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A Duke Energy Company

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October 9, 2001

U.S. Nuclear Regulatory Commission
Document Control Desk
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Subject: Duke Energy Corporation
Catawba Nuclear Station
Docket Nos. 50-413 and 50-414
UFSAR/Selected Licensee Commitment Changes

Pursuant to 10CFR 50.71(e), please find attached changes to the Catawba Nuclear Station Selected Licensee Commitments Manual. This document constitutes Chapter 16 of the Updated Final Safety Analysis Report (UFSAR).

Any questions regarding this information should be directed to A. P. Jackson, Regulatory Compliance, at (803) 831-3742.

I certify that I am a duly authorized officer of Duke Energy Corporation, and that the information contained herein accurately represents changes made to Chapter 16 of the UFSAR since the previous submittal.

Gary R. Peterson

Attachment

A053

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

C. P. Patel, Project Manager
U.S. Nuclear Regulatory Commission
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October 9, 2001

RE: Catawba Nuclear Station
Selected Licensee Commitments Manual
Revision Date 10/5/01

Attached are revisions to the Catawba Nuclear Station Selected Licensee Commitments Manual. Please remove and replace the following pages:

REMOVE	**INSERT**
LIST OF EFFECTIVE PAGES	
Pages 5 & 6	Pages 5 & 6
TAB 16.9	
Chapter 16.9-7, pages 1-2 dated 03/09/00	Chapter 16.9-7, pages 1-2 dated 10/05/01
Chapter 16.9-9, pages 1-2 dated 03/09/00	Chapter 16.9-9, pages 1-2 dated 10/05/01
Chapter 16.9-11, pages 1-4 dated 08/15/01	Chapter 16.9-11, pages 1-4 dated 10/05/01
Chapter 16.9-12, pages 1-4 dated 08/15/01	Chapter 16.9-12, pages 1-5 dated 10/05/01

If you have any questions concerning the contents of this package update, contact Toni Pasour at (803) 831-3566.

Gary D. Gilbert
Regulatory Compliance Manager

Attachments

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Tab 16.10

Tab 16.11

16.9 AUXILIARY SYSTEMS

16.9-7 BORATION SYSTEMS FLOW PATHS – SHUTDOWN

COMMITMENT:

As a minimum, one of the following boron injection flow paths shall be OPERABLE and capable of being powered from an OPERABLE emergency power source:

a. A flow path from the boric acid tank via a boric acid transfer pump and a charging pump to the Reactor Coolant System if the boric acid storage tank in SLC 16.9.11a. is OPERABLE, or

b. The flow path from the refueling water storage tank via a charging pump to the Reactor Coolant System if the refueling water storage tank in SLC 16.9.11b. is OPERABLE, or

c. The flow path from the refueling water storage tank via one RHR pump (Notes 1, 2) to the Reactor Coolant System through at least two RCS cold legs is OPERABLE in MODE 6 with the water level $\geq$ 23 feet above the reactor vessel flange AND the refueling water storage tank OPERABLE per SLC 16.9.11b. The RHR pump may not be the pump that is being applied to meet LCO 3.9.4, or

d. The flow path from the refueling water storage tank via one SI pump (Notes 1, 2) to the Reactor Coolant System through four RCS cold legs is OPERABLE in MODE 6 with the reactor vessel head removed AND the refueling water storage tank OPERABLE per SLC 16.9.11b.

Notes:
1. Since BDMS is inoperable when the RHR and SI pump options are used, the operator must log BDMS inoperable and enter the appropriate action per Technical Specification 3.9.2.
2. This option is technically approved for use in satisfying the SLC for boration flowpath requirements; however, operating and surveillance procedures will depend on specific outage schedule and plant configuration. Therefore, before use of this option is invoked, the operating and surveillance procedures needed to ensure compliance must be approved and in place.

APPLICABILITY:

MODE 4 with any RCS cold leg temperature $\leq$ 285°F,
MODES 5 and 6.

REMEDIAL ACTION:

With none of the above flow paths OPERABLE or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

TESTING REQUIREMENTS:

At least one of the above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that the temperature of the heated portion of the flow path is greater than or equal to 65°F when a flow path from the boric acid tanks is used, and

b. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

REFERENCES:

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.

BASES:

The Boration System Flow Paths ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include a flow path and boric acid transfer pump.

In MODE 4 with any RCS cold leg temperature ≤ 285°F, and in MODES 5 and 6, one Boron Injection flow path is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single Boron Injection flow path becomes inoperable. The boration capability of one path, in association with a charging pump, RHR pump, or SI pump, and borated water source, is sufficient to provide a SHUTDOWN MARGIN of 1.3% Δk/k after xenon decay and cooldown to 200°F and of 1% Δk/k after xenon decay and cooldown from 200°F to 68°F.

