Omaha Public Power District
444 South 16th Street Mall
Omaha, Nebraska 68102-2247

May 8, 2000
LIC-00-0004

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Station P-137
Washington, DC 20555

Reference:
1. Docket No. 50-285
2. Letter from OPPD (W.G. Gates) to NRC (Document Control Desk) dated December 11, 1997 (LIC-97-0187)

SUBJECT: Revised Application for Amendment of Operating License

Enclosed is a revised submittal of Omaha Public Power District's (OPPD) "Application for Amendment of Operating License" which seeks to amend the Fort Calhoun Station (FCS) Unit No. 1 Technical Specifications (TS). In Reference 2, OPPD proposed to add a new Limiting Condition for Operation (LCO) to TS 2.15 pertaining to an inoperable engineered safety feature (ESF) logic subsystem. Additional administrative revisions are proposed to either support the new LCO or clarify existing text.

The new LCO will prevent unnecessary plant shutdowns since the allowed outage time (48 hours) provides sufficient time to troubleshoot, repair and test the inoperable channels. The ESF logic system has two redundant subsystems one of which would remain operable and capable of both automatic and manual actuation of engineered safety features equipment and essential supporting systems.

In addition to the new LCO proposed in Reference 2, new administrative changes are proposed in this revised submittal that address comments received by OPPD during the NRC's review of the original submittal. Specifically, footnotes in Tables 2-2, 2-3 and 2-4 have been revised for clarity. The phrase "exceed the minimum limits" was corrected to read "meet the minimum limits" in the proposed new LCO TS 2.15(3). The Discussion and Justification section is updated to reflect these revisions. However, the revisions have no effect on the Basis for No Significant Hazards Consideration section. To facilitate NRC review, this revised submittal also includes all unaffected pages from Reference 2.

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A001

Attachment A contains a markup reflecting the requested changes of the Technical Specifications. Attachment B provides the "Discussion, Justification and No Significant Hazards Consideration."

OPPD requests 60 days to implement the proposed specifications following NRC approval.

If you have additional questions or require further information, please contact me or members of my staff.

Sincerely,

W. G. Gates

W. G. Gates
Vice President

TJP/TCM

Attachments

c:

E. W. Merschoff, NRC Regional Administrator, Region IV
L. R. Wharton, NRC Project Manager
W. C. Walker, NRC Senior Resident Inspector
Winston & Strawn
B. E. Casari, Director - Environmental Health Division,
State of Nebraska

U. S. Nuclear Regulatory Commission
LIC-00-0004
Enclosure

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Omaha Public Power District	)	Docket No. 50-285
(Fort Calhoun Station	)	
Unit No. 1)	)	

AFFIDAVIT

W. G. Gates, being duly sworn, hereby deposes and says that he is the vice president in charge of all nuclear activities of the Omaha Public Power District; that as such he is duly authorized to sign and file with the Nuclear Regulatory Commission the attached information concerning the Revised Application for Amendment dated May 8, 2000, revising the definition of engineered safety feature (ESF) logic, proposing a new Limiting Conditions for Operation (LCO) for Specification 2.15 pertaining to an inoperable ESF logic subsystem, revising the Basis of Specification 2.15 to include more detail concerning ESF logic, and incorporating associated administrative changes; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information, and belief.

W. G. Gates
W. G. Gates
Vice President

STATE OF NEBRASKA)
) ss
COUNTY OF DOUGLAS)

Subscribed and sworn to before me, a Notary Public in and for the State of Nebraska on this 8th day of May, 2000.

