

May 16, 1989

Docket No. 50-483

Mr. Donald F. Schnell
Senior Vice President - Nuclear
Union Electric Company
Post Office Box 149
St. Louis, Missouri 63166

Dear Mr. Schnell:

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JHannon	ARM/LFMB
OGC-WF1	MHodges
LMarsh	

SUBJECT: AMENDMENT NO. 45 TO FACILITY OPERATING LICENSE NO. NPF-30
(TAC NO. 66176)

The Commission has issued the enclosed Amendment No. 45 to Facility Operating License No. NPF-30 for the Callaway Plant, Unit 1. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated January 14, 1986 as supplemented April 14 and May 5, 1989.

The amendment incorporates Technical Specification limiting conditions for operation and surveillance requirements for the steam generator Atmospheric Steam Dumps (ASD's) into the Callaway License in order to assure the availability of mitigating equipment assumed in the steam generator tube rupture analysis. The TS requirements constitute additional limitations on facility operations and satisfy, in part, the specific requirements of License Condition 2.C.(11) of the operating license.

A copy of the Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

/s/

Thomas W. Alexion, Project Manager
Project Directorate III-3
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 45 to
License No. NPF-30
2. Safety Evaluation

cc w/enclosures:
See next page

*See previous concurrence

Office:	LA/PDIII-3*	PM/PDIII-3*	SRXB*	EMEB*	PD/PDIII-3*	OGC/NRR*
Surname:	PKreutzer	TAlexion/tg	MHodges	LMarsh	JHannon	NRomney
Date:	04/28/89	04/28/89	04/28/89	05/05/89	04/28/89	05/11/89

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Office: LA/PDIII-3
Surname: PKreutzer
Date: 4/12/89

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TAlexion/tg
4/28/89

SRXB
MHodges
4/28/89

EMEB
LMarsh
5/5/89

PD/PDIII-3
JHannon
4/28/89

OGC RR
NRomney
5/11/89

Mr. D. F. Schnell
Union Electric Company

Callaway Plant
Unit No. 1

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. STN-50-483

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 45
License No. NPF-30

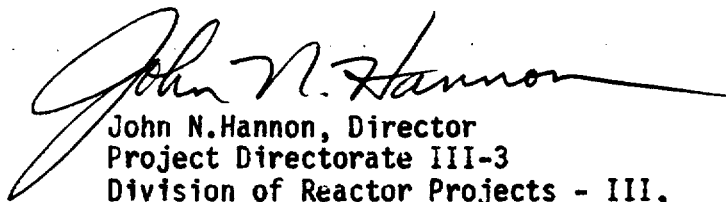
1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment filed by Union Electric Company (UE, the licensee) dated January 14, 1986 as supplemented by letter dated April 14 and May 5, 1989 complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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;
 - 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 amended by 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-30 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 45, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into the license. UE shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, reading "John N. Hannon", is written over the typed name and title.

John N. Hannon, Director
Project Directorate III-3
Division of Reactor Projects - III,
IV, V and Special Projects
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 16, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 45

OPERATING LICENSE NO. NPF-30

DOCKET NO. 50-483

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Corresponding overleaf pages are provided to maintain document completeness.

REMOVE

X
XVI
3/4 3-49
-
B 3/4 7-3
-

INSERT

X
XVI
3/4 3-49
3/4 7-9b
B 3/4 7-3
B 3/4 7-3a

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

<u>SECTION</u>	<u>PAGE</u>
<u>EMERGENCY CORE COOLING SYSTEMS (Continued)</u>	
3/4.5.5 REFUELING WATER STORAGE TANK.....	3/4 5-10
<u>3/4.6 CONTAINMENT SYSTEMS</u>	
3/4.6.1 PRIMARY CONTAINMENT	
Containment Integrity.....	3/4 6-1
Containment Leakage.....	3/4 6-2
Containment Air Locks.....	3/4 6-4
Internal Pressure.....	3/4 6-6
Air Temperature.....	3/4 6-7
Containment Vessel Structural Integrity.....	3/4 6-8
Containment Ventilation System.....	3/4 6-11
3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS	
Containment Spray System.....	3/4 6-13
Spray Additive System.....	3/4 6-14
Containment Cooling System.....	3/4 6-15
3/4.6.3 CONTAINMENT ISOLATION VALVES.....	3/4 6-16
TABLE 3.6-1 CONTAINMENT ISOLATION VALVES.....	3/4 6-18
3/4.6.4 COMBUSTIBLE GAS CONTROL	
Hydrogen Analyzers.....	3/4 6-31
Hydrogen Control Systems.....	3/4 6-32
<u>3/4.7 PLANT SYSTEMS</u>	
3/4.7.1 TURBINE CYCLE	
Safety Valves.....	3/4 7-1
TABLE 3.7-1 MAXIMUM ALLOWABLE POWER RANGE NEUTRON FLUX HIGH SETPOINT WITH INOPERABLE STEAM LINE SAFETY VALVES DURING FOUR LOOP OPERATION.....	3/4 7-2

