Duke Energy®
Carolinas

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June 23, 2008

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: Duke Energy Carolinas, LLC (Duke)
Catawba Nuclear Station, Units 1 and 2
Docket Numbers 50-413 and 50-414
Proposed Technical Specifications (TS) and Bases Amendment
TS and Bases 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation"

Pursuant to 10 CFR 50.90, Duke is requesting amendments to the Catawba Facility Operating Licenses and TS. This request modifies the subject TS and Bases by changing the logic configuration of TS Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation", Function 5.b.(5), "Turbine Trip and Feedwater Isolation, Feedwater Isolation, Doghouse Water Level - High High". The existing one-out-of-one (1/1) logic per train per doghouse is being modified to a two-out-of-three (2/3) logic per train per doghouse. The proposed change will improve the overall reliability of this function and will reduce the potential for spurious actuations.

The contents of this amendment request package are as follows:

Attachment 1 provides the technical and regulatory evaluations of the proposed changes. Attachment 2 contains a marked-up version of the affected TS and Bases pages. Reprinted (clean) TS and Bases pages will be provided to the NRC prior to issuance of the approved amendments. This amendment request contains NRC commitments as discussed in Attachment 3.

Duke requests NRC approval of these proposed changes by February 28, 2009. Following NRC approval, Catawba will implement the associated modifications on a staggered basis for each unit. The Unit 1 modification will be implemented during the end-of-cycle 18 refueling outage (scheduled for Fall 2009). The Unit 2 modification will be implemented during the end-of-cycle 16 refueling outage (scheduled for Spring 2009).

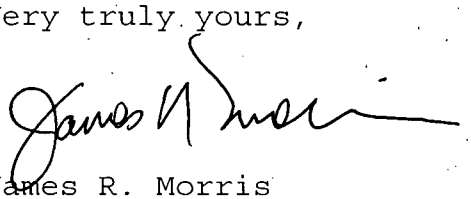
Duke is requesting a 30-day implementation period in conjunction with these amendments. Implementation of the approved amendments will require changes to the Catawba Updated Final Safety Analysis Report (UFSAR). The following UFSAR section will be impacted: 7.6.22, "Main Feedwater Flow Isolation on High Doghouse Water Level Instrumentation". Necessary UFSAR changes will be implemented and provided to the NRC in accordance with 10 CFR 50.71(e).

In accordance with Duke administrative procedures and the Quality Assurance Program Topical Report, these proposed amendments have been reviewed and approved by the Catawba Plant Operations Review Committee and by the Corporate Nuclear Safety Review Board.

Pursuant to 10 CFR 50.91, a copy of these proposed amendments is being sent to the designated official of the State of South Carolina.

Inquiries on this matter should be directed to L.J. Rudy at (803) 701-3084.

Very truly yours,



James R. Morris

LJR/s

Attachments

James R. Morris affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.

James R. Morris, Vice President

Subscribed and sworn to me: 6-23-08
Date

Notary Public

My commission expires: 7-10-2012
Date

SEAL

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RGC File
ELL-EC05O

ATTACHMENT 1

TECHNICAL AND REGULATORY EVALUATIONS

Subject: Application for License Amendment for Doghouse Water Level Instrumentation Logic Change

1. SUMMARY DESCRIPTION

2. DETAILED DESCRIPTION

3. TECHNICAL EVALUATION

4. REGULATORY EVALUATION

5. ENVIRONMENTAL CONSIDERATION

6. REFERENCES

1. SUMMARY DESCRIPTION

This evaluation supports a request to amend Operating Licenses NFP-35 (Catawba Nuclear Station Unit 1) and NFP-52 (Catawba Nuclear Station Unit 2).

TS Table 3.3.2-1, "Engineered Safety Feature Actuation System Instrumentation", delineates the required ESFAS Instrumentation functions. Function 5.b.(5) is titled "Turbine Trip and Feedwater Isolation, Feedwater Isolation, Doghouse Water Level - High High". Catawba proposes to modify the logic configuration for this function from a 1/1 configuration to a 2/3 configuration. In conjunction with this revision, changes are also proposed to the applicable TS Conditions and Surveillance Requirements (SRs) for this function to reflect the revised logic configuration.