Joan M. Hineline
Notary Public

GENERAL NOTARY-State of Nebraska
JOAN M. HINELINE
My Comm. Exp. Sept. 3, 2000

U. S. Nuclear Regulatory Commission
LIC-00-0004
Enclosure

BEFORE THE UNITED STATES
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Omaha Public Power District	)	Docket No. 50-285
(Fort Calhoun Station	)	
Unit No. 1)	)	

APPLICATION FOR AMENDMENT
OF
OPERATING LICENSE

Pursuant to Section 50.90 of the regulations of the U. S. Nuclear Regulatory Commission ("the Commission"), Omaha Public Power District, holder of Facility Operating License No. DPR-40, herewith requests that the Technical Specifications set forth in Appendix A to that License be amended to revise the definition of engineered safety feature (ESF) logic, incorporate a new Limiting Conditions for Operation (LCO) for Specification 2.15 pertaining to an inoperable ESF logic subsystem, revise the Basis of Specification 2.15 to include more detail concerning ESF logic, and incorporate associated administrative changes.

The proposed changes in Technical Specifications are provided in Attachment A to this Application. A Discussion, Justification and No Significant Hazards Consideration Analysis, which demonstrates that the proposed changes do not involve significant hazards consideration, is appended in Attachment B. The proposed changes in specifications would not authorize any change in the types or any increase in the amounts of effluents that will be released, or a change in the authorized power level of the facility.

WHEREFORE, Applicant respectfully requests that the Definitions Section and Specification 2.15 of Appendix A to Facility Operating License No. DPR-40 be amended in the form attached hereto as Attachment A.

A copy of this Application, including its attachments, has been submitted to the Director - Environmental Health Division, State of Nebraska, as required by 10 CFR 50.91.

OMAHA PUBLIC POWER DISTRICT

By M. L. Tate
Vice President

Subscribed and sworn to before me this 8th day of May, 2000.

Joan M. Hineline
Notary Public

GENERAL NOTARY-State of Nebraska
JOAN M. HINELINE
My Comm. Exp. Sept. 3, 2000

LIC-00-0004
ATTACHMENT A

DEFINITIONS

PROTECTIVE SYSTEMS (Continued)

Engineered Safety Feature Logic[2]

The system which utilizes relay contact outputs from individual instrument channels to provide a dual channel signal to independently initiate the actuation of the engineered safety feature equipment. Two logic subsystems, termed A and B, are provided; each subsystem is composed of four channels wired to provide independent safety feature initiation signals on a 2-out-of-4 basis (Containment Radiation High Signal is 1-out-of-2 logic).

Degree of Redundancy

The difference between the number of operable channels and the number of channels which when tripped will cause an automatic system trip.

INSTRUMENTATION SURVEILLANCE

Channel Check

A qualitative determination of acceptable operability by observation of channel behavior during normal plant operation. This determination shall where feasible, include comparison of the channel with other independent channels measuring the same variable.

Channel Functional Test

Injection of a simulated signal into the channel to verify that it is operable, including any alarm and/or trip initiating action.

Channel Calibration

Adjustment of channel output such that it responds, with acceptable range and accuracy, to known values of the parameter which the channel measures. Calibration shall encompass the entire channel, including equipment action, alarms, interlocks or trip, and shall be deemed to include the channel functional test.

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~~ 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 the at least one inoperable channel has not been restored to ~~operable~~ 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.

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.15 Instrumentation and Control Systems (Continued)

ventilation isolation signals available if the containment ventilation isolation valves are closed. If after 24 hours from time of initiating a hot shutdown procedure the at least one inoperable engineered safety features or isolation functions channel has not been restored to operable OPERABLE status, the reactor shall be placed in a cold shutdown condition within the following 24 hours. 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.

(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.

(34) In the event the number of channels of a 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; however, operation can continue without containment ventilation isolation signals available if the ventilation isolation valves are closed. 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 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.

(45) 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 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)

(56) 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~~ 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)

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 the RPS~~reactor protection system~~, which automatically initiates ~~appropriate action to prevent exceeding established limits~~. Safety is not compromised, however, by ~~continuing operating~~ continued operation with certain instrumentation ~~channels~~ out of ~~service since provisions were made~~ for this in the plant design. ~~This specification outlines limiting conditions for operation necessary to preserve the effectiveness of the reactor control and protection system when any one or more of the channels are out of service.~~

The ~~All reactor protection~~ RPS and ~~almost all~~ 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 ~~engineered safeguards control~~ ESF logic system.