INDEX

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

<u>SECTION</u>	<u>PAGE</u>
<u>PLANT SYSTEMS (Continued)</u>	
TABLE 3.7-2 STEAM LINE SAFETY VALVES PER LOOP.....	3/4 7-3
Auxiliary Feedwater System.....	3/4 7-4
Condensate Storage Tank.....	3/4 7-6
Specific Activity.....	3/4 7-7
TABLE 4.7-1 SECONDARY COOLANT SYSTEM SPECIFIC ACTIVITY SAMPLE AND ANALYSIS PROGRAM.....	3/4 7-8
Main Steam Line Isolation Valves.....	3/4 7-9
Main Feedwater System.....	3/4 7-9a
Steam Generator Atmospheric Steam Dump Valves.....	3/4 7-9b
3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION.....	3/4 7-10
3/4.7.3 COMPONENT COOLING WATER SYSTEM.....	3/4 7-11
3/4.7.4 ESSENTIAL SERVICE WATER SYSTEM.....	3/4 7-12
3/4.7.5 ULTIMATE HEAT SINK.....	3/4 7-13
3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM.....	3/4 7-14
3/4.7.7 EMERGENCY EXHAUST SYSTEM.....	3/4 7-17
3/4.7.8 SNUBBERS.....	3/4 7-19
FIGURE 4.7-1 SAMPLING PLAN 2) FOR SNUBBER FUNCTIONAL TEST.....	3/4 7-24
3/4.7.9 SEALED SOURCE CONTAMINATION.....	3/4 7-25
3/4.7.10 Deleted	
3/4.7.11 Deleted	
3/4.7.12 AREA TEMPERATURE MONITORING.....	3/4 7-37
TABLE 3.7-4 AREA TEMPERATURE MONITORING.....	3/4 7-38

INDEX

BASES

<u>SECTION</u>	<u>PAGE</u>
<u>REACTOR COOLANT SYSTEM (Continued)</u>	
3/4.4.5 STEAM GENERATORS.....	B 3/4 4-3
3/4.4.6 REACTOR COOLANT SYSTEM LEAKAGE.....	B 3/4 4-4
3/4.4.7 CHEMISTRY.....	B 3/4 4-5
3/4.4.8 SPECIFIC ACTIVITY.....	B 3/4 4-5
3/4.4.9 PRESSURE/TEMPERATURE LIMITS.....	B 3/4 4-6
TABLE B 3/4.4-1 REACTOR VESSEL TOUGHNESS.....	B 3/4 4-10
FIGURE B 3/4.4-1 FAST NEUTRON FLUENCE ($E > 1\text{MeV}$) AS A FUNCTION OF FULL POWER SERVICE LIFE.....	B 3/4 4-12
FIGURE B 3/4.4-2 EFFECT OF FLUENCE AND COPPER ON SHIFT OF RT_{NDT} FOR REACTOR VESSEL STEELS EXPOSED TO IRRADIATION AT 550°F	B 3/4 4-13
3/4.4.10 STRUCTURAL INTEGRITY.....	B 3/4 4-17
3/4.4.11 REACTOR COOLANT SYSTEM VENTS.....	B 3/4 4-17
<u>3/4.5 EMERGENCY CORE COOLING SYSTEMS</u>	
3/4.5.1 ACCUMULATORS.....	B 3/4 5-1
3/4.5.2, 3/4.5.3, and 3/4.5.4 ECCS SUBSYSTEMS.....	B 3/4 5-1
3/4.5.5 REFUELING WATER STORAGE TANK.....	B 3/4 5-2
<u>3/4.6 CONTAINMENT SYSTEMS</u>	
3/4.6.1 PRIMARY CONTAINMENT.....	B 3/4 6-1
3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS.....	B 3/4 6-3
3/4.6.3 CONTAINMENT ISOLATION VALVES.....	B 3/4 6-4
3/4.6.4 COMBUSTIBLE GAS CONTROL.....	B 3/4 6-4

