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A Duke Energy Company

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

Subject: Duke Energy Corporation
Catawba Nuclear Station, Unit 1
Docket Number 50-413
Proposed Technical Specification (TS)
Amendment 3.3.2, Engineered Safety Feature
Actuation System (ESFAS) Instrumentation

Pursuant to 10 CFR 50.90, Duke Energy Corporation is requesting a one time amendment to the Catawba Nuclear Station Facility Operating Licenses and TS for Unit 1. This amendment modifies the Required Actions for the Engineered Safety Feature Actuation System (ESFAS) Table 3.3.2-1, function 6.f (auxiliary feedwater (AFW), auxiliary feedwater pump train A and train B suction transfer on suction pressure - low) on a one time basis. The proposed one time change will require that if more than 1 channel becomes inoperable, immediately enter the applicable Condition(s) or Required Action(s) for the associated AFW train made inoperable by the inoperable channels.

A low pressure signal in the AFW pump suction line protects the AFW pumps against a loss of the normal supply of water and initiates transfer to the assured source of water, Nuclear Service Water System (NSWS).

During scheduled calibration checks of pressure switch, 1CAPS5232, the locking screw for the pressure switch broke. This instrument is part of the two out of three logic that provides transfer of the "B" train AFW suction source on low pressure. The three "B" train AFW low suction pressure switches are powered by the same 125 VDC power supply.

A001

The electrical isolations necessary to implement the modification to allow the pressure switch to be replaced will cause the remaining two pressure switches to have their power removed. Removing the power to the 3 pressure switches in the "B" train results in the three pressure switches being inoperable. This would result in Unit 1 entering TS 3.0.3 requiring the unit to be shutdown within the next 7 hours. The work that is required to complete this job is such that the probability of completing the work in the time frame of TS 3.0.3 is highly unlikely.

The loss of one train function 6.f of TS Table 3.3.2-1 affects its associated train of AFW. It is not necessary to require a TS 3.0.3 entry and associated plant shutdown within the time limits of TS 3.0.3 for more than one inoperable channel, when a TS 3.0.3 entry is not required for the case of an inoperable AFW train. The AFW system TS (TS 3.7.5) allows a single train of AFW to be inoperable for up to 72 hours. This will provide the requisite time to allow the pressure switch to be replaced.

The failure places Unit 1 in a condition where one additional instrument failure would place Unit 1 into TS 3.0.3 requiring a unit shutdown. In addition, one additional pressure switch actuation would place Unit 1 in a condition, where upon an AFW automatic start, the NSWS would be supplied to the Unit 1 steam generators. This would result in adversely affecting SG chemistry. Current TS would allow Unit 1 to operate in this condition for the remainder of the operating cycle which is currently scheduled to end in 2002. CNS believes that operating in this condition for the remainder of the operating cycle would place Unit 1 in a vulnerable position and not be in the interests of safe and prudent operation. CNS would like to replace the pressure switch in the next couple of months. Therefore, Duke requests NRC review and approval of this amendment in an expeditious manner.

The contents of this amendment request package are as follows:

Attachment 1 provides marked copies of the affected TS page for Catawba, showing the proposed change.

Attachment 2 contains reprinted page of the affected TS page for Catawba. Attachment 3 provides a description of the proposed change and technical justification. Pursuant to 10 CFR 50.92, Attachment 4 documents the determination that the amendment contains No Significant Hazards Considerations. Pursuant to 10 CFR 51.22(c)(9), Attachment 5 provides the basis for the categorical exclusion from performing an Environmental Assessment/Impact Statement.

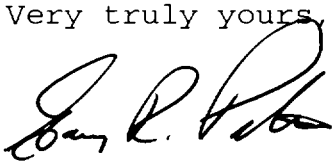
Implementation of this amendment to the Catawba Facility Operating Licenses and TS will not impact the Catawba Updated Final Safety Analysis Report (UFSAR). Duke has determined that the standard 30 day implementation period is acceptable for this proposed one time amendment.

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

Pursuant to 10 CFR 50.91, a copy of this proposed amendment is being sent to the appropriate state official.

Inquiries on this matter should be directed to R.D. Hart at (803) 831-3622.

Very truly yours,



Gary R. Peterson

RDH/s

Attachments

Gary R. Peterson, being duly sworn, states that he is Vice President of Duke Energy Corporation; that he is authorized on the part of said corporation to sign and file with the Nuclear Regulatory Commission this amendment to the Catawba Nuclear Station Facility Operating Licenses Numbers NPF-35 and Technical Specifications; and that all statements and matters set forth herein are true and correct to the best of his knowledge.

