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OPPD
Omaha Public Power District

444 South 16th Street Mall
Omaha NE 68102-2247

February 13, 2002
LIC-02-0010

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

References:
1. Docket No. 50-285
2. Letter from OPPD (S. K. Gambhir) to NRC (Document Control Desk), "Licensee Event Report 97-002 Revision 0 for the Fort Calhoun Station," dated May 14, 1997 (LIC-97-0078)
3. Letter from OPPD (S. K. Gambhir) to NRC (Document Control Desk), "Fort Calhoun Station Unit No. 1 License Amendment Request, Alternate Shutdown Panel and Auxiliary Feedwater Panel," dated November 21, 2001 (LIC-01-0113)

SUBJECT: Fort Calhoun Station Unit No. 1 License Amendment Request, "Alternate Shutdown Panel and Auxiliary Feedwater Panel"

Pursuant to 10 CFR 50.90, Omaha Public Power District (OPPD) hereby requests to revise the amendment request submitted in Reference 3. This amendment will revise Technical Specifications 2.15(5) and 2.15(6) to identify: (1) all indication and control functions required for the alternate (remote) shutdown panels, (2) panel locations of the functions, and (3) the number of operable channels required.

The Attachments contain revised pages to replace those in the November 21, 2001 submittal (Reference 3), as follows:

- A revision to Section 5.0, "Technical Analysis," in Attachment 1, FCS Evaluation,
- The addition of "Note 1" in the "Required Number of Channels" column of the table 2.15(5) for Reactor Coolant Hot Leg and Reactor Coolant Cold Leg Temperature in Attachment 2, Markup of Technical Specifications,
- The addition of, "Note 1: One reactor coolant hot leg temperature indication and one reactor coolant cold leg temperature indication channel must both be operable on the same steam generator (i.e., RC-2A or RC-2B)," at the end of the table in Attachment 2, Markup of Technical Specifications.

OPPD requests approval of the proposed amendment by May 15, 2002, to support scheduling implementation after the next refueling outage. Once approved, the amendment shall be implemented within 120 days.

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I declare under penalty of perjury that the foregoing is true and correct. (Executed on February 13, 2001)

If you have any questions or require additional information, please contact Dr. R. L. Jaworski at (402) 533-6833.

Sincerely,

R. T. Ridenoure
Division Manager
Nuclear Operations

RTR/RRL/rrl

Attachments:
1. Fort Calhoun Station's Evaluation
2. Markup of Technical Specification Pages

c: E. W. Merschoff, NRC Regional Administrator, Region IV
A. B. Wang, NRC Project Manager
W. C. Walker, NRC Senior Resident Inspector
Division Administrator - Public Health Assurance, State of Nebraska
Winston & Strawn

LIC-02-0010
Attachment 1

ATTACHMENT 1

Replace Section 5.0 of Attachment 1 to LIC-01-0113 with the following revision.

5.0 TECHNICAL ANALYSIS

5.1 Design Basis

The proposed changes to Technical Specifications Section 2.15(5) and 2.15(6) will clarify the scope of the Alternate Shutdown Panels. The changes will identify: (1) all indication and control functions required for the alternate (remote) shutdown panels, (2) panel locations of the functions, and (3) the number of channels required.

The original design of Alternate Shutdown Panel AI-185 contained one Reactor Coolant System (RCS) hot leg temperature indication (TI-121H) and one RCS cold leg temperature indication (TI-121C-1), both associated with the same steam generator. Both of these were narrow range indications with a temperature range from 515 - 615 degrees Fahrenheit. During the 1998 refueling outage, additional instrumentation was added to Alternate Shutdown Panel AI-185 such that both steam generators now have wide range (50 - 700 degrees Fahrenheit) hot and cold leg RCS temperature indication.

The proposed change to Technical Specification 2.15(5) will allow continued plant operation if one RCS cold leg and one RCS hot leg temperature indication are operable provided the operable hot and cold leg temperature indications are on the same steam generator. This is equivalent to FCS's existing Technical Specification requirements and conforms to the FCS design bases for the Alternate Shutdown Panel.

LIC-02-0010
Attachment 2

ATTACHMENT 2

Markup of Technical Specification Pages

Replace Attachment 2 to LIC-01-0113 with the following revision.

This page included for reference only. No changes made to this page.