INDEX

BASES

<u>SECTION</u>	<u>PAGE</u>
<u>3/4.7 PLANT SYSTEMS</u>	
3/4.7.1 TURBINE CYCLE.....	B 3/4 7-1
3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION.....	B 3/4 7-3a
3/4.7.3 COMPONENT COOLING WATER SYSTEM.....	B 3/4 7-3a
3/4.7.4 ESSENTIAL SERVICE WATER SYSTEM.....	B 3/4 7-3a
3/4.7.5 ULTIMATE HEAT SINK.....	B 3/4 7-3a
3/4.7.6 CONTROL ROOM EMERGENCY VENTILATION SYSTEM.....	B 3/4 7-4
3/4.7.7 EMERGENCY EXHAUST SYSTEM.....	B 3/4 7-4
3/4.7.8 SNUBBERS.....	B 3/4 7-5
3/4.7.9 SEALED SOURCE CONTAMINATION.....	B 3/4 7-6
3/4.7.10 Deleted	
3/4.7.11 Deleted	
3/4.7.12 AREA TEMPERATURE MONITORING.....	B 3/4 7-8
<u>3/4.8 ELECTRICAL POWER SYSTEMS</u>	
3/4.8.1, 3/4.8.2., and 3/4.8.3 A.C. SOURCES, D.C. SOURCES and ONSITE POWER DISTRIBUTION.....	B 3/4 8-1
3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES.....	B 3/4 8-3
<u>3/4.9 REFUELING OPERATIONS</u>	
3/4.9.1 BORON CONCENTRATION.....	B 3/4 9-1
3/4.9.2 INSTRUMENTATION.....	B 3/4 9-1
3/4.9.3 DECAY TIME.....	B 3/4 9-1
3/4.9.4 CONTAINMENT BUILDING PENETRATIONS.....	B 3/4 9-1
3/4.9.5 COMMUNICATIONS.....	B 3/4 9-1

INSTRUMENTATION

REMOTE SHUTDOWN INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.5 The remote shutdown monitoring instrumentation channels given in Table 3.3-9 and the auxiliary shutdown panel (ASP) controls shall be OPERABLE with readouts displayed external to the control room.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

- a. With the number of OPERABLE remote shutdown monitoring channels less than the Minimum Channels OPERABLE as required by Table 3.3-9, restore the inoperable channel(s) to OPERABLE status within 7 days; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With the ASP controls inoperable, restore the inoperable ASP controls to OPERABLE status within 7 days; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.5.1 Each remote shutdown monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK and CHANNEL CALIBRATION at the frequencies given in Table 4.3-6.

4.3.3.5.2 The ASP controls shall be demonstrated OPERABLE at least once per 18 months by operating each actuated component from the ASP.

4.3.3.5.3 The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 for the turbine-driven auxiliary feedwater pump or the atmospheric steam dump valves.

TABLE 3.3-9

REMOTE SHUTDOWN MONITORING INSTRUMENTATION

<u>INSTRUMENT</u>	<u>READOUT LOCATION</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>MINIMUM CHANNELS OPERABLE</u>
1. RCS Pressure-Wide Range	ASP*	2	1
2. Reactor Coolant Temperature- Cold Leg	ASP*	4	1
3. Source Range, Neutron Flux#	ASP*	2	1
4. Reactor Trip Breaker Indication	RTS**	1/trip breaker	1/trip breaker
5. Reactor Coolant Temperature - Hot Leg	ASP*	2	1
6. Reactor Coolant Pump Breakers	***	1/pump	1/pump
7. Pressurizer Pressure	ASP*	1	1
8. Pressurizer Level	ASP*	2	1
9. Steam Generator Pressure	ASP*	2/stm. gen.	1/stm. gen.
10. Steam Generator Level	ASP*	2/stm. gen.	1/stm. gen.
11. Auxiliary Feedwater Flow Rate	ASP*	4	1
12. Auxiliary Feedwater Suction Pressure	ASP*	3	1

*Auxiliary Shutdown Panel

**Reactor Trip Switchgear

***13.8 kV Switchgear

#Not required OPERABLE in MODE 1 or in MODE 2 above P-6 setpoint.

PLANT SYSTEMS

STEAM GENERATOR ATMOSPHERIC STEAM DUMP VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.7 At least three steam generator atmospheric steam dump valves (ASD's) shall be OPERABLE.

APPLICABILITY: Modes 1, 2 and 3.

ACTION:

- a. With one of the required ASD's inoperable due to causes other than excessive seat leakage, within 7 days restore the ASD to OPERABLE status, or be in HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- b. With more than one of the required ASD's inoperable due to causes other than excessive seat leakage, within 24 hours restore at least two of the required ASD's to OPERABLE status or be in HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.
- c. With one or more of the required ASD's inoperable because of excessive seat leakage, close the associated block valve(s) and restore the ASD to OPERABLE status within 30 days, or be in HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours.
- d. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.7.1.7 No additional requirements other than those required by Specification 4.0.5.