Gary R. Peterson, Vice President

Subscribed and sworn to me: 2-20-01
Date

Notary Public

My commission expires: 6-26-2002
Date

SEAL

xc (with attachments):

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ATTACHMENT 1

MARKED-UP TS PAGE FOR CATAWBA

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
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(a)	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)
7. Automatic Switchover to Containment Sump						
a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
b. Refueling Water Storage Tank (RWST) Level – Low	1,2,3,4	4	N	SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9 SR 3.3.2.10	≥ 162.4 inches	177.15 inches
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

(continued)

(a) Above the P-11 (Pressurizer Pressure) interlock.

*If more than one channel of Auxiliary Feedwater Suction Pressure – Low for one train becomes inoperable, immediately enter the applicable Condition(s) and Required Action(s) for the associated AFW train made inoperable by the inoperable channels. This is a one time only change for Unit 1 in support of the activities associated with the replacement of pressure switch 1CAPS5232.

ATTACHMENT 2

REPRINTED TS PAGE FOR CATAWBA

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
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(a)	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)
7. Automatic Switchover to Containment Sump						
a. Automatic Actuation Logic and Actuation Relays	1,2,3,4	2 trains	C	SR 3.3.2.2 SR 3.3.2.4 SR 3.3.2.6	NA	NA
b. Refueling Water Storage Tank (RWST) Level – Low	1,2,3,4	4	N	SR 3.3.2.1 SR 3.3.2.7 SR 3.3.2.9 SR 3.3.2.10	≥ 162.4 inches	177.15 inches
Coincident with Safety Injection	Refer to Function 1 (Safety Injection) for all initiation functions and requirements.					

(continued)

(a) Above the P-11 (Pressurizer Pressure) interlock.
*If more than one channel of Auxiliary Feedwater Suction Pressure – Low for one train becomes inoperable, immediately enter the applicable Condition(s) and Required Action(s) for the associated AFW train made inoperable by the inoperable channels. This is a one time only change for Unit 1 in support of the activities associated with the replacement of pressure switch 1CAPS5232.

ATTACHMENT 3

DESCRIPTION OF PROPOSED CHANGE AND TECHNICAL JUSTIFICATION

Description of Proposed Changes and Technical Justification

The auxiliary feedwater (AFW) system at Catawba Nuclear Station (CNS) automatically supplies feedwater to the steam generators to remove decay heat from the reactor coolant system upon loss of normal feedwater supply. The AFW pumps take suction through suction lines from the condensate storage system and pump to the steam generator secondary side.

The AFW System consists of two motor driven AFW pumps and one steam turbine driven pump configured into three trains. Each of the motor driven pumps supply 100% of the flow requirements to two steam generators, although each pump has the capability to be realigned to feed other steam generators. The turbine driven pump provides 200% of the flow requirements and supplies water to all four steam generators. Travel stops are set on the steam generator flow control valves such that the pumps can supply the minimum flow required without exceeding the maximum flow allowed. The pumps are equipped with independent recirculation lines to prevent pump operation against a closed system. Each motor driven AFW pump is powered from an independent Class 1E power supply. The steam turbine driven AFW pump receives steam from two main steam lines upstream of the main steam isolation valves. Each of the steam feed lines will supply 100% of the requirements of the turbine driven AFW pump.

The normal supply of water to the AFW pumps is from the condensate system. The assured source of water to the AFW system is supplied by the Nuclear Service Water System (NSWS). A low pressure signal in the AFW pump suction line protects the AFW pumps against a loss of the normal supply of water for the pumps and initiates transfer to the assured source of water. This function protects the AFW pumps against a loss of the normal supply of water for the pumps, the condensate storage system. Three pressure switches per train are located on the AFW pump suction line from the condensate storage system. A low pressure signal sensed by two out of three switches coincident with an automatic AFW start signal will align their train related motor driven AFW pump and the turbine driven AFW pump to the assured water supply, the NSWS. The NSWS (safety grade) is then aligned to supply the AFW pumps to ensure an adequate supply of water for the AFW system to maintain at least one of the steam generators as the heat sink for reactor decay heat and sensible heat removal.

The safety related NSWS supply is not normally aligned to the pump suctions, but is automatically aligned when low suction pressure is detected. This automatic switchover to NSWS takes place only if the AFW System has been automatically initiated by an AFW start signal. The AFW pumps will be tripped on low suction pressure if the pumps have been manually started or if the initiating signals have been cleared and the system associated resets have been reset.

This AFW low suction pressure automatic switchover function is listed in Technical Specification (TS) Table 3.3.2-1, which delineates requirements for Engineered Safety Feature Actuation System (ESFAS) Instrumentation. Function 6.f is the AFW pump train A and train B suction transfer on suction pressure - low function.

