will not require the system to be considered inoperable.

Certain postulated failures and post accident recovery operational alignments may result in post accident system operation with only one train of ABFVES in a "normal" alignment. Under these conditions system flow rate is expected to increase above the normal flow band specified in Technical Specification 5.5.11. An analysis has been performed which conservatively predicts the maximum flow rate under these conditions is approximately 37,000 cfm. 37,000 cfm corresponds to a face velocity of approximately 48 ft/min that is significantly more than the normal 40 ft/min velocity specified in ASTM D3803-1989 (Ref. 10). Therefore, the laboratory test of the carbon penetration is performed in accordance with ASTM D3803-1989 and Generic Letter 99-02 at a face velocity of 48 ft/min. These test results are to be adjusted for a 2.27 inch bed using the methodology presented in ASTM D3803-1989 prior to comparing them to the Technical Specification 5.5.11 limit. Specific test Frequencies and additional information are discussed in detail in the VFTP.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.12.3

This SR verifies that each ABFVES train starts and operates with flow through the HEPA filters and carbon adsorbers on an actual or simulated actuation signal. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.7.12.4

This SR verifies the pressure boundary integrity of the ECCS pump rooms. The following rooms are considered to be ECCS pump rooms (with respect to the ABFVES): centrifugal charging pump rooms, safety injection pump rooms, residual heat removal pump rooms, and the containment spray pump rooms. Although the containment spray system is not normally considered an ECCS system, it is included in this ventilation boundary because of its accident mitigation function which requires the pumping of post accident containment sump fluid. The Elevation 522 pipe chase area is also maintained at a negative pressure by the ABFVES. Since the Elevation 543 and 560 mechanical penetration rooms communicate directly with the Elevation 522 pipe chase area, these penetration rooms are also maintained at a negative pressure by the ABFVES. The ability of the system to maintain the ECCS pump rooms at a negative pressure, with respect to potentially unfiltered adjacent areas, is periodically tested to verify proper functioning of the ABFVES. Upon receipt of a safety injection signal to initiate LOCA operation, the ABFVES is designed to maintain a slight negative pressure in the ECCS pump rooms, with respect to adjacent areas, to prevent unfiltered LEAKAGE. The ABFVES will continue to operate in this mode until the safety injection signal is reset. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

BASES

REFERENCES

1. UFSAR, Section 6.5.

2. UFSAR, Section 9.4.

3. UFSAR, Section 14.4.

4. UFSAR, Section 15.6.

5. Regulatory Guide 1.52 (Rev. 2).

6. 10 CFR 50.67.

7. 10 CFR 50.36, Technical Specifications, (c)(2)(ii).

8. Not used.

9. Catawba Nuclear Station License Amendments 90/84 for Units 1/2, August 23, 1991.

10. ASTM D3803-1989.