PLANT SYSTEMS

BASES

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blow down in the event of a steam line rupture. This restriction is required to: (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam line isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analyses.

3/4.7.1.6 FEEDWATER ISOLATION VALVES

The OPERABILITY of the feedwater isolation valves: (1) provides a pressure boundary to permit auxiliary feedwater addition in the event of a main steam or feedwater line break inside containment; and (2) ensure that no more than one steam generator will blow down in the event of a steam line rupture which a) minimizes the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and b) limits the pressure rise within containment. The OPERABILITY of the feedwater isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analysis.

3/4.7.1.7 STEAM GENERATOR ATMOSPHERIC STEAM DUMP VALVES

The OPERABILITY of the steam generator atmospheric steam dump valves (ASD's) ensures that the reactor decay heat can be dissipated to the atmosphere in the event of a steam generator tube rupture and loss of off-site power and that the Reactor Coolant System can be cooled down for Residual Heat Removal System operation. The number of required ASD's assures that the subcooling can be achieved, consistent with the assumptions used in the steam generator tube rupture analysis, to facilitate equalizing pressures between the Reactor Coolant System and the faulted steam generator. For cooling the plant to RHR initiation conditions, only one ASD is required. In this case, with three ASD's OPERABLE, if the single failure of one ASD occurs and another ASD is assumed to be associated with the faulted steam generator, one ASD remains available for required heat removal.

Each ASD is equipped with a manual block valve (in the auxiliary building) to provide a positive shutoff capability should an ASD develop leakage. Closure of the block valves of all ASD's because of excessive seat leakage does not endanger the reactor core; consistent with plant

PLANT SYSTEMS

BASES

3/4.7.1.7 STEAM GENERATOR ATMOSPHERIC STEAM DUMP VALVES (Continued)

accident and transient analyses, decay heat can be dissipated with the main steamline safety valves or a block valve can be opened manually in the auxiliary building and the ASD can be used to control release of steam to the atmosphere. For the steam generator tube rupture event, primary to secondary leakage can be terminated by depressurizing the Reactor Coolant System with the pressurizer power operated relief valves.

3/4.7.2 STEAM GENERATOR PRESSURE/TEMPERATURE LIMITATION

The limitation on steam generator pressure and temperature ensures that the pressure-induced stresses in the steam generators do not exceed the maximum allowable fracture toughness stress limits. The limitations of 70°F and 200 psig are based on a steam generator RT_{NDT} of 60°F and are sufficient to prevent brittle fracture.

3/4.7.3 COMPONENT COOLING WATER SYSTEM

The OPERABILITY of the Component Cooling Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses. Each independent CCW loop contains two 100% capacity pumps and, therefore, the failure of one pump does not affect the OPERABILITY of that loop.

3/4.7.4 ESSENTIAL SERVICE WATER SYSTEM

The OPERABILITY of the Essential Service Water System ensures that sufficient cooling capacity is available for continued operation of safety-related equipment during normal and accident conditions. The redundant cooling capacity of this system, assuming a single failure, is consistent with the assumptions used in the safety analyses.

3/4.7.5 ULTIMATE HEAT SINK

The limitations on the ultimate heat sink level and temperature ensure that sufficient cooling capacity is available either to: (1) provide normal cooldown of the facility, or (2) mitigate the effects of accident conditions within acceptable limits.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 45 TO FACILITY OPERATING LICENSE NO. NPF-30

UNION ELECTRIC COMPANY
CALLAWAY PLANT, UNIT 1
DOCKET NO. STN 50-483

1.0 INTRODUCTION

Callaway License Condition 2.C.(11) states: "Prior to restart following the first refueling outage, UE shall submit for NRC review and approval an analysis which demonstrates that the steam generator single-tube rupture (SGTR) analysis presented in the FSAR is the most severe case with respect to the release of fission products and calculated doses. Consistent with the analytical assumptions, the licensee shall propose all necessary changes to Appendix A to this license".

The required SGTR analysis was submitted by letter dated January 8, 1986 and supplemented with additional letters. This analysis takes credit for the operation of an Atmospheric Steam Dump (ASD) to mitigate the consequence of a SGTR accident. Since the ASD's have not previously been relied upon to mitigate postulated accidents and transients, there are currently no requirements relating to operability of the ASD's in the Callaway Technical Specifications (TS). Therefore, by letter dated January 14, 1986, the licensee submitted proposed TS that require ASD operability.