The changes proposed in this request will result in a more reliable logic configuration for this function, as well as reduce the potential for spurious actuations of this function.

Duke requests that the NRC approve the proposed amendments based on the improvement in plant safety that will result.

2. DETAILED DESCRIPTION

The doghouses are seismic Category 1 structures located on either side of the reactor buildings. Each unit has two doghouses, designated as inboard and outboard. The primary purpose of the doghouses is to house main steam and feedwater piping that is located external to the reactor and turbine buildings, although the doghouses also contain other safety related equipment as well.

The doghouse water level instrumentation provides for the termination of forward feedwater flow in the event of a postulated pipe break in the main feedwater piping in the doghouses to prevent flooding safety related equipment essential to the safe shutdown of the plant. The level instrumentation consists of two independent and redundant trains of level switches, designated Train A and Train B, which monitor level in each of the doghouses. These switches are powered from the 125 Volt DC Vital Instrumentation and Control Power System. Each doghouse contains two level switches. One switch is assigned to each train of instrumentation. Each switch provides an alarm and a trip actuation signal. When the switch senses a flooding condition, it will initiate an alarm output at the lower setpoint and an isolation signal at the upper setpoint. A high high level detected by one out of the two switches, in either the inboard or the outboard doghouse, will initiate a doghouse isolation. This signal initiates a feedwater isolation for the specific doghouse where the high high level is detected and trips both main feedwater pumps thus causing a main turbine trip. The doghouse water level instrumentation is described in Section 7.6.22 of the Catawba UFSAR.

TS Table 3.3.2-1 specifies the requirements for the doghouse water level instrumentation. This instrumentation is required to be operable in Mode 1 and in Mode 2 except when all main feedwater isolation valves, main feedwater control valves, and associated bypass valves are closed and de-activated or isolated by a closed manual valve. The "Required Channels" column for this instrumentation specifies two channels per doghouse. Condition L governs inoperable instrumentation for this function. With one channel inoperable, the affected unit must be in Mode 3 within 6 hours. SR 3.3.2.8, an 18 month trip actuating device operational test, is the only SR specified for this function. The nominal trip setpoint for this function is 11 inches above the 577 foot floor level elevation, with an allowable value of $\leq$ 12 inches above this elevation.

The proposed changes to TS Table 3.3.2-1 are as follows:

- The "Required Channels" column of the Doghouse Water Level - High High function is changed from "2 per doghouse" to "3 per train per doghouse".

- Condition L for the Doghouse Water Level - High High function is revised to add Required Actions for the proposed 2/3 logic. These new Required Actions specify that with one channel inoperable, the inoperable channel must be placed in the tripped condition within 6 hours, or the unit must be in Mode 3 within 12 hours. In addition, a Note is added that states that the inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels.

- The "Surveillance Requirements" column of the Doghouse Water Level - High High function is changed to add two additional SRs. These are SR 3.3.2.9, which is an 18 month channel calibration, and SR 3.3.2.12, which is an 18 month actuation logic test.

Because the modifications to the instrumentation will be implemented on a staggered basis during unit refueling outages, it is necessary to actually present the TS requirements for this function as separate line items in Table 3.3.2-1. One line item will be applicable to the existing 1/1 logic configuration and one line item will be applicable to the proposed 2/3 logic configuration.

Appropriate changes are also being proposed to the TS Bases for this function, consistent with the above proposed TS changes.

3. TECHNICAL EVALUATION

Proposed modifications CD101137 (Unit 1) and CD201138 (Unit 2) will install two additional level switches per train in each doghouse, and change the 1/1 feedwater isolation per train logic to initiate on a 2/3 per train logic. After implementation of the modifications, a 2/3 doghouse water level high high condition on either train will initiate a feedwater isolation. The purpose of these modifications is to eliminate a secondary side single point vulnerability that presently exists. Under the existing design, a feedwater isolation can be inadvertently initiated if a high high doghouse level condition is sensed by one switch due to an unintended switch actuation or a switch failure.