Function 6.f requires three operable instrumentation channels per train. Function 6.f refers to Condition M. Condition M states that with one channel inoperable, the inoperable channel must be placed in the tripped condition within 1 hour or the unit must be in Mode 3 within 7 hours and in Mode 4 within 13 hours. There are no conditions that apply for more than one inoperable channel of this instrumentation; therefore, TS 3.0.3 would apply in this case.

During a scheduled calibration check of pressure switch, 1CAPS5232, the locking screw for the pressure switch setpoint broke. This instrument is part of the two out of three logic that provides transfer of the "B" train AFW suction source on low pressure.

Maintenance was unable to repair the broken locking screw and no replacement instrument was located in the Duke system. A modification has been developed to replace the pressure switch with a similar type of switch with a smaller range. The three "B" train AFW low suction pressure switches are powered by the same 125 VDC power supply. The electrical isolations necessary to implement the modification to allow the pressure switch to be replaced will cause the remaining two pressure switches to have their power removed. Removing the power to the 3 pressure switches in the "B" train results in the three pressure switches being inoperable and loss of the automatic AFW suction swap for the "B" train. This would result in Unit 1 entering TS 3.0.3 requiring the unit to be shutdown within the next 7 hours. The work that is required to complete this job is such that the probability of completing the work in the time frame of TS 3.0.3 is not likely.

Catawba is proposing on a one time basis to add a footnote to TS Table 3.3.2-1, function 6.f, Conditions. The footnote would apply when two or more channels are inoperable on one train. The footnote would require immediately entering the applicable Condition(s) and Required Action(s) for the associated AFW train made inoperable by the inoperable channels. This footnote would also state that this is a one time only change in support of the activities associated with the replacement of pressure switch 1CAPS5232.

This footnote was chosen because the loss of one train of assured suction source, NSWS, only affects the associated train of AFW. The TS Bases for the AFW system (TS 3.7.5) states that the NSWS assured source of water supply is configured into two trains. The turbine driven AFW pump receives NSWS from both trains of NSWS, therefore, the loss of one train of assured source renders only one AFW train inoperable. The remaining NSWS train provides an OPERABLE assured source to the other motor driven pump and the turbine driven pump. Therefore, the loss of one train of function 6.f in TS Table 3.3.2-1 only affects its respective train of AFW. It is not necessary to require a TS 3.0.3 entry and associated plant shutdown within the time limits of TS 3.0.3 for more than one inoperable channel, when a TS 3.0.3 entry is not required for the case of an inoperable AFW train.

The time frame for inoperability of a single AFW train is based on redundant capabilities afforded by the AFW system, time needed for repairs, and the low probability of a design basis accident occurring during this time period.

Therefore, the appropriate Required Action for loss of the automatic suction transfer should be to enter the Required Action(s) for the associated AFW train made inoperable by the loss of this function.

During the pressure switch replacement, work activities will be coordinated with current plant procedures. These procedures were developed to ensure that maintenance activities are controlled and limit unavailability of systems. These procedures ensure that the risk associated with online maintenance is minimized to the extent practicable and appropriate TS are followed. During the pressure switch replacement the "B" train of AFW will be declared out of service and TS 3.7.5 will be followed. In this condition, TS 3.7.5 and plant procedures will limit any work activities on the opposite AFW train and the turbine driven AFW pump.

A separate plant subsystem has been incorporated into the Catawba design to allow a means of limited plant shutdown, independent from the control room and auxiliary shutdown panels. This system, known as the Standby Shutdown System, provides an alternate means to achieve and maintain a hot shutdown condition following postulated fire, security, and station blackout events. This system is in addition to the normal shutdown capabilities available. The Standby Shutdown System (except for interfaces to existing safety-related systems) is designed in accordance with accepted fire protection and security requirements and is not designed as a safety related system. The Standby Shutdown System utilizes the turbine driven AFW pump to provide adequate secondary side makeup independent from all AC power and normal sources of water. If the turbine has not started automatically prior to the event, it may be started manually and receive suction water from condensate sources. If condensate sources are depleted or lost, the turbine will automatically transfer suction to an independent source initiated by the SSF related train of the condensate source loss detection logic and battery-powered motor-operated valves. The independent source of water is the buried piping of the Condenser Circulating Water System, which contains sufficient water in the embedded pipe to maintain the plant at hot standby for at least 3 days. In this manner, sufficient AFW flow may be maintained even if normal and emergency AC power is lost, and condensate and safety-grade water sources are lost.