2.0 DISCUSSION

The NRC staff is currently reviewing two separate concerns relating to License Condition 2.C.(11) of Operating License No. NPF-30. The first concern is the SGTR accident analysis. Two scenarios were analyzed as requested by the staff: the scenario most conducive to steam generator overfill, and the scenario that maximizes offsite dose. With regard to the SGTR analysis, the staff is currently examining assumptions being used for operator action times used in the analysis. The second concern of the License Condition is the proposed TS for ASD operability. The staff is handling the two concerns separately and will address the acceptability of the SGTR analysis in future correspondence.

By letter dated March 21, 1989, the staff provided the results of the review of the licensee's submittal of January 14, 1986. In summary, the staff did not find the proposed TS to be acceptable. Areas of concern included the time interval allowed for inoperability of a single ASD and operability with an ASD isolated (via closure of the upstream block valve) due to excessive leakage. Included in the staff's response were alternatives that the staff felt would provide acceptable reliability of the ASD's for SGTR accident mitigation. By letter dated April 14, 1989, the licensee responded to the staff position with revised TS for the ASD's.

3.0 EVALUATION

The Callaway Plant design includes four ASD's, one ASD for each steam generator. The operability of at least three of the four ASD's ensures that reactor decay heat can be dissipated to the atmosphere in the event of a SGTR coincident with a loss of offsite power. Reactor Coolant System (RCS) cooling can subsequently be performed through Residual Heat Removal System (RHR) operation. For RCS cooldown to RHR system initiation, only one ASD is required. Three operable ASD's are adequate, assuming that one of the operable ASD's is on the faulted steam generator, and thus unavailable for heat removal, and that one ASD fails to function in accordance with single failure assumptions.

The proposed TS are only applicable in plant operational Modes 1, 2, and 3. The purpose of the ASD's is to provide for removal of decay heat during the initial phases of the SGTR event up to RHR system initiation. Since the RHR system is available in Modes 4, 5, and 6, these TS are only applicable in Modes 1, 2, and 3.

Each ASD is equipped with a manual block valve, located near the ASD in the auxiliary building, to provide a positive shutoff capability should an ASD develop leakage. Closure of the block valves of all ASD's because of excessive seat leakage does not endanger the reactor core because decay heat can be dissipated with the steam line safety valves. Also, consistent with SGTR analysis assumptions, a block valve can be used to control release of steam to the atmosphere.

The LCO Action statements included in the revised TS are consistent with those provided in the NRC staff position. The new proposed requirements state that three of the four steam generator ASD's shall be operable in Modes 1, 2, and 3. If only two ASD's are operable, this specification allows 7 days to return one of the two inoperable ASD's to operable status. If only one or no ASD is operable, this specification allows only 24 hours to return at least two ASD's to operable status. If one or more of the required ASD's are inoperable due to excessive seat leakage, the associated upstream block valve may be closed. With the block valve closed, the specification allows 30 days to restore the required number of ASD's to operable status.

The restoration time periods provided in the proposed LCO Action statement are based on the low likelihood of having a SGTR event coincident with a loss of offsite power during the time period that one or more of the required ASD's is out of service. The allowed time period (7 days) for the case of one inoperable ASD is longer than the time period (24 hours) allowed when more than one ASD is inoperable.

The licensee's letter dated May 5, 1989, clarifies earlier discussion in the April 14, 1989 letter regarding testing of the ASD's at power. Testing is normally done during Mode 3 to preclude plant transients associated with cycling the valves and it is done in accordance with the NRC approved Callaway Inservice Testing Program. The staff considers the surveillance requirements of the Callaway Inservice Testing Program for ASME Code valves appropriate and sufficient for the ASD's. Therefore, the surveillance requirements in the proposed TS refer to the provisions of existing specification 4.0.5.

The licensee's revised TS submittal of April 14, 1989 is consistent with the staff's position regarding the operability of the ASD's. We consider the revised TS acceptable and appropriate for reliable mitigation of a steam-generator-tube-rupture event. The TS requirements constitute additional limitations on facility operations and satisfy, in part, the specific requirements of License Condition 2.C.(11) of the operating license. Therefore, based upon our review of the licensee's submittal, we find the proposed TS changes regarding the ASD's to be acceptable.

The staff also notes that the licensee proposed a wording change to remote shutdown instrumentation specification to provide consistent use of the term "atmospheric steam dump". The staff finds this change to be administrative in nature and, therefore, acceptable.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change to a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or a change to a surveillance requirement. The 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 this amendment.

5.0 CONCLUSION

The staff 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; and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

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Dated: May 16, 1989