The Catawba UFSAR, in Section 7.6.22, "Main Feedwater Flow Isolation on High Doghouse Water Level Instrumentation", Subsection 7.6.22.3, "Analysis", discusses the extent that the current design of the doghouse water level instrumentation meets the appropriate portions of IEEE 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations". Subsection 7.6.22.3.1, "General Functional Requirements", states that the instrumentation and controls associated with doghouse water level are designed with reliability and redundancy to automatically initiate their system related function. Although the existing 1/1 logic per train doghouse water level instrumentation meets these requirements, modifying the instrumentation to initiate a feedwater isolation on a 2/3 logic per train will increase the reliability of this function. Under the proposed design, a single switch failure or an inadvertent actuation will not cause an unwarranted feedwater isolation. The modifications will also provide the control room operators with indications to alert them of any level switch that is in a high high doghouse water level trip condition. The discussion in Chapter 3 of the UFSAR, Section 3.1, "Conformance with General Design Criteria", regarding a single failure causing a loss of a protection function will be alleviated by modifying the logic to 2/3, since a failure of one switch will not initiate a feedwater isolation. Also, redundancy will be enhanced, since the proposed 2/3 logic per train will allow one switch per train to be taken out of service for testing or maintenance without resulting in the loss of the minimum required redundancy.

The Doghouse Water Level - High High function is not credited in Catawba's UFSAR Chapter 15 accident analyses. Furthermore, this function is not Maintenance Rule High Safety significant.

The following discussion items are noted with respect to the proposed modifications:

- Single Failure Criterion - The existing instrumentation (1/1 logic per train) is designed such that no single failure can prevent the safety function from being accomplished. The proposed instrumentation (2/3 logic per train) will further enhance the function's capability to withstand failures, because in addition to having two trains of instrumentation in each doghouse, the proposed logic will be more reliable (i.e., each train of instrumentation will be able to perform its safety function even following the failure of one instrumentation channel).

- Component Quality and Qualification - The new instrumentation will be identical to that of the existing instrumentation. The quality assurance program under which this instrumentation is qualified includes requirements pertaining to design review, procurement, inspection, and testing to ensure that the instrumentation components are of a quality consistent with minimum maintenance requirements and low failure rates. Equipment qualification requirements for the new instrumentation will be identical to those for the existing instrumentation.

- Train Independence - Each train of doghouse water level instrumentation switches will be combined in a 2/3 logic in a terminal box inside the doghouse. Each redundant train will be physically separated and electrically isolated.

- Capability for Testing and Maintenance - The instrumentation and controls for each channel and train will be designed to facilitate testing as required by TS. The instrumentation and controls for each channel and train will be designed to facilitate the repair, replacement, and adjustment of malfunctioning components.

The proposed additions to Condition L are acceptable because they preserve the existing time requirements relative to the implementation of mitigating action in response to an inoperable channel. For a 1/1 logic per train, 6 hours are allowed to place the unit in Mode 3 in response to an inoperable channel. For a 2/3 logic per train, 6 hours are allowed to place the inoperable channel in the tripped

condition. In the unlikely event that the inoperable channel cannot be placed in the tripped condition within 6 hours, an additional 6 hours are allowed to place the unit in Mode 3. The additional 6 hours are acceptable, since even with one inoperable channel, the affected train can still perform its function (i.e., the logic becomes 2/2). The 2 hours allowed for bypassing a channel for surveillance testing are retained for the 2/3 logic per train. Consistent with the application of TS requirements, since the Required Channels for this function are specified on a per train and per doghouse basis, Condition L may be entered separately for each train and/or each doghouse, as appropriate.

The proposed additional SRs are acceptable because they will ensure that the doghouse water level instrumentation maintains a high level of reliability. SR 3.3.2.8, which is a trip actuating device operational test, is being retained for the proposed 2/3 logic configuration. SR 3.3.2.9, which is a channel calibration, will ensure that each instrumentation channel will respond to the measured parameter of doghouse water level within the required range and accuracy. SR 3.3.2.12, which is an actuation logic test, will ensure that the appropriate logic combinations are tested pursuant to the requirements of Generic Letter 96-01, "Testing of Safety-Related Logic Circuits".

4. REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

General Design Criterion 13 - Instrumentation and Control

"Instrumentation shall be provided to monitor variables and systems over their anticipated ranges for normal operation, for anticipated operational occurrences, and for accident conditions as appropriate to assure adequate safety, including those variables and systems that can affect the fission process, the integrity of the reactor core, the reactor coolant pressure boundary, and the containment and its associated systems. Appropriate controls shall be provided to maintain these variables and systems within prescribed operating ranges."

Discussion: The modifications proposed in this amendment request do not compromise the ability to monitor important variables and systems. On the contrary, the proposed modifications will increase the reliability of the doghouse water level instrumentation by revising the logic from 1/1 to 2/3. The proposed modifications will not result in the inability to monitor important reactor core, reactor coolant, or containment parameters. This criterion will continue to be met.

General Design Criterion 20 - Protection System Functions

"The protection system shall be designed (1) to initiate automatically the operation of appropriate systems including the reactivity control systems, to assure that specified acceptable fuel design limits are not exceeded as a result of anticipated operational occurrences and (2) to sense accident conditions and to initiate the operation of systems and components important to safety."

Discussion: This proposed amendment revises the doghouse water level instrumentation from a 1/1 logic to a 2/3 logic. There is no impact on the ability of this or other protection system functions to be able to automatically start and initiate the operation of systems and components important to safety. Therefore, the ability to meet this criterion is not compromised.

General Design Criterion 21 - Protection System Reliability and Testability

"The protection system shall be designed for high functional reliability and inservice testability commensurate with the safety functions to be performed. Redundancy and independence designed into the protection system shall be sufficient to assure that (1) no single failure results in loss of the protection function and (2) removal from service of any component or channel does not result in loss of the required minimum redundancy unless the acceptable reliability of operation of the protection system can be otherwise demonstrated. The protection system shall be designed to permit periodic testing of its functioning when the reactor is in operation, including a capability to test channels independently to determine failures and losses of redundancy that may have occurred."

Discussion: The doghouse water level instrumentation reliability and testability will not be compromised as a result of the requested amendment. The function's ability to perform its accident mitigation function in the event of a single failure of a protection channel will be preserved (it will actually be enhanced). Minimum redundancy requirements will continue to be met during all phases of plant operation, including testing conditions. Testing of this function will continue to be governed by TS requirements.

4.2 Precedent

The doghouse water level instrumentation function is not contained in NUREG-1431, "Standard Technical Specifications, Westinghouse Plants", as this function is plant specific. However, the proposed 2/3 logic configuration for this instrumentation is consistent with the existing instrumentation design at Duke's McGuire Nuclear Station.

4.3 Significant Hazards Consideration

The proposed amendments modify the Catawba TS to revise the logic configuration for the doghouse water level instrumentation function from 1/1 to 2/3, and make corresponding revisions to the governing Conditions and SRs.

Duke has evaluated whether or not a significant hazard consideration is involved with the proposed changes by analyzing the three standards set forth in 10 CFR 50.92(c) as discussed below:

Criterion 1:

Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The doghouse water level instrumentation is considered accident mitigation equipment. As such, changes in the logic configuration for this instrumentation cannot have an impact on the probability of an accident.

The instrumentation will continue to comply with all applicable regulatory requirements and design criteria following approval of the proposed changes (e.g., train separation, redundancy, and single failure). The instrumentation will actually be made more reliable as a result of the proposed modifications. Therefore, since the instrumentation will continue to function as designed, all plant parameters will remain within their design limits. As a result, the proposed changes will not increase the consequences of an accident.

Based on this discussion, the proposed amendments do not significantly increase the probability or consequences of an accident previously evaluated.

Criterion 2:

Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed modification to the logic configuration for the doghouse water level instrumentation will result in it being better enabled to fulfill its design function in response to accident conditions. The instrumentation will continue to meet its seismic and equipment qualification requirements. The proposed modifications do not involve a change in the methods governing normal plant operation. The change does not alter assumptions made in the safety analysis (this instrumentation is not credited in the safety analysis).

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

Criterion 3:

Does the proposed amendment involve a significant reduction in a margin of safety?

Response: No.