When one of the four channels is taken out of service for maintenance, RPS~~the protective system~~ 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~~reactor protective system~~ 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~~ OPERABLE high-power level channel ~~is 3 in order~~ to provide adequate power ~~tilt detection~~. If only 2 channels are ~~operable~~ 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. ~~The containment radiation high signal~~ CRHS isolates the containment pressure relief, air sample and purge system valves.

References

(1) USAR, Section 7.2.7.1

2.0 **LIMITING CONDITIONS FOR OPERATION**

2.15 Instrumentation and Control Systems (Continued)

Basis (Continued).

Entry into Technical Specification 2.15(3) is made when conditions have caused one logic subsystem ("A" or "B") to become inoperable but the redundant logic subsystem remains operable. The loss of a prime initiation relay (which renders all 4 channels of a logic subystem inoperable) is the condition most likely to cause entry into Technical Specification 2.15(3). In this situation, the remaining ESF logic subsystem still has the capability to automatically actuate engineered safety features equipment and essential supporting systems . The 48-hour completion time is commensurate with the importance of avoiding the vulnerability of a single failure in the remaining ESF logic subsystem. Technical Specification 2.15(3) will not be used upon loss of the common channels that affect both "A" and "B" subsystems prime initiators operability. Upon exiting TS 2.15(3) following the restoration of a prime initiation relay to OPERABLE status, if any channel(s) remain inoperable, the appropriate LCO (TS 2.15(1) or (2)) is applicable with the length of inoperability measured from time of discovery of: 1) prime initiation relay inoperability, or 2) channel inoperability, whichever is longer.

The ~~engineered safety features~~ ESF logic system provides a 2-out-of-4 logic on the ~~signals used to actuate the equipment~~ connected to each of ~~the two~~ emergency diesel generator units.

The rod block system automatically inhibits all CEA motion in the event a Limiting Condition for Operation (LCO) on CEA insertion, CEA deviation, CEA overlap or CEA sequencing is approached. The installation of the rod block system ensures that no single failure in the control element drive control system (other than a dropped CEA) can cause the CEAs to move such that the CEA insertion, deviation, sequencing or overlap limits are exceeded. Accordingly, with the rod block system installed, only the dropped CEA event is considered an AOO and factored into the derivation of the Limiting Safety System Settings and Limiting Conditions for Operation. With the rod block function out-of-service several additional CEA deviation events must be considered as AOOs. Analysis of these incidents indicates that the single CEA withdrawal incident is the most limiting of these events. An analysis of the at-power single CEA withdrawal incident was performed for Fort Calhoun for various initial Group 4 insertions, and it has been concluded that the Limiting Conditions for Operation (LCO) and Limiting Safety System Settings (LSSS) are valid for a Group 4 insertion of less than or equal to 15%

The operability of the Alternate Shutdown Panel (AI-185), including Wide Range Logarithmic Power and Source Range Monitors on AI-212, and Emergency Auxiliary Feedwater Panel (AI-179) instrument and control circuits ensures that sufficient capability is available to permit entry into and maintenance of the Hot Shutdown Mode from locations outside of the Control Room. This capability is required in the event that Control Room habitability is lost due to fire in the cable spreading room or Control Room.

Variances which may exist at startup between the more accurate ΔT-Power and Nuclear Instrumentation Power (NI-Power) are not significant for enabling of the trip functions. By 15% of rated power as measured by the uncalibrated NI Power, the Axial Power Distribution (APD) and Loss of Load (LOL) trip functions are enabled while the High Rate of Change Power trip is bypassed.

The APD trip function acts to limit the axial power shape to the range assumed in the setpoint analysis. Significant margins to local power density limits exist at 15% power, as well as power levels up to at least 30% (where NI calibration occurs).

The LOL trip function as an anticipatory trip for the high pressurizer pressure and high power trips in order to limit the severity of a LOL transient. This trip is not credited in the USAR Chapter 14 Safety Analyses and any variance between ΔT-Power and NI-Power has no effect on the safety analysis.

