April 10, 1991

Docket No. 50-313

Mr. Neil S. Carns
Vice President, Operations ANO
Entergy Operations, Inc.
Route 3 Box 137G
Russellville, Arkansas 72801

Dear Mr. Carns:

SUBJECT: ISSUANCE OF AMENDMENT NO. 145 TO FACILITY OPERATING LICENSE NO. DPR-51 - ARKANSAS NUCLEAR ONE, UNIT NO. 1 (TAC NO. 79264)

The Commission has issued the enclosed Amendment No. 145 to Facility Operating License No. DPR-51 for the Arkansas Nuclear One, Unit No. 1 (ANO-1). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated January 29, 1991.

The amendment revises ANO-1 TSs 3.3 and 4.5.2 regarding the reactor building emergency cooling system. Specifically, the TSs are clarified by defining a reactor building cooling train in terms of equivalent cooling capacity to meet the design requirements as specified in the Safety Analysis Report.

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

Sincerely,

Original Signed By:

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 145 to DPR-51
2. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION

Docket File	NRC/Local PDR	PD4-1 Reading	OGC(MS15B18)
M. Virgilio(MS13E4)	P. Noonan	T. Alexion (2)	GPA/PA(MS2G5)
D. Hagan(MS3206)	G. Hill(4)(P1-37)	Wanda Jones(MS7103)	
J. Calvo(MS11F22)	PD4-1 Plant File	ACRS(10) (MSP315)	
ARM/LFMB(MS4503)	T. Westerman,RIV	T. Quay	

OFC	:PD4-1/LA	:PD4-1/PM	:SPLB	:BC/SPLB	:OGC	:PD4-1/D	:
NAME	:PNoonan	:TAlexion	:JKudrick	:CMcCracken	:MZobler	:TQuay	:
DATE	:2/26/91	:2/26/91	:3/21/91	:3/26/91	:3/29/91	:4/10/91	:

OFFICIAL RECORD COPY
Document Name: ANO1 AMEND/79264

NRC FILE CENTER COPY

April 10, 1991

Docket No. 50-313

Mr. Neil S. Carns
Vice President, Operations ANO
Entergy Operations, Inc.
Route 3 Box 137G
Russellville, Arkansas 72801

Dear Mr. Carns:

SUBJECT: ISSUANCE OF AMENDMENT NO. 145 TO FACILITY OPERATING LICENSE NO. DPR-51 - ARKANSAS NUCLEAR ONE, UNIT NO. 1 (TAC NO. 79264)

The Commission has issued the enclosed Amendment No. 145 to Facility Operating License No. DPR-51 for the Arkansas Nuclear One, Unit No. 1 (ANO-1). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated January 29, 1991.

The amendment revises ANO-1 TSs 3.3 and 4.5.2 regarding the reactor building emergency cooling system. Specifically, the TSs are clarified by defining a reactor building cooling train in terms of equivalent cooling capacity to meet the design requirements as specified in the Safety Analysis Report.

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

Sincerely,

Original Signed By:

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 145 to DPR-51
2. Safety Evaluation

cc w/enclosures:
See next page

DISTRIBUTION

Docket File	NRC/Local PDR	PD4-1 Reading	OGC(MS15B18)
M. Virgilio(MS13E4)	P. Noonan	T. Alexion (2)	GPA/PA(MS2G5)
D. Hagan(MS3206)	G. Hill(4)(P1-37)	Wanda Jones(MS7103)	
J. Calvo(MS11F22)	PD4-1 Plant File	ACRS(10) (MSP315)	
ARM/LFMB(MS4503)	T. Westerman,RIV	T. Quay	

FC	:PD4-1/LA	:PD4-1/PM	:SPLB	:BC/SPLB	:OGC	:PD4-1/D	:
AME	:PNoonan	:TAlexion	:JKudrick	:CMcCracken	:MZobler	:TQuay	:
ATE	:3/1/91	:3/26/91	:3/21/91	:3/26/91	:3/29/91	:4/10/91	:

OFFICIAL RECORD COPY
Document Name: ANO1 AMEND/79264

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

April 10, 1991

Docket No. 50-313

Mr. Neil S. Carns
Vice President, Operations ANO
Entergy Operations, Inc.
Route 3 Box 137G
Russellville, Arkansas 72801

Dear Mr. Carns:

SUBJECT: ISSUANCE OF AMENDMENT NO. 145 TO FACILITY OPERATING LICENSE NO. DPR-51 - ARKANSAS NUCLEAR ONE, UNIT NO. 1 (TAC NO. 79264)

The Commission has issued the enclosed Amendment No. 145 to Facility Operating License No. DPR-51 for the Arkansas Nuclear One, Unit No. 1 (ANO-1). This amendment consists of changes to the Technical Specifications (TSs) in response to your application dated January 29, 1991.

The amendment revises ANO-1 TSs 3.3 and 4.5.2 regarding the reactor building emergency cooling system. Specifically, the TSs are clarified by defining a reactor building cooling train in terms of equivalent cooling capacity to meet the design requirements as specified in the Safety Analysis Report.