Margin of safety is related to the confidence in the ability of the fission product barriers to perform their accident mitigation functions. These barriers include the fuel and fuel cladding, the reactor coolant system, and the containment and containment related systems. The proposed modifications will not impact the reliability of these barriers to function. The proposed modifications will actually enhance the reliability of the doghouse water level instrumentation in responding to a feedwater line break in a doghouse. Radiological doses to plant operators or to the public will not be impacted as a result of the proposed change. The affected instrumentation is not credited in the UFSAR Chapter 15 accident analyses, nor is it Maintenance Rule High Safety significant.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Duke concludes that the proposed amendments do not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of no significant hazards consideration is justified.

4.4 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

5. ENVIRONMENTAL CONSIDERATION

Duke has determined that the proposed amendments do change requirements with respect to the installation or use of a facility component located within the restricted area, as defined by 10 CFR 20. It also represents a change to surveillance requirements. Duke has evaluated the proposed changes and has determined that they do not involve: (1) a significant hazards consideration, (2) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (3) a significant increase in individual or cumulative occupational radiation exposures. Accordingly, the proposed amendments meet the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendments.

6. REFERENCES

1. IEEE 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations".

2. Catawba Nuclear Station Technical Specifications, Units 1 and 2, through Amendments 240/235.

3. Catawba Updated Final Safety Analysis Report, dated April 24, 2006, Section 7.6.22, "Main Feedwater Flow Isolation on High Doghouse Water Level Instrumentation".

ATTACHMENT 2

MARKED-UP TS AND BASES PAGES

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No (241) which are attached hereto, are hereby incorporated into this renewed operating license. Duke Energy Carolinas, LLC shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than December 6, 2024, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

(4) Antitrust Conditions

Duke Energy Carolinas, LLC shall comply with the antitrust conditions delineated in Appendix C to this renewed operating license.

(5) Fire Protection Program (Section 9.5.1, SER, SSER #2, SSER #3, SSER #4, SSER #5)*

Duke Energy Carolinas, LLC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report, as amended, for the facility and as approved in the SER through Supplement 5, subject to the following provision:

> The licensee may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

*The parenthetical notation following the title of this renewed operating license condition denotes the section of the Safety Evaluation Report and/or its supplement wherein this renewed license condition is discussed.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No (236) which are attached hereto, are hereby incorporated into this renewed operating license. Duke Energy Carolinas, LLC shall operate the facility in accordance with the Technical Specifications.

(3) Updated Final Safety Analysis Report

The Updated Final Safety Analysis Report supplement submitted pursuant to 10 CFR 54.21(d), as revised on December 16, 2002, describes certain future activities to be completed before the period of extended operation. Duke shall complete these activities no later than February 24, 2026, and shall notify the NRC in writing when implementation of these activities is complete and can be verified by NRC inspection.

The Updated Final Safety Analysis Report supplement as revised on December 16, 2002, described above, shall be included in the next scheduled update to the Updated Final Safety Analysis Report required by 10 CFR 50.71(e)(4), following issuance of this renewed operating license. Until that update is complete, Duke may make changes to the programs described in such supplement without prior Commission approval, provided that Duke evaluates each such change pursuant to the criteria set forth in 10 CFR 50.59 and otherwise complies with the requirements in that section.

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INSERTS FOR TS AND TS BASES PAGES

INSERT 1

OR		
L.2.1	----------NOTES---------- 1. Only applicable to 2/3 logic. 2. The inoperable channel may be bypassed for up to 2 hours for surveillance testing of other channels. ----------	
	Place channel in trip.	6 hours
	OR	
L.2.2	Be in MODE 3.	12 hours

INSERT 2

For a 2/3 logic, if one channel is inoperable, 6 hours are allowed to restore the channel to OPERABLE status or to place it in the tripped condition. Therefore, failure of one channel places the Function in a two-out-of-two configuration. One channel must be tripped to place the Function in a one-out-of-two configuration that satisfies redundancy requirements. Alternatively, if the inoperable channel is not restored to OPERABLE status or placed in the tripped condition within 6 hours, the unit must be placed in MODE 3 within 12 hours.