The High Rate of Change of Power trip acts to limit power excursions from low power levels and bypassing of this trip at high power levels is conservative. This trip is not credited in the USAR Chapter 14 Safety Analyses for Mode 1 operation. Any variance between ΔT-Power and NI-Power has no effect on the safety Analysis.

TABLE 2-2

Instrument Operating Requirements for Reactor Protective System

No.	Functional Unit	Minimum Operable Channels	Minimum Degree of Redundancy	Permissible Bypass Condition	Test, Maintenance and Inoperable Bypass
1	Manual (Trip Buttons)	1	None	None	N/A
2	High Power Level	2[b][c]	1[c]	Thermal Power Input Bypassed below 10^{-4}% of Rated Power[a][d]	(e)~~(f)~~
3	Thermal Margin/Low Pressurizer Pressure	2[b]	1	Below 10^{-4}% of Rated Power[a][d]	(e)~~(f)~~
4	High Pressurizer Pressure	2[b]	1	None	(e)
5	Low R.C. Flow	2[b]	1	Below 10^{-4}% of Rated Power [a][d]	(e)
6	Low Steam Generator Water Level	2/Steam Gen[b]	1/Steam Gen	None	(e)
7	Low Steam Generator Pressure	2/Steam Gen[b]	1/Steam Gen	Below 600 psia[a][d]	(e)
8	Containment High Pressure	2[b]	1	During Leak Test	(e)
9	Axial Power Distribution	2[b][c]	1[c]	Below 15% of Rated Power[g]	(e)~~(f)~~
10	High Rate Trip-wide Range Log Channels	2[b]	1	Below 10^{-4}% and above 15% of Rated Power[a][g]	(e)
11	Loss of Load	2[b]	1	Below 15% of Rated Power[g]	(e)
12	Steam Generator Differential Pressure	2[b]	1	None	(e)

a. Bypass automatically removed.

b. ~~If minimum operable channel conditions are reached, one inoperable channel must be placed in the tripped condition within one hour from the time of discovery of loss of operability. The remaining channel may be bypassed for 48 hours and, if an inoperable channel is not returned to operable status within this time frame, a unit shutdown must be initiated. (See Specification (2) and exception associated with the high rate trip-wide range log channel.)~~ Specification 2.15(2) is applicable.

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TABLE 2-2
(Continued)

c. If two channels are inoperable, load shall be reduced to 70% or less of rated power.

d. For low power physics testing this trip may be bypassed up to 10^{-1}% of rated power.

e. ~~If one channel becomes inoperable, that channel may be bypassed for 48 hours from time of discovery of loss of operability. If not returned to operable status within this time frame, the channel must be placed in the tripped condition. (See Specification (1) and associated exceptions.)~~ Specification 2.15(1) is applicable.

f. Deleted. ~~If the inoperable channel is determined to be caused by malfunctioning RTDs or nuclear detectors, the channel may be bypassed for up to 7 days from time of discovery of loss of operability. If not returned to operable status within this time frame, the unit must be placed in hot shutdown within the following 12 hours.~~

g. For each channel, the same bistable automatically activates the Loss of Load and Axial Power Distribution (APD) trips and automatically bypasses the high rate trip at 15% of rated power. Only the APD trip is a Limiting Safety System Setting. Therefore, the bistable is set to actuate within the APD tolerance band.