Probabilistic Risk Assessment (PRA)

Duke Energy has evaluated this one time TS amendment change request from a probabilistic risk standpoint in accordance with Regulatory Guide 1.174 and Regulatory Guide 1.177 limits. The pressure switches in question are explicitly modeled in the Catawba PRA. Specifically, inoperability of all three of the Train B AFW to NSWS pressure switches was evaluated.

The risk significance of changing the current allowed outage time (AOT) for TS 3.3.2, ESFAS Instrumentation, Table 3.3.2-1, Function 6.f., Auxiliary Feedwater Pump Train A and Train B Suction Transfer on Suction Pressure - Low, from a TS 3.0.3 shutdown for greater than 1 pressure transmitter inoperable to that of immediately entering the Applicable Condition(s) and Required Action(s) for the associated AFW train made inoperable by the inoperable channel(s), is small.

The results indicate an increase in the core damage frequency (CDF) over the base case probabilistic risk assessment results of 2.2E-07/reactor year. The Incremental Conditional Core Damage Probability (ICCDP) for a 72-hour time frame is calculated to be 1.8E-09. These values constitute an acceptable level of risk increase in accordance with Regulatory Guides 1.174 and 1.177.

A qualitative assessment of the significance of this AOT change request to the seismic CDF was made. The probability of a seismic event of sufficient magnitude to fail the condensate grade sources of the AFW system is estimated to be less than 2E-07 for a 72 hours period. With such a low initiating event probability, the contribution to the risk metrics (i.e. change in CDF and ICCDP) is expected to be very small.

Regarding Large Early Release Frequency (LERF), the major contributors to LERF at Catawba are Interfacing Systems LOCAs (ISLOCA) and seismic events. The ISLOCA is assumed to result in core damage and the AFW system provides no mitigation function for the ISLOCA. The seismic contribution to the LERF is dominated by seismic events of very high ground accelerations that result in certain structural failures. Seismic events of this magnitude lead to failure of necessary plant support systems (e.g., ac power) and the unavailability of a single train of AFW to NSWS auto swap is not expected to make a measurable difference to the LERF. Therefore the impact on LERF is very small.

Based on all of the above discussion, the risk implications of this one time Technical Specification amendment change request are acceptable.

ATTACHMENT 4

NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

No Significant Hazards Consideration Determination

The following discussion is a summary of the evaluation of the changes contained in this proposed amendment against the 10 CFR 50.92(c) requirements to demonstrate that all three standards are satisfied. A no significant hazards consideration is indicated if operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated, or

2. Create the possibility of a new or different kind of accident from any accident previously evaluated, or

3. Involve a significant reduction in a margin of safety.

First Standard

Implementation of this amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated. Approval of this one time amendment will have no effect on accident probabilities or consequences. For the proposed change, the equipment referenced in the affected TS (ESFAS instrumentation) is not accident initiating equipment; therefore, there will be no impact on any accident probabilities by the approval of this amendment. The design function of the equipment is not being modified by these proposed changes. The proposed one time change is not increasing the time already evaluated for an AFW train to be out of service. Therefore, there will be no impact on any accident consequences.

Second Standard

Implementation of this one time amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated. No new accident causal mechanisms are created as a result of NRC approval of this amendment request. No changes are being made to the plant that will introduce any new accident causal mechanisms. This one time amendment request does not impact any plant systems that are accident initiators; therefore, no new accident types can be created.

Third Standard

Implementation of this one time amendment would not involve a significant reduction in a margin of safety. Margin of safety is related to the confidence in the ability of the

fission product barriers to perform their design functions during and following an accident situation. These barriers include the fuel cladding, the reactor coolant system, and the containment system. The performance of these fission product barriers will not be impacted by implementation of this proposed one time amendment. The equipment referenced in the affected TS for proposed one time change is already capable of performing as designed. Therefore, a significant reduction in the margin of safety is not created by this one time TS change.

Based upon the preceding discussion, Duke has concluded that the proposed one time amendment does not involve a significant hazards consideration.

ATTACHMENT 5

ENVIRONMENTAL ANALYSIS

Environmental Analysis

Pursuant to 10 CFR 51.22(b), an evaluation of this license amendment request has been performed to determine whether or not it meets the criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) of the regulations.

Implementation of this one time amendment will have no adverse impact upon the Catawba units; neither will it contribute to any additional quantity or type of effluent being available for adverse environmental impact or personnel exposure.

It has been determined there is:

1. No significant hazards consideration,

2. No significant change in the types, or significant increase in the amounts, of any effluents that may be released offsite, and

3. No significant increase in individual or cumulative occupational radiation exposures involved.

Therefore, this one time amendment to the Catawba TS meets the criteria of 10 CFR 51.22(c)(9) for categorical exclusion from an environmental impact statement.