INSERT 3

For a 1/1 logic, Required Action L.1 is modified by a Note that allows one channel to be bypassed for up to 2 hours for surveillance testing provided the other channel is OPERABLE. For a 2/3 logic, Required Action L.2.1 is modified by a Note that allows the inoperable channel to be bypassed for up to 2 hours for surveillance testing of other channels.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
J. One channel inoperable.	J.1 ----------NOTE---------- The inoperable channel may be bypassed for up to 4 hours for surveillance testing of other channels. ---------- Place channel in trip.	6 hours
	OR	
	J.2 Be in MODE 3.	12 hours
K. One Main Feedwater Pumps trip channel inoperable.	K.1 Place channel in trip.	1 hour
	OR	
	K.2 Be in MODE 3.	7 hours
L. One channel inoperable.	L.1 ----------NOTE---------- (5) (2.) One channel may be bypassed for up to 2 hours for surveillance testing provided the other channel is OPERABLE. ---------- Be in MODE 3.	6 hours

(continued)

1. Only applicable to 1/1 logic.

INSERT 1

Table 3.3.2-1 (page 4 of 5)
Engineered Safety Feature Actuation System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	CONDITIONS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE	NOMINAL TRIP SETPOINT
(2) SG Water Level- High High (P-14)	1,2(e),3(e)	4 per SG	D	SR 3.3.2.1 SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.5 SR 3.3.2.6 SR 3.3.2.9 SR 3.3.2.10	≤ 85.6% (Unit 1) ≤ 78.9% (Unit 2)	83.9% (Unit 1) 77.1% (Unit 2)
(3) Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements. See Item 5.b.(1) for Applicable MODES.					
(4) Tavg-Low	1,2(e)	4	J	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9	≥ 561°F	564°F
coincident with Reactor Trip, P-4	Refer to Function 8.a (Reactor Trip, P-4) for all initiation functions and requirements.					
(5) Doghouse WaterLevel - High High	1,2(e)	(1/1 logic) 2 per doghouse (2/3 logic) 3 per train per doghouse	L	(1/1 logic) SR 3.3.2.8 (2/3 logic) SR 3.3.2.8 SR 3.3.2.9 SR 3.3.2.12	≤ 12 inches above 577 ft floor level	11 inches above 577 ft floor level
6. Auxiliary Feedwater						
a. Automatic Actuation Logic and Actuation Relays	1,2,3	2 trains	H	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
b. SG Water Level - Low Low	1,2,3	4 per SG	D	SR 3.3.2.1 SR 3.3.2.5 SR 3.3.2.9 SR 3.3.2.10	≥ 9% (Unit 1) ≥ 35.1% (Unit 2)	10.7% (Unit 1) 36.8% (Unit 2)
c. Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					
d. Loss of Offsite Power	1,2,3	3 per bus	D	SR 3.3.2.3 SR 3.3.2.9 SR 3.3.2.10	≥ 3242 V	3500 V
e. Trip of all Main Feedwater Pumps	1,2	3 per pump	K	SR 3.3.2.8 SR 3.3.2.10	NA	NA
f. Auxiliary Feedwater Pump Train A and Train B Suction Transfer on Suction Pressure - Low	1,2,3	3 per train	M	SR 3.3.2.8 SR 3.3.2.10	A) ≥ 9.5 psig B) ≥ 5.2 psig (Unit 1) ≥ 5.0 psig (Unit 2)	A) 10.5 psig B) 6.2 psig (Unit 1) 6.0 psig (Unit 2)

(continued)

(e) Except when all MFIVs, MFCVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

(2) Feedwater Isolation-Steam Generator Water Level-High High (P-14)

This signal provides protection against excessive feedwater flow. The ESFAS SG water level instruments provide input to the SG Water Level Control System. Therefore, the actuation logic must be able to withstand both an input failure to the control system (which may then require the protection function actuation) and a single failure in the other channels providing the protection function actuation. Thus, four OPERABLE channels are required to satisfy the requirements with a two-out-of-four logic. The setpoints are based on percent of narrow range instrument span.