TABLE 2-3

Instrument Operating Requirements for Engineered Safety Features

No.	Functional Unit	Minimum Operable Channels	Minimum Degree of Redundancy	Permissible Bypass Condition	Test, Maintenance and Inoperable Bypass
1	Safety Injection				
A	Manual	1	None	None	N/A
B	High Containment Pressure				
	Logic Subsystem A	2[a][d][l]	1	During Leak Test	(f)
	Logic Subsystem B	2[a][d][l]	1		
C	Pressurizer Low/Low Pressure				
	Logic Subsystem A	2[a][d][l]	1	Reactor Coolant Pressure Less Than 1700 psia[b]	(f)
	Logic Subsystem B	2[a][d][l]	1		
2	Containment Spray				
A	Manual	1	None	None	N/A
B	High Containment Pressure				
	Logic Subsystem A	2[a][c][d][l]	1	During Leak Test	(f)
	Logic Subsystem B	2[a][c][d][l]	1		
C	Pressurizer Low/Low Pressure				
	Logic Subsystem A	2[a][c][d][l]	1	Reactor Coolant Pressure Less Than 1700 psia[b]	(f)
	Logic Subsystem B	2[a][c][d][l]	1		
3	Recirculation				
A	Manual	1	None	None	N/A
B	~~SIRW Tank Low Level~~				
	Logic Subsystem A	2[a][k][l]	1	None	(j)
	Logic Subsystem B	2[a][k][l]	1		
4	Emergency Off-Site Power Trip				
A	Manual	1[e]	None	None	N/A
B	Emergency Bus Low Voltage (Each Bus)				
	-Loss of Voltage	2[d]	1	Reactor Coolant Temperature Less Than 300°F	(f)
	-Degraded Voltage	2[a][d]	1		

TABLE 2-3
(Continued)

No.	Functional Unit	Minimum Operable Channels	Minimum Degree of Redundancy	Permissible Bypass Condition	Test, Maintenance and Inoperable Bypass
5	Auxiliary Feedwater				
A	Manual	1	None	None	N/A
B	Auto. Initiation Logic Subsystem A Logic Subsystem B			Operating Modes 3, 4, and 5	
	-Steam Generator Low Level	2[a][d][l]	1		(h)
	-Steam Generator Low Pressure	3[a][g][l]	1		(i)
	-Steam Generator Differential Pressure	3[a][g][l]	1		(i)

a Circuits on ESF Logic Subsystems A and B ~~actuation circuits~~ each have 4 channels.

b Auto removal of bypass above 1700 psia.

c Coincident high containment pressure and pressurizer pressure low signals required for initiation of containment spray.

d If minimum operable channel conditions are reached, ~~one inoperable~~ channel must be placed in the tripped ~~condition or~~ low level actuation position for auxiliary feedwater system within eight hours from the time of discovery of loss of operability. ~~The remaining inoperable channel may be bypassed for 48 hours and, if an inoperable channel is not returned to operable status within this time frame, a unit shutdown must be initiated (see Specification (2))~~. Specification 2.15(2) is applicable.

e Control switch on incoming breaker.

f If one channel becomes inoperable, that channel must be placed in the tripped or bypassed condition within eight hours from time of discovery of loss of operability. ~~If bypassed and that channel is not returned to operable status within 48 hours from time of discovery of loss of operability, that channel must be placed in the tripped condition within the following eight hours. (See Specification (1) and exception associated with maintenance.)~~ Specification 2.15(1) is applicable.

g Three channels required because bypass or failure results in auxiliary feedwater actuation block in the affected channel.

h ~~If one channel becomes inoperable, that channel must be placed in the actuation condition within eight hours or bypassed condition within one hour from time of discovery of loss of operability. If bypassed and that channel is not returned to operable status within 48 hours from time of discovery of loss of operability, the channel must be placed in the low level actuation permissive condition within the following eight hours. (See Specification (1) and exception associated with maintenance.)~~ Specification 2.15(1) is applicable.

TABLE 2-3
(Continued)

i If the channel becomes inoperable, that channel must be placed in the bypassed condition within eight hours from time of discovery of loss of operability. If the channel is not returned to operable OPERABLE status within 48 hours from time of discovery of loss of operability, one of the eight channels may continue to be placed in the bypassed condition provided the Plant Review Committee has reviewed and documented the judgment concerning prolonged operation in bypass of the defective inoperable channel. The channel shall be returned to operable OPERABLE status no later than during the next cold shutdown. If one of the four channels on one steam generator is in prolonged bypass and a channel on the other steam generator becomes inoperable, the second inoperable channel must be placed in bypass within eight hours from time of discovery of loss of operability. If one of the inoperable channels is not returned to operable OPERABLE status within seven days from the time of discovery of the second loss of operability, the unit must be placed in hot shutdown within the following 12 hours.