2.0 LIMITING CONDITIONS FOR OPERATION

2.15 Instrumentation and Control Systems

Applicability

Applies to plant instrumentation systems.

Objective

To delineate the conditions of the plant instrumentation and control systems necessary to assure reactor safety.

Specifications

The operability, permissible bypass, and Test Maintenance and Inoperable bypass specifications of the plant instrument and control systems shall be in accordance with Tables 2-2 through 2-5.

(1) In the event the number of channels of a particular system in service falls one below the total number of installed channels, the inoperable channel shall be placed in either the bypassed or tripped condition within one hour if the channel is equipped with a key operated bypass switch, and eight hours if jumpers or blocks must be installed in the control circuitry. The inoperable channel may be bypassed for up to 48 hours from time of discovering loss of operability; however, if the inoperability is determined to be the result of malfunctioning RTDs or nuclear detectors supplying signals to the high power level, thermal margin/low pressurizer pressure, and axial power distribution channels, these channels may be bypassed for up to 7 days from time of discovering loss of operability. If the inoperable channel is not restored to OPERABLE status after the allowable time for bypass, it shall be placed in the tripped position or, in the case of malfunctioning RTDs or linear power nuclear detectors, the reactor shall be placed in hot shutdown within 12 hours. If active maintenance and/or surveillance testing is being performed to return a channel to active service or to establish operability, the channel may be bypassed during the period of active maintenance and/or surveillance testing. This specification applies to the high rate trip-wide range log channel when the plant is at or above 10^{-4}% power and is operating below 15% of rated power.

(2) In the event the number of channels of a particular system in service falls to the limits given in the column entitled "Minimum Operable Channels," one of the inoperable channels must be placed in the tripped position or low level actuation permissive position for the auxiliary feedwater system within one hour, if the channel is equipped with a bypass switch, and within eight hours if jumpers or blocks are required; however, if minimum operable channel conditions for SIRW tank low signal are reached, both inoperable channels must be placed in the bypassed condition within eight hours from time of discovery of loss of operability. If at least one inoperable channel has not been restored to OPERABLE status after 48 hours from time of discovering loss of operability, the reactor shall be placed in a hot shutdown condition within the following 12 hours; however, operation can continue without containment ventilation isolation signals available if the containment ventilation isolation valves are closed.

2.0 **LIMITING CONDITIONS FOR OPERATION**
2.15 Instrumentation and Control Systems (Continued)

If after 24 hours from time of initiating a hot shutdown procedure at least one inoperable engineered safety features or isolation functions channel has not been restored to OPERABLE status, the reactor shall be placed in a cold shutdown condition within the following 24 hours. This specification applied to the high rate trip-wide range log channel when the plant is at or above 10^{-4}% power and is operating below 15% of rated power.

(3) In the event the number of channels on a particular engineered safety features (ESF) or isolation logic subsystem in service falls below the limits given in the columns entitled "Minimum Operable Channels" or "Minimum Degree of Redundancy," except as conditioned by the column entitled "Permissible Bypass Conditions," sufficient channels shall be restored to OPERABLE status within 48 hours so as to meet the minimum limits or the reactor shall be placed in a hot shutdown condition within the following 12 hours; however, operation can continue without containment ventilation isolation signals available if the ventilation isolation valves are closed. If after 24 hours from time of initiating a hot shutdown procedure sufficient channels have not been restored to OPERABLE status, the reactor shall be placed in a cold shutdown condition within the following 24 hours.

(4) In the event the number of channels of those particular systems in service not described in (3) above falls below the limits given in the columns entitled "Minimum Operable Channels" or "Minimum Degree of Redundancy," except as conditioned by the column entitled "Permissible Bypass Conditions," the reactor shall be placed in a hot shutdown condition within 12 hours. If minimum conditions for engineered safety features or isolation functions are not met within 24 hours from time of discovering loss of operability, the reactor shall be placed in a cold shutdown condition within the following 24 hours. If the number of OPERABLE high rate trip-wide range log channels falls below that given in the column entitled "Minimum Operable Channels" in Table 2-2 and the reactor is at or above 10^{-4}% power and at or below 15% of rated power, reactor critical operation shall be discontinued and the plant placed in an operational mode allowing repair of the inoperable channels before startup or reactor critical operation may proceed.