(3) Feedwater Isolation-Safety Injection

Feedwater Isolation is also initiated by all Functions that initiate SI. The Feedwater Isolation Function requirements for these Functions are the same as the requirements for their SI function. Therefore, the requirements are not repeated in Table 3.3.2-1. Instead Function 1, SI, is referenced for all initiating functions and requirements. Item 5.b.(1) is referenced for the applicable MODES.

(4) Feedwater Isolation - RCS T_{avg}- Low coincident with Reactor Trip (P-4)

This signal provides protection against excessive cooldown, which could subsequently introduce a positive reactivity excursion after a plant trip. There are four channels of RCS T_{avg} - Low (one per loop), with a two-out-of-four logic required coincident with a reactor trip signal (P-4) to initiate a feedwater isolation. The P-4 interlock is discussed in Function 8.a.

(5) Feedwater Isolation – Doghouse Water Level – High High

This signal initiates a Feedwater Isolation. The signal terminates forward feedwater flow in the event of a postulated pipe break in the main feedwater

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

Each doghouse contains two trains of level instrumentation.

For a 1/1 logic, the

piping in the doghouses to prevent flooding safety related equipment essential to the safe shutdown of the plant. The level instrumentation consists of two level switches (one per train) in each of the two reactor building doghouses. A high-high level detected by one-out-of-two switches, in either the inboard or outboard doghouse, will initiate a doghouse isolation. This signal initiates Feedwater Isolation for the specific doghouse where the High-High level is detected and trips both main feedwater pumps thus causing a main turbine trip.

For a 2/3 logic, the level instrumentation consists of six level switches (three per train) in each of the two reactor building doghouses. A high-high level detected by two-out-of-three switches, in either the inboard or outboard doghouse, will initiate a doghouse isolation.

The Feedwater Isolation Function must be OPERABLE in MODES 1 and 2 and also in MODE 3 (except for the functions listed in Table 3.3.2-1). Feedwater Isolation is not required OPERABLE when all MFIVs, MFCVs, and associated bypass valves are closed and de-activated or isolated by a closed manual valve. In lower MODES, the MFW System is not in service and this Function is not required to be OPERABLE.

6. Auxiliary Feedwater

The AFW System is designed to provide a secondary side heat sink for the reactor in the event that the MFW System is not available. The system has two motor driven pumps and a turbine driven pump, making it available during normal and accident operation. The normal source of water for the AFW System is the condensate storage system (not safety related). A low suction pressure to the AFW pumps will automatically realign the pump suctions to the Nuclear Service Water System (NSWS)(safety related). The AFW System is aligned so that upon a pump start, flow is initiated to the respective SGs immediately.

a. Auxiliary Feedwater-Automatic Actuation Logic and Actuation Relays

Automatic actuation logic and actuation relays consist of the same features and operate in the same manner as described for ESFAS Function 1.b.

ACTIONS (continued)

K.1 and K.2

Condition K applies to the AFW pump start on trip of all MFW pumps.

This action addresses the auto start function of the AFW System on loss of all MFW pumps. The OPERABILITY of the AFW System must be assured by allowing automatic start of the AFW System pumps. If a channel is inoperable, 1 hour is allowed to return it to an OPERABLE status or to place the channel in trip. If the function cannot be returned to an OPERABLE status or placed in a trip condition, 6 hours are allowed to place the unit in MODE 3. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging unit systems. In MODE 3, the unit does not have any analyzed transients or conditions that require the explicit use of the protection function noted above.

L.1, L.2.1 and L.2.2

For a 1/1 logic, the

Condition L applies to the Doghouse Water Level – High High. The failure of one channel in either reactor building doghouse results in a loss of redundancy for the function and possible feedwater isolation (depending on the failed status of the channel). This requires the unit be placed in MODE 3 within 6 hours.

INSERT 2

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. In Mode 3, this Function is no longer required OPERABLE.

MODE

INSERT 3

The Required Actions are modified by a Note that allows this inoperable channel to be bypassed for up to 2 hours for surveillance testing of other channels.

M.1, M.2.1 and M.2.2

Condition M applies to the Auxiliary Feedwater Pumps Suction Transfer on Suction Pressure Low.