j If one channel becomes inoperable, that channel must be placed in the bypassed condition within eight hours from time of discovery of loss of operability. If the channel is not returned to operable OPERABLE status within 48 hours from time of discovery of loss of operability, one of the eight channels may continue to be placed in the bypassed condition provided the Plant Review Committee has reviewed and documented the judgement concerning prolonged operation in bypass of the defective inoperable channel. The channel shall be returned to operable OPERABLE status no later than during the next cold shutdown. If a channel is in prolonged bypass and a channel on the opposite train becomes inoperable, the second inoperable channel must be placed in bypass within eight hours from time of discovery of loss of operability. If one of the inoperable channels is not returned to operable OPERABLE status within seven days from the time of discovery of the second loss of operability, the unit must be placed in hot shutdown within the following 12 hours.

k ~~If minimum operable channel conditions are reached, both inoperable channels must be placed in the bypassed condition within eight hours from time of discovery of loss of operability. If one of the inoperable channels is not returned to operable status within 48 hours from time of discovery of the second loss of operability, a unit shutdown must be initiated (see Specification 2.15(2)).~~ Specification 2.15(2) is applicable.

l Specification 2.15(3) is applicable. If ESF Logic Subsystems A and B are inoperable, enter Specification 2.0.1.

TABLE 2-4

INSTRUMENT OPERATING CONDITIONS FOR ISOLATION FUNCTIONS

No.	Functional Unit	Minimum Operable Channels	Minimum Degree of Redundancy	Permissible Bypass Condition	Test, Maintenance and Inoperable Bypass
1	Containment Isolation				
A	Manual	1	None	None	N/A
B	Containment High Pressure				
	Logic Subsystem A	2[a][e][g]	1	During Leak Test	(f)
	Logic Subsystem B	2[a][e][g]	1		
C	Pressurizer Low/Low Pressure				
	Logic Subsystem A	2[a][e][g]	1	Reactor Coolant Pressure Less Than 1700 psia[b]	(f)
	Logic Subsystem B	2[a][e][g]	1		
2	Steam Generator Isolation				
A	Manual	1	None	None	N/A
B	Steam Generator Isolation	1	None	None	N/A
	(i) Steam Generator ~~Low Pressure~~				
	Logic Subsystem A	2/Steam Gen [e][g]	1/Steam Gen	Steam Generator Pressure Less Than 600 psia[c]	(f)
	Logic Subsystem B	2/Steam Gen [e][g]	1/Steam Gen		
	(ii) Containment High Pressure				
	Logic Subsystem A	2[a][e][g]	1	During Leak Test	(f)
	Logic Subsystem B	2[a][e][g]	1		
3	Ventilation Isolation				
A	Manual	1	None	None	N/A
B	Containment High Radiation				
	Logic Subsystem A	1[d][g]	None	If Containment Relief and Purge Valves Are Closed	(f)
	Logic Subsystem B	1[d][g]	None		

a Circuits on ESF Logic Subsystems A and B ~~circuits~~ each have 4 channels.

b Auto removal of bypass prior to exceeding 1700 psia.

c Auto removal of bypass prior to exceeding 600 psia.

TABLE 2-4
(Continued)

d A and B trains are both actuated by either the Containment or Auxiliary Building Exhaust Stack initiating channels. The number of installed channels for Containment Radiation High Signal is two for purposes of Specification 2.15(1).

e If minimum operable channel conditions are reached, one inoperable channel must be placed in the tripped condition within eight hours from the time of discovery of loss of operability. ~~The remaining inoperable channel may be bypassed for 48 hours from the time of discovery of loss of operability and, if an inoperable channel is not returned to operable status within this time frame, a unit shutdown must be initiated (see Specification 2.15(2)).~~ Specification 2.15(2) is applicable.

f If one channel becomes inoperable, that channel must be placed in the tripped or bypassed condition within eight hours from the time of discovery of loss of operability. ~~If bypassed and that channel is not returned to operable status within 48 hours from the time of discovery of loss of operability, that channel must be placed in the tripped condition within the following eight hours. (See Specification 2.15(1) and exception associated with maintenance.)~~ Specification 2.15(1) is applicable.

g Specification 2.15(3) is applicable. If ESF Logic Subsystems A and B are inoperable, enter Specification 2.0.1.

