



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

April 6, 2001

Mr. G. R. Peterson  
Site Vice President  
Catawba Nuclear Station  
Duke Energy Corporation  
4800 Concord Road  
York, South Carolina 29745-9635

SUBJECT: CATAWBA NUCLEAR STATION, UNIT 1 RE: ISSUANCE OF AMENDMENT  
(TAC NO. MB1208)

Dear Mr. Peterson:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 190 to Facility Operating License NPF-35 for the Catawba Nuclear Station, Unit 1. The amendment consists of changes to the Technical Specifications in response to your application dated February 20, 2001.

The amendment revises the required actions for the Engineered Safety Feature Actuation System 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 one channel of low suction pressure instrumentation becomes inoperable, in lieu of requiring unit shutdown within 7 hours, the licensee will immediately enter the applicable condition(s) or required action(s) for the associated AFW train made inoperable by the inoperable channels. This modification will support the timely replacement of a broken pressure switch in the Train B of AFW suction transfer on low suction pressure function.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

*Chandu P. Patel*

Chandu P. Patel, Project Manager, Section 1  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-413

Enclosures:

1. Amendment No. 190 to NPF-35
2. Safety Evaluation

cc w/encls: See next page

NRR-058

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/RA/

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Catawba Nuclear Station

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Catawba Nuclear Station

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**NUCLEAR REGULATORY COMMISSION**  
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DUKE ENERGY CORPORATION  
NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION  
SALUDA RIVER ELECTRIC COOPERATIVE, INC.  
DOCKET NO. 50-413  
CATAWBA NUCLEAR STATION, UNIT 1  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 190  
License No. NPF-35

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Catawba Nuclear Station, Unit 1 (the facility) Facility Operating License No. NPF-35 filed by the Duke Energy Corporation, acting for itself, North Carolina Electric Membership Corporation and Saluda River Electric Cooperative, Inc. (licensees), dated February 20, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-35 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 190 , which are attached hereto, are hereby incorporated into this license. Duke Energy Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Richard L. Emch, Jr., Chief, Section 1  
Project Directorate II  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: April 6, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 190

FACILITY OPERATING LICENSE NO. NPF-35

DOCKET NO. 50-413

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contain marginal lines indicating the areas of change.

Remove

3.3.2-14

Insert

3.3.2-14

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.





UNITED STATES  
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 190 TO FACILITY OPERATING LICENSE NPF-35  
DUKE ENERGY CORPORATION, ET AL.  
CATAWBA NUCLEAR STATION, UNIT 1

DOCKET NO. 50-413

1.0 INTRODUCTION

By letter dated February 20, 2001, Duke Energy Corporation, et al. (DEC, the licensee), submitted a request for a change to the Catawba Nuclear Station, Unit 1 (Catawba Unit 1), Technical Specifications (TS). The requested change would modify 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 one channel of low suction pressure instrumentation becomes inoperable, in lieu of requiring unit shutdown within 7 hours, the licensee will immediately enter the applicable condition(s) or required action(s) for the associated AFW train made inoperable by the inoperable channels. This modification will support the timely replacement of a broken pressure switch in the Train B of AFW suction transfer on low suction pressure function.

2.0 BACKGROUND

The AFW System at Catawba Unit 1 automatically supplies feedwater to the steam generators to remove decay heat from the reactor coolant system upon loss of normal feedwater. Normally, the AFW pumps take suction from the condensate storage system and provide feedwater to the steam generator secondary side. 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, the Nuclear Service Water System (NSWS) (safety grade). This assured source of feedwater, however, does not have the desired level of water chemistry.

The licensee stated that during a scheduled calibration check of the pressure switch 1CAPS5232, the locking screw for the pressure switch broke. This instrument is one of the three switches that upon a "two out of three" logic of low suction pressure transfers the "B" train AFW suction source to the NSWS. In order to meet the TS, the licensee placed the switch in a trip condition.