16.9 AUXILIARY SYSTEMS

16.9-9 BORATION SYSTEMS PUMPS – SHUTDOWN

COMMITMENT:

a. One charging pump in the boron injection flow path required by SLC 16.9.7 shall be OPERABLE and capable of being powered from an OPERABLE emergency power source, or

b. One RHR pump (Notes 1, 2) in the boron injection flow path required by SLC 16.9.7 shall be OPERABLE and capable of being powered by an OPERABLE emergency power source, or

c. One SI pump (Notes 1, 2) in the boron injection flow path required by SLC 16.9.7 shall be OPERABLE and capable of being powered by an OPERABLE emergency power source.

Notes:
1. Since BDMS is inoperable when the RHR and SI pump options are used, the operator must log BDMS inoperable and enter the appropriate action per Technical Specification 3.9.2.
2. This option is technically approved for use in satisfying the SLC for boration pump requirements; however, operating and surveillance procedures will depend on specific outage schedule and plant configuration. Therefore, before use of this option is invoked, the operating and surveillance procedures needed to ensure compliance must be approved and in place.

APPLICABILITY:

MODE 4 with any RCS cold leg temperature ≤285°F,
MODES 5 and 6.

REMEDIAL ACTION:

With no charging pump, or RHR pump, or SI pump OPERABLE or capable of being powered from an OPERABLE emergency power source, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

TESTING REQUIREMENTS:

The above required charging pump, or RHR pump, or SI pump shall be demonstrated OPERABLE by testing in accordance with the Inservice Test Program.

REFERENCES:

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.

BASES:

The Boration System Pumps ensures that negative reactivity control is available during each mode of facility operation.

In MODE 4 with any RCS cold leg temperature ≤ 285°F, and in MODES 5 and 6, one charging pump, one RHR pump, or one SI pump is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single pump becomes inoperable. The boration capability of one charging pump, RHR pump, or SI pump in association with a flow path and borated water source, is sufficient to provide a SHUTDOWN MARGIN of 1.3% Δk/k after xenon decay and cooldown to 200°F and of 1% Δk/k after xenon decay and cooldown from 200°F to 68°F.

When the temperature of one or more RCS cold legs drops below 285°F in Mode 4, the potential for low temperature overpressurization of the reactor vessel makes it necessary to render all but one charging pump or safety injection pump inoperable. The Technical Specification 3.4.12 limitation for a maximum of one centrifugal charging or safety injection pump to be OPERABLE and the associated Surveillance Requirement to verify a maximum of one charging pump or one safety injection pump is capable of injecting into the RCS below 285°F provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

16.9 AUXILIARY SYSTEMS

16.9-11 BORATION SYSTEMS BORATED WATER SOURCE – SHUTDOWN

COMMITMENT:

As a minimum, one of the following borated water sources shall be OPERABLE:

a. A boric acid tank with:

1) A minimum contained borated water volume as presented in the CORE OPERATING LIMITS REPORT,

2) A minimum boron concentration as presented in the CORE OPERATING LIMITS REPORT, and

3) A minimum solution temperature of 65°F.

b. The refueling water storage tank with:

1) A minimum contained borated water volume as presented in the CORE OPERATING LIMITS REPORT,

2) A minimum boron concentration as presented in the CORE OPERATING LIMITS REPORT, and

3) A minimum solution temperature of 70°F.

APPLICABILITY:

MODE 4 with any RCS cold leg temperature ≤ 285°F,
MODES 5 and 6.

REMEDIAL ACTION:

With no borated water source OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes.

TESTING REQUIREMENTS:

The above required borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

TESTING REQUIREMENTS (con't)

1) Verifying the boron concentration of the water,

2) Verifying the contained borated water volume, and

3) Verifying the boric acid tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the refueling water storage tank temperature when it is the source of borated water and the outside air temperature is less than 70°F.

REFERENCES:

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.
2. Core Operating Limits Report (COLR), Latest Release.

BASES:

The Boration System Borated Water Sources ensures that negative reactivity control is available during each mode of facility operation.

In MODE 4 with any RCS cold leg temperature ≤ 285°F, and in MODES 5 and 6, one Borated Water Source is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity changes in the event the single Borated Water Source becomes inoperable. The boration capability of one borated water source, in association with a flow path and charging pump, is sufficient to provide a SHUTDOWN MARGIN (SDM) of 1.3% Δk/k in MODE 4 and 1% Δk/k in MODES 5 and 6 after xenon decay and cooldown to 68°F. This temperature range envelops temperatures in MODES 5 and 6.