LIC-00-0004
ATTACHMENT B

DISCUSSION, JUSTIFICATION AND NO SIGNIFICANT HAZARDS CONSIDERATION

DISCUSSION AND JUSTIFICATION

The Omaha Public Power District (OPPD) proposes to revise Technical Specifications (TS) 2.15, and a definition in the Fort Calhoun Station (FCS) Unit No. 1 Technical Specifications as follows:

1. The definition of engineered safety feature (ESF) logic is revised to note that the Containment Radiation High Signal (CRHS) is 1-out-of-2 logic;

2. TS 2.15(2) is revised to require that at least one inoperable channel be restored to operability. At least one and as many as two channels are inoperable when this limiting conditions for operation (LCO) is applicable. However, the current wording of the LCO implies that only one channel is inoperable;

3. A new LCO is proposed (TS 2.15(3)) that will pertain only to ESF logic. The LCO would be entered when the number of operable channels on an ESF logic subsystem falls below the limits of Table 2-3 or 2-4. Currently, this would require the plant to be in hot shutdown within 12 hours. A 48-hour allowed outage time (AOT) is proposed to allow repairs to be accomplished safely and effectively and avoid unnecessary plant shutdowns;

4. The Basis of TS 2.15 is revised to provide additional detail concerning ESF logic.

The following minor changes are also proposed:

In TS 2.15, the term "operable" is changed to "OPERABLE" since it is a defined term. Footnote "a" on Tables 2-3 and 2-4 is revised to clarify that it pertains to circuits on ESF logic subsystems "A" and "B." New footnotes ("l" and "g" respectively) are added to Tables 2-3 and 2-4 to specify applicable LCOs. Other footnotes pertaining to channel inoperability are revised to refer to the applicable LCOs.

DISCUSSION AND JUSTIFICATION (Continued):

Background

ESF logic is comprised of two logic subsystems (A and B), which act independently of each other and receive input from different sets of instrumentation. ESF instrumentation is arranged into independent channels (A through D). The two-out-of-four logic (CRHS is one-out-of-two) of each ESF logic subsystem receives input from the instrumentation of all four (two for CRHS) channels. In most cases, the instruments providing input into ESF logic subsystem "A" are different from those that input ESF logic subsystem "B." When a measured process variable departs from its normal range, the prime initiation relay on that ESF logic subsystem trips and sends a signal to trip the derived initiation lockout relay on the opposite ESF logic subsystem. ESF equipment actuation results from the logical combination of initiating signals each of which is derived from a departure from the normal operating range of one of the following critical parameters:

- Pressurizer Pressure Low Signal (PPLS)
- Containment Pressure High Signal (CPHS)
- Safety Injection Refueling Water (SIRW) Tank Low Signal (STLS)
- Containment Radiation High Signal (CRHS)
- Steam Generator Low Pressure Signal (SGLS)

The design of the ESF system features improved system reliability as prime and derived initiation signals are each capable of independently generating the required actuation signal resulting in ESF equipment actuation from either or both ESF logic subsystems.

The failure of one or more prime initiation lockout relays on one of the ESF logic subsystems would prevent all of the channels associated with the failed lockout relay(s) from providing a trip signal to the prime actuation, derived initiation, or backup actuation relays. However, the condition (e.g., PPLS) would be detected by the opposite ESF logic subsystem and, given the logical combination of initiating signals, that subsystem would automatically actuate ESF equipment.