The three "B" train AFW low suction pressure switches are powered by the same 125 VDC power supply. The licensee indicated that the electrical isolations necessary to replace the broken pressure switch will cause the remaining two pressure switches to have their power removed, resulting in all three of the pressure switches being inoperable. This would require

Catawba Unit 1 to enter TS 3.0.3 and shut down the unit within the next 7 hours. The licensee estimates that the broken pressure switch replacement activities will take longer than 7 hours.

Current TS allows Catawba Unit 1 to operate for the remainder of the operating cycle which is currently scheduled to end in 2002 as long as the broken pressure switch is placed in a trip condition. However, one additional instrument failure would place the unit into TS 3.0.3 requiring a unit shutdown. Similarly, one additional pressure switch actuation would place the unit in a condition, where upon an AFW automatic start, the NSWS would be supplied to the Catawba Unit 1 steam generators adversely affecting steam generator chemistry. The licensee believes neither of these situations to be in the interest of safe and prudent operation. The licensee would like to replace the pressure switch as soon as practical. The proposed change will provide the requisite time to allow the replacement of the broken switch.

### 3.0 EVALUATION

The AFW System at Catawba Unit 1 consists of two motor-driven AFW pumps and one steam turbine-driven pump. Each of the motor-driven pumps supplies 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.

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 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. 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 suction to the NSWS. The NSWS 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 AFW low suction pressure automatic switchover function is listed in TS Table 3.3.2-1, which delineates requirements for ESFAS Instrumentation. Function 6.f is associated with the AFW pump train A and train B suction transfer on low suction pressure.

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 (Hot Standby) within 7 hours and in Mode 4 (Hot Shutdown) within 13 hours. There are no provisions in the TS for more than one inoperable channel of this instrumentation; therefore, TS 3.0.3 would apply when more than one channel is inoperable.

The three "B" train AFW low suction pressure switches are powered by the same 125 VDC power supply. The electrical isolations necessary to replace the broken pressure switch will cause the remaining two pressure switches to have their power removed. Removing the power to the three pressure switches in the "B" train makes them inoperable, resulting in a loss of the automatic AFW suction swap for the "B" train. This would result in Catawba Unit 1 entering

TS 3.0.3 requiring the unit to be shutdown within the next 7 hours. The licensee estimates that the replacement activities will take longer than 7 hours.

The licensee has proposed 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.

The TS Bases for the AFW System (TS 3.7.5) states that the NSWWS assured source of water supply is configured into two trains. The turbine-driven AFW pump receives NSWWS from both trains of NSWWS; therefore, the loss of one train of assured source due to the AFW pump suction pressure switches being inoperable renders only the associated motor-driven AFW train inoperable. The remaining NSWWS train provides an assured source to the other motor-driven pump and the turbine-driven pump. The AFW System TS allows a single train of AFW to be inoperable for up to 72 hours. Therefore, the licensee stated that 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 in function 6.f, when a TS 3.0.3 entry is not required for the case of an inoperable AFW train in TS 3.5.7.

Also, the licensee indicated that during the pressure switch replacement, work activities will be coordinated with current plant procedures. 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.

In addition, the licensee stated that Catawba Unit 1 is designed with a separate plant subsystem 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 additional source of water. 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 condensate sources are depleted or lost, the turbine-driven AFW pump will automatically transfer suction to an independent source initiated by the standby shutdown facility related train of the condensate source loss detection logic and battery-powered motor-operated valves. The independent source of water is provided from 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.

The NRC staff has reviewed the information provided by the licensee for the proposed change. The staff has determined that the licensee's proposed change is acceptable to the staff. The staff's decision is based on the following considerations: 1) it is desirable to replace the broken pressure switch in a timely manner, 2) consistent with the licensee's implementation of the existing TS for AFW trains, adequate protection will be provided by other redundant equipment during the one time extended allowed outage (AOL) time from 7 hours to 72 hours, 3) the probability of the design basis accident during the one time extended AOL is expected to be small, and 4) Catawba has additional capability to achieve and maintain Hot Shutdown by Standby Shutdown System which provides an independent source of water.

#### 4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the South Carolina State official was notified of the proposed issuance of the amendments. The State official had no comments.

#### 5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding (66 FR 12568). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

#### 6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (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.

Principal Contributor: C. Patel

Date: April 6, 2001