The SLC commitment values are presented in the COLR as: (1) the minimum boron concentrations and minimum volumes in the boric acid tank or the RWST necessary to attain and maintain SDM, (2) the minimum contained borated water volumes in the boric acid tank or the RWST, and (3) a curve specifying the minimum contained borated water volume in the boric acid tank near EOC. The minimum contained borated water volume includes the required volume to maintain SDM, an allowance for usable volume (to allow for a full suction pipe), instrument error, and additional margin (at least 5% of the SDM volume). The COLR specified volumes and boron concentrations satisfy SDM requirements in MODES 4-6.

BASES (con't)

Boric Acid Tank Minimum Contained Shutdown Volume

The boric acid tank minimum contained shutdown volume listed in the COLR is a summation of the volumes presented below:

Volume and concentration of boric acid solution required to maintain SDM at 68°F	Presented in the COLR
Unusable volume (14" of depth from the bottom of the BAT is required to maintain a full suction pipe)	7,230 gallons
Volume to prevent vortexing (an additional 4" of depth over the unusable volume to prevent vortexing)	2,066 gallons
Instrument error (an additional 3" of depth over the vortex prevention volume is needed to account for total loop accuracy for 1(2)NVLP-5740 and 1(2)NVLP-6070)	1,550 gallons
Additional margin (at least 5% of the BAT minimum water volume required to maintain SDM)	240 gallons

Refueling Water Storage Tank Minimum Shutdown Volume

The refueling water storage tank minimum contained shutdown volume listed in the COLR is a summation of the volumes presented below:

Volume and concentration of boric acid solution required to maintain SDM at 68°F	Presented in the COLR
Unusable volume (depth from the bottom of the tank required to maintain a full suction pipe)	13,442 gallons
Volume to prevent vortexing (an additional volume over the unusable volume to prevent vortexing)	13,247 gallons
Instrument error (an additional volume over the vortex prevention volume is needed to	

account for instrument accuracy)	11,307 gallons
Additional margin (at least 5% of the refueling water storage tank minimum water volume required to maintain SDM)	3,504 gallons

There is no difference in the REMEDIAL ACTIONS specified for borated water source inoperability due to volume, boron concentration or temperature of the BAT or RWST not within specified limits, since the station is already at shutdown conditions. Suspending all operations involving core alterations or positive reactivity changes is an immediate action that precludes dependence on these borated water sources should they become inoperable for any reason.

The required minimum temperature of $\geq$ 65°F for the boric acid tank (BAT) ensures that the minimum solubility temperature for the specified boric acid concentration of the BAT is met, with margin.

The limits on boron concentration of the RWST also ensure that the water maintained in the RWST is compatible with MODE 5 shutdown concentration borated water in the refueling canal and does not represent a potential dilution source.

The required minimum temperature of $\geq$ 70°F for the RWST ensures that the contained water temperature will be consistent with the temperature range required for Low Temperature Overpressure Protection, and also with Technical Specification 3.5.4, Refueling Water Storage Tank (ECCS), which becomes applicable in MODE 4. There is no required maximum temperature specified for use of the RWST as a borated water source because the LOCA analysis is not applicable in MODES 5 and 6, or in the lower end of MODE 4.

16.9 AUXILIARY SYSTEMS

16.9-12 BORATION SYSTEMS BORATED WATER SOURCES – OPERATING

COMMITMENT:

As a minimum, the following borated water source(s) shall be OPERABLE as required by SLC 16.9.8:

a. A boric acid tank with:

1) A minimum contained borated water volume as presented in the CORE OPERATING LIMITS REPORT,

2) A minimum boron concentration as presented in the CORE OPERATING LIMITS REPORT, and

3) A minimum solution temperature of 65°F.

b. The refueling water storage tank with:

1) A minimum contained borated water volume as presented in the CORE OPERATING LIMITS REPORT or Technical Specification Surveillance Requirement 3.5.4.2 whichever is larger,

2) A minimum boron concentration as presented in the CORE OPERATING LIMITS REPORT,

3) A minimum solution temperature of 70°F, and

4) A maximum solution temperature 100°F.

APPLICABILITY:

MODES 1, 2, and 3,
MODE 4 with all RCS cold leg temperatures > 285°F.

REMEDIAL ACTION:

a. With the boric acid tank inoperable and being used as one of the above required borated water sources, restore the system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1% $\Delta k/k$

REMEDIAL ACTION (con't)

at 200°F; restore the boric acid tank to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the refueling water storage tank inoperable due to RWST boron concentration or temperature not within acceptable limits, restore the RWST to OPERABLE status within 8 hours in compliance with Technical Specification LCO 3.5.4, REQUIRED ACTION A, or proceed to shut down in compliance with Technical Specification LCO 3.5.4, REQUIRED ACTION C.

c. With the refueling water storage tank inoperable due to RWST minimum water volume not within acceptable limits, restore the RWST to OPERABLE status within 1 hour in compliance with Technical Specification LCO 3.5.4, REQUIRED ACTION B, or proceed to shut down in compliance with Technical Specification LCO 3.5.4, REQUIRED ACTION C.