It is OPPD's position that a 48-hour AOT allowing FCS to remain at power while restoring sufficient channels to operable status is justified because ESF logic will still provide ESF equipment actuation, and the alternative involves subjecting the plant to a transient (manual shutdown). LCO 3.3.5A, "Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip (Analog)," of Combustion Engineering Owners Group (CEOG) Standard Technical Specification (STS), Rev. 1, dated April 7, 1995 provides a 48-hour AOT in similar circumstances. The completion times requested for shutting down the reactor are identical to TS 2.15(2) requirements; i.e., if the AOT is not met, the reactor must be placed in hot shutdown within the following 12 hours and in cold shutdown within 48 hours of initiating hot shutdown.

BASIS FOR NO SIGNIFICANT HAZARDS CONSIDERATION:

The proposed changes do not involve significant hazards consideration because operation of Fort Calhoun Station (FCS) Unit No. 1 in accordance with these changes would not:

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

Omaha Public Power District (OPPD) proposes to incorporate a new Limiting Condition for Operation (LCO) into Specification 2.15 which will apply to an engineered safety feature (ESF) logic subsystem when the minimum operable channels or minimum degree of redundancy requirements listed in Tables 2-3 and 2-4 are not met. The LCO proposes an allowed outage time (AOT) of 48 hours to restore sufficient channels to operability so as to meet minimum requirements, or the plant must be placed in hot shutdown within the following 12 hours.

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 ESF logic subsystem acting alone can automatically actuate ESF equipment and essential supporting systems.

The design of the ESF logic system is not being altered by this change. The change allows a reasonable time to contact trained personnel and adequately troubleshoot, perform and test repairs on an inoperable ESF logic subsystem. The proposed AOT ensures that repairs are thoroughly planned and accomplished without undue haste. In this situation, the opposite ESF logic subsystem is operable as verified through surveillance testing and capable of providing both automatic and manual ESF equipment actuation.

The proposed AOT is similar to that of LCO 3.3.5A, "Engineered Safety Features Actuation System (ESFAS) Logic and Manual Trip (Analog)," of Combustion Engineering Owners Group (CEOG) Standard Technical Specification (STS), Rev. 1, dated April 7, 1995.

Additional administrative revisions are proposed to either support the new LCO (e.g., footnotes in Tables 2-3 & 2-4) or clarifiy existing information. Therefore, OPPD concludes that the proposed LCO and administrative revisions do not involve a significant increase in the probability or consequences of an accident previously evaluated.

BASIS FOR NO SIGNIFICANT HAZARDS CONSIDERATION (Continued):

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

There will be no physical alterations to the plant configuration, changes to setpoint values, or changes to the application of setpoints or limits because of these proposed changes. No changes in operating modes are proposed. The proposed LCO provides a reasonable AOT to troubleshoot, repair, and test an inoperable ESF logic subsystem. The remaining ESF logic subsystem is still operable and capable of both automatic and manual ESF equipment actuation. The remaining changes are administrative in nature and thus none of the proposed changes create the possibility of a new or different kind of accident from any previously evaluated.

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

The proposed LCO provides a reasonable AOT to troubleshoot, repair, and test an inoperable ESF logic subsystem. The remaining ESF logic subsystem is still operable as verified by surveillance testing and capable of both automatic and manual ESF equipment actuation. With an inoperable ESF logic subsystem, the ESF logic system would not be single failure proof for a brief period of time. However, it is OPPD's position that effecting repairs while the plant is at power and stable is preferable to imposing a transient (manual shutdown) on the plant at a time when the ESF logic system is no longer single failure proof. Therefore, OPPD concludes that the proposed LCO and supporting administrative changes do not result in a significant reduction in a margin of safety.

Based on the above considerations, it is OPPD's position that this proposed amendment does not involve significant hazards considerations as defined by 10 CFR 50.92 and the proposed changes will not result in a condition which significantly alters the impact of the Station on the environment. Thus, the proposed changes meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and pursuant to 10 CFR 51.22(b) no environmental assessment need be prepared.