If during power operation, the rod block function of the secondary CEA position indication system and rod block circuit are inoperable for more than 24 hours, or the plant computer PDIL alarm, CEA group deviation alarm and the CEA sequencing function are inoperable for more than 48 hours, the CEAs shall be withdrawn and maintained at fully withdrawn and the control rod drive system mode switch shall be maintained in the off position except when manual motion of CEA Group 4 is required to control axial power distribution.

~~(5) In the event that any of the following Alternate Shutdown Panel instrumentation or control circuits become inoperable, either restore the inoperable component(s) to OPERABLE status within seven days, or be in hot shutdown within the next twelve hours. This specification is applicable in Modes 1 and 2.~~

~~Wide Range Logarithmic Power (AI-212)~~
~~Source Range Power (AI-212)~~
~~Reactor Coolant Cold Leg Temperature (AI-185)~~
~~Reactor Coolant Hot Leg Temperature (AI-185)~~
~~Pressurizer Level (AI-185)~~
~~Volume Control Tank Level (AI-185)~~

2.0 LIMITING CONDITIONS FOR OPERATION

2.15 Instrumentation and Control Systems (Continued)

~~(6) In the event that any of the following Emergency Auxiliary Feedwater Panel instrumentation or control circuits become inoperable, either restore the inoperable component(s) to OPERABLE status within seven days, or be in hot shutdown within the next twelve hours. This specification is applicable in Modes 1 and 2.~~

~~Steam Generator Level, Wide Range (AI-179)~~
~~Steam Generator Level, Narrow Range (AI-179)~~
~~Steam Generator Pressure (AI-179)~~
~~Pressurizer Pressure (AI-179)~~

(5) In the event that the number of operable channels of the listed Alternate Shutdown Panels or the Auxiliary Feedwater Panel instrumentation or control circuits falls below the required number of channels, either restore the required number of channels to OPERABLE status within seven (7) days, or be in hot shutdown (Mode 3) within the next twelve hours. This specification is applicable in Modes 1 and 2.

Function/Instrument or Control Parameter	Location	Required Number of Channels
1. Reactivity Control		
a. Source Range Power	AI-212	1
b. Reactor Wide Range Logarithmic Power	AI-212	1
2. Reactor Coolant System Pressure Control		
a. Pressurizer Wide Range Pressure (0-2500 psia)	AI-179	1
3. Decay Heat Removal via Steam Generators		
a. Reactor Coolant Hot Leg Temperature	AI-185	1 (Note 1)
b. Reactor Coolant Cold Leg Temperature	AI-185	1 (Note 1)
c. Steam Generator Pressure	AI-179	1 per steam generator
d. Steam Generator Narrow Range Level	AI-179	1 per steam generator
e. Steam Generator Wide Range Level	AI-179	1 per steam generator
4. Reactor Coolant System Inventory Controls		
a. Pressurizer Level	AI-185	1
b. Volume Control Tank Level	AI-185	1
c. Charging Pump CH-1B and its associated controls	AI-185	1
d. Charging Isolation Valve Control	AI-185	1
5. Transfer Functions		
a. All Transfer Switches/Lockout Relays	AI-185	1
b. All Transfer Switches/Lockout Relays	AI-179	1
6. Auxiliary Feedwater Controls		
a. Steam Generator RC-2A and 2B Auxiliary Feedwater Isolation Inboard and Outboard Valves Controls	AI-179	1
b. Steam-Driven Pump FW-10 Recirculation Valve Control	AI-179	1

c. Steam-Driven Pump FW-10 Steam Isolation Valve Control	AI-179	1
d. Steam from Steam Generator RC-2A and RC-2B to FW-10 Steam Isolation Valve Control	AI-179	1

Note 1: One reactor coolant hot leg temperature indication and one reactor coolant cold leg temperature indication channel must both be operable on the same steam generator (i.e., RC-2A or RC-2B).

Basis

During plant operation, the complete instrumentation systems will normally be in service. This specification outlines limiting conditions for operation necessary to preserve the effectiveness of the reactor protective system (RPS) and engineered safety features (ESF) system when one or more of the channels are out of service. Reactor safety is provided by RPS, which automatically initiates appropriate action to prevent exceeding established limits. Safety is not compromised, however, by continued operation with certain instrumentation channels out of service since provisions were made for this in the plant design.