If one channel is inoperable, 1 hour is allowed to restore the channel to OPERABLE status or to place it in the tripped condition. The failure of one channel places the Function in a two-out-of-two configuration. One

SURVEILLANCE REQUIREMENTS (continued)

SR 3.3.2.8

SR 3.3.2.8 is the performance of a TADOT. This test is a check of the Manual Actuation Functions, AFW pump start on trip of all MFW pumps, AFW low suction pressure, Reactor Trip (P-4) Interlock, and Doghouse Water Level - High High Feedwater Isolation. It is performed every 18 months. Each Manual Actuation Function is tested up to, and including, the master relay coils. In some instances, the test includes actuation of the end device (i.e., pump starts, valve cycles, etc.). The Frequency is adequate, based on industry operating experience and is consistent with the typical refueling cycle. The SR is modified by a Note that excludes verification of setpoints during the TADOT for manual initiation Functions. The manual initiation Functions have no associated setpoints.

SR 3.3.2.9

SR 3.3.2.9 is the performance of a CHANNEL CALIBRATION.

A CHANNEL CALIBRATION is performed every 18 months, or approximately at every refueling. CHANNEL CALIBRATION is a complete check of the instrument loop, including the sensor. The test verifies that the channel responds to measured parameter within the necessary range and accuracy.

CHANNEL CALIBRATIONS must be performed consistent with the assumptions of the unit specific setpoint methodology.

The Frequency of 18 months is based on the assumption of an 18 month calibration interval in the determination of the magnitude of equipment drift in the setpoint methodology.

This SR is modified by a Note stating that this test should include verification that the time constants are adjusted to the prescribed values where applicable. The applicable time constants are shown in Table 3.3.2-1.

SR 3.3.2.10

This SR ensures the individual channel ESF RESPONSE TIMES are less than or equal to the maximum values assumed in the accident analysis. Response Time testing acceptance criteria are included in the UFSAR (Ref. 2). Individual component response times are not modeled in the

SURVEILLANCE REQUIREMENTS (continued)

time could be affected is replacing the sensing assembly of a transmitter.

ESF RESPONSE TIME tests are conducted on an 18 month STAGGERED TEST BASIS. Testing of the final actuation devices, which make up the bulk of the response time, is included in the testing of each channel. The final actuation device in one train is tested with each channel. Therefore, staggered testing results in response time verification of these devices every 18 months. The 18 month Frequency is consistent with the typical refueling cycle and is based on unit operating experience, which shows that random failures of instrumentation components causing serious response time degradation, but not channel failure, are infrequent occurrences.

This SR is modified by a Note that clarifies that the turbine driven AFW pump is tested within 24 hours after reaching 600 psig in the SGs.

SR 3.3.2.11

SR 3.3.2.11 is the performance of a COT on the NSWS Suction Transfer - Low Pit Level.

A COT is performed on each required channel to ensure the entire channel will perform the intended Function. Setpoints must be found within the Allowable Values specified in Table 3.3.2-1. This test is performed every 18 months. The Frequency is adequate based on operating experience.

SR 3.3.2.12

Doghouse Water Level - High High and

SR 3.3.2.12 is the performance of an ACTUATION LOGIC TEST on the NSWS Suction Transfer-Emergency Low Pit Level. Function

An ACTUATION LOGIC TEST to satisfy the requirements of GL 96-01 is performed on each NSWS Pit Suction Transfer instrumentation to ensure all combinations will initiate a transfer to the SNSWP. This test is performed every 18 months. The Frequency is adequate based on operating experience.

logic

the appropriate Function

ATTACHMENT 3

NRC COMMITMENTS

The following NRC commitments are being made in support of these amendment requests:

1. The approved amendments will be implemented within 30 days from the date of NRC approval. "Implemented" means that the approved amendments will have been placed into the control room copies of the TS. However, the provisions afforded by the approved amendments will not actually be utilized until such time that the associated plant modifications are in place.

2. Prior to actually utilizing the provisions afforded by the approved amendments, Catawba will have in place all required design, document, and process changes necessary to support these provisions. Catawba will implement the associated modifications on a staggered basis for each unit.

3. Within one year following the implementation of the associated modification for the final unit, Catawba will submit a follow-up administrative license amendment request to delete the superceded TS and Bases requirements.