TESTING REQUIREMENTS:

Each borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1) Verifying the boron concentration in the water,

2) Verifying the contained borated water volume of the water source, and

3) Verifying the boric acid tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the refueling water storage tank temperature when the outside air temperature is either less than 70°F or greater than 100°F.

REFERENCES:

1. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.
2. Catawba Technical Specification 3.5.4, Refueling Water Storage Tank (ECCS), through Amendments 187/180.
3. Core Operating Limits Report (COLR), Latest Release.
4. Safety Analysis Inputs Manual (SAIM), Latest Release.

BASES:

The Boration System Borated Water Sources ensures that negative reactivity control is available during each mode of facility operation.

In MODES 1, 2, and 3, and MODE 4 with RCS average temperature above 285°F., a minimum of two borated water sources are required to ensure single functional capability in the event an assumed failure renders one of the sources inoperable. The boration capability of either borated water source, in association with a flow path and charging pump, is sufficient to provide a SHUTDOWN MARGIN (SDM) from expected operating conditions of 1.3% $\Delta k/k$ after xenon decay and cooldown to 285°F.

The SLC commitment values are presented in the COLR as: (1) the minimum boron concentrations and minimum volumes in the boric acid tank or RWST necessary to attain and maintain SDM, (2) the minimum contained borated water volumes in the boric acid tank or the RWST, and (3) a curve specifying the minimum contained water volume in the boric acid tank near EOC. The minimum contained water volume is based on the required volume to maintain SDM, an allowance for usable volume (to allow for a full suction pipe), instrument error, and additional margin (at least 5% of the SDM volume.) The COLR specified volumes and boron concentrations satisfy SDM requirements during MODES 1-3 and MODE 4 with RCS average temperature above 285°F.

Boric Acid Tank Minimum Contained Operating Volume

The boric acid tank minimum contained operating volume listed in the COLR is a summation of the volumes presented below:

Volume and concentration of boric acid solution required to maintain SDM at 285°F	Presented in the COLR
Unusable volume (14" of depth from the bottom of the BAT is required to maintain a full suction pipe)	7,230 gallons
Volume to prevent vortexing (an additional 4" of depth over the unusable volume to prevent vortexing)	2,066 gallons
Instrument error (an additional 3" of depth over the vortex prevention volume is needed to account for total loop accuracy for 1(2)NVLP-5740 and 1(2)NVLP-6070)	1,550 gallons

Additional margin (at least 5% of BAT minimum water volume required to maintain SDM)	854 gallons

Refueling Water Storage Tank Minimum Contained Operating Volume

The refueling water storage tank minimum contained operating volume listed in the COLR is a summation of the volumes presented below:

Volume and concentration of boric acid solution required to maintain SDM at 285°F	Presented in the COLR
Unusable volume (depth from the bottom of the tank required to maintain a full suction pipe)	13,442 gallons
Volume to prevent vortexing (an additional volume over the unusable volume to prevent vortexing)	13,247 gallons
Instrument error (an additional volume over the vortex prevention volume is needed to account for instrument accuracy)	11,307 gallons
Additional margin (at least 5% of the refueling water storage tank minimum water volume required to maintain SDM)	3,504 gallons

As documented in the Bases for Technical Specification 3.5.4, REQUIRED ACTION A.1, with RWST boron concentration or borated water temperature not within limits, they must be returned to within limits within 8 hours. Under these conditions, neither the boron injection subsystem, nor the ECCS or containment spray systems can perform their design function. Therefore, prompt operator action must be taken to restore the tank to OPERABLE condition. The 8 hour limit to restore the RWST temperature or boron concentration to within limits was developed considering the time required to change either the boron concentration or temperature and the fact that the contents of the tank are still available for injection.

As documented in the Bases for Technical Specification 3.5.4, REQUIRED ACTION B.1, with RWST inoperable for water volume not within limits, it must be restored to OPERABLE status within 1 hour. In this condition, neither the boron injection subsystem, nor the ECCS or containment spray systems can perform their design

function. Therefore, prompt operator action must be taken to restore the tank to OPERABLE condition or to place the plant in a MODE in which the RWST is not required. The short time limit of 1 hour to restore the RWST to OPERABLE status is based on this condition simultaneously affecting redundant trains.

The required minimum temperature of $\geq$ 65°F for the boric acid tank (BAT) ensures that the minimum solubility temperature for the specified boric acid concentration of the BAT is met, with margin.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value within an acceptable range for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The required temperature range for the RWST ensures that the contained water temperature will be consistent with the temperature range required for Technical Specification 3.5.4, Refueling Water Storage Tank (ECCS). This range of $\geq$ 70°F and $\leq$ 100°F is compatible with the minimum and maximum values assumed in the safety analyses.