The RPS and most engineered safety feature channels are supplied with sufficient redundancy to provide the capability for channel test at power, except for backup channels such as derived circuits in the ESF logic system.

When one of the four channels is taken out of service for maintenance, RPS logic can be changed to a two-out-of-three coincidence for a reactor trip by bypassing the removed channel. If the bypass is not effected, the out-of-service channel (Power Removed) assumes a tripped condition (except high rate-of-change of power, high power level and high pressurizer pressure),[1] which results in a one-out-of-three channel logic. If in the 2-out-of-4 logic system of the RPS one channel is bypassed and a second channel manually placed in a tripped condition, the resulting logic is 1-out-of-2. At rated power, the minimum OPERABLE high-power level channel is 3 in order to provide adequate power tilt detection. If only 2 channels are OPERABLE, the reactor power level is reduced to 70% rated power which protects the reactor from possibly exceeding design peaking factors due to undetected flux tilts and from exceeding dropped CEA peaking factors.

The ESF logic system is a Class 1 protection system designed to satisfy the criteria of IEEE 279, August 1968. Two functionally redundant ESF logic subsystems "A" and "B" are provided to ensure high reliability and effective in-service testing. These logic subsystems are designed for individual reliability and maximum attainable mutual independence both physically and electrically. Either logic subsystem acting alone can automatically actuate engineered safety features and essential supporting systems.

All engineered safety features are initiated by 2-out-of-4 logic matrices except containment high radiation which operates on a 1-out-of-2 basis. The number of installed channels for Containment Radiation High Signal (CRHS) is two. CRHS isolates the containment pressure relief, air sample and purge system valves.

Proposed

Technical Specification Pages

2.0 **LIMITING CONDITIONS FOR OPERATION**
2.15 Instrumentation and Control Systems (Continued)

If after 24 hours from time of initiating a hot shutdown procedure at least one inoperable engineered safety features or isolation functions channel has not been restored to OPERABLE status, the reactor shall be placed in a cold shutdown condition within the following 24 hours. This specification applied to the high rate trip-wide range log channel when the plant is at or above 10^{-4}% power and is operating below 15% of rated power.

(3) In the event the number of channels on a particular engineered safety features (ESF) or isolation logic subsystem in service falls below the limits given in the columns entitled "Minimum Operable Channels" or "Minimum Degree of Redundancy," except as conditioned by the column entitled "Permissible Bypass Conditions," sufficient channels shall be restored to OPERABLE status within 48 hours so as to meet the minimum limits or the reactor shall be placed in a hot shutdown condition within the following 12 hours; however, operation can continue without containment ventilation isolation signals available if the ventilation isolation valves are closed. If after 24 hours from time of initiating a hot shutdown procedure sufficient channels have not been restored to OPERABLE status, the reactor shall be placed in a cold shutdown condition within the following 24 hours.

(4) In the event the number of channels of those particular systems in service not described in (3) above falls below the limits given in the columns entitled "Minimum Operable Channels" or "Minimum Degree of Redundancy," except as conditioned by the column entitled "Permissible Bypass Conditions," the reactor shall be placed in a hot shutdown condition within 12 hours. If minimum conditions for engineered safety features or isolation functions are not met within 24 hours from time of discovering loss of operability, the reactor shall be placed in a cold shutdown condition within the following 24 hours. If the number of OPERABLE high rate trip-wide range log channels falls below that given in the column entitled "Minimum Operable Channels" in Table 2-2 and the reactor is at or above 10^{-4}% power and at or below 15% of rated power, reactor critical operation shall be discontinued and the plant placed in an operational mode allowing repair of the inoperable channels before startup or reactor critical operation may proceed.

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(5) In the event that the number of operable channels of the listed Alternate Shutdown Panels or the Auxiliary Feedwater Panel instrumentation or control circuits falls below the required number of channels, either restore the required number of channels to OPERABLE status within seven (7) days, or be in hot shutdown (Mode 3) within the next twelve hours. This specification is applicable in Modes 1 and 2.

2.0 LIMITING CONDITIONS FOR OPERATION
2.15 Instrumentation and Control Systems (Continued)

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Note 1: One reactor coolant hot leg temperature indication and one reactor coolant cold leg temperature indication channel must both be operable on the same steam generator (i.e., RC-2A or RC-2B).

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