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

Sincerely,

Thomas W. Alexion

Thomas W. Alexion, Project Manager
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 145 to DPR-51
2. Safety Evaluation

cc w/enclosures:
See next page

cc:

Mr. Donald C. Hintz
Executive Vice President
and Chief Operating Officer
Entergy Operations, Inc.
P. O. Box 31995
Jackson, Mississippi 39286

Mr. Jerry Yelverton
Director Nuclear Operations
Arkansas Nuclear One
Route 3 Box 137G
Russellville, Arkansas 72801

Mr. Nicholas S. Reynolds
Winston & Strawn
1400 L Street, N.W.
Washington, D.C. 20005-3502

Mr. Robert B. Borsum
Babcock & Wilcox
Nuclear Power Generation Division
1700 Rockville Pike, Suite 525
Rockville, Maryland 20852

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
1 Nuclear Plant Road
Russellville, Arkansas 72801

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
Office of Executive Director
for Operations
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76011

Honorable Joe W. Phillips
County Judge of Pope County
Pope County Courthouse
Russellville, Arkansas 72801

Ms. Greta Dicus, Director
Division of Environmental Health
Protection
Arkansas Department of Health
4815 West Markam Street
Little Rock, Arkansas 72201

Mr. Gerald Muench
Vice President Operations Support
Entergy Operations, Inc.
P. O. Box 31995
Jackson, Mississippi 39286

Mr. Robert B. McGehee
Wise, Carter, Child & Caraway
P. O. Box 651
Jackson, Mississippi 39205

Mr. Tom W. Nickels
Arkansas Nuclear One
Route 3, Box 137G
Russellville, Arkansas 72801

Admiral Kinnaird R. McKee, USN (Ret)
Post Office Box 41
Oxford, Maryland 21654

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

ENTERGY OPERATIONS INC.

DOCKET NO. 50-313

ARKANSAS NUCLEAR ONE, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 145
License No. DPR-51

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Entergy Operations, Inc. (the licensee) dated January 29, 1991, 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 license 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. DPR-51 is hereby amended to read as follows:

   2. Technical Specifications

      The Technical Specifications contained in Appendix A, as revised through Amendment No. 145 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Theodore R. Quay

Theodore R. Quay, Director
Project Directorate IV-1
Division of Reactor Projects III, IV, and V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: April 10, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 145

FACILITY OPERATING LICENSE NO. DPR-51

DOCKET NO. 50-313

Revise the following pages of the Appendix "A" Technical Specifications with the attached pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change.

REMOVE PAGES	INSERT PAGES
36	36
37	37
37a	37a
38	38
38a	38a
39	39
39a	39a
95	95
96	96
97	97

3.3 EMERGENCY CORE COOLING, REACTOR BUILDING EMERGENCY COOLING AND REACTOR BUILDING SPRAY SYSTEMS

Applicability

Applies to the emergency core cooling, reactor building emergency cooling and reactor building spray systems.

Objectivity

To define the conditions necessary to assure immediate availability of the emergency core cooling, reactor building emergency cooling and reactor building spray systems.

Specification

3.3.1 The following equipment shall be operable whenever containment integrity is established as required by Specification 3.6.1:

(A) One reactor building spray pump and its associated spray nozzle header.

(B) One train of reactor building emergency cooling.

(C) Two out of three service water pumps shall be operable, powered from independent essential buses, to provide redundant and independent flow paths.

(D) Two engineered safety feature actuated low pressure injection pumps shall be operable.

(E) Both low pressure injection coolers and their cooling water supplies shall be operable.

(F) Two BWST level instrument channels shall be operable.

(G) The borated water storage tank shall contain a level of 40.2 ± 1.8 ft. (387,400 ± 17,300 gallons) of water having a concentration of 2470 ± 200 ppm boron at a temperature not less than 40F. The manual valve on the discharge line from the borated water storage tank shall be locked open.

(H) The four reactor building emergency sump isolation valves to the LPI system shall be either manually or remote-manually operable.

(I) The engineered safety features valves associated with each of the above systems shall be operable or locked in the ES position.

3.3.2 In addition to 3.3.1 above, the following ECCS equipment shall be operable when the reactor coolant system is above 350F and irradiated fuel is in the core:

(A) Two out of three high pressure injection (makeup) pumps shall be maintained operable, powered from independent essential buses, to provide redundant and independent flow paths.

(B) Engineered safety features valves associated with 3.3.2.a above shall be operable or locked in the ES position.

3.3.3 In addition to 3.3.1 and 3.3.2 above, the following ECCS equipment shall be operable when the reactor coolant system is above 800 psig:

(A) The two core flooding tanks shall each contain an indicated minimum of 13 ± 0.4 feet (1040 ± 30 ft^3) of borated water at 600 ± 25 psig.

(B) Core flooding tank boron concentration shall not be less than 2270 ppm boron.

(C) The electrically operated discharge valves from the core flood tanks shall be open and breakers locked open and tagged.

(D) One of the two pressure instrument channels and one of the two level instrument channels per core flood tank shall be operable.

3.3.4 The reactor shall not be made critical unless the following equipment in addition to 3.3.1, 3.3.2, and 3.3.3 above is operable.

(A) Two reactor building spray pumps and their associated spray nozzle headers and two trains of reactor building emergency cooling. The two reactor building spray pumps shall be powered from operable independent emergency buses and the two reactor building emergency cooling trains shall be powered from operable independent emergency buses.

(B) The sodium hydroxide tank shall contain an indicated

$34^{+1.0}_{-0.8}$ ft. of $18^{+2.8}_{-3.0}$ wt % solution sodium hydroxide

(19,500 lb. ± 2500 lb.).

(C) All manual valves in the main discharge lines of the sodium hydroxide tanks shall be locked open.

(D) Engineered safety feature valves and interlocks associated with 3.3.1, 3.3.2, and 3.3.3 shall be operable or locked in the ES position.

3.3.5 Maintenance shall be allowed during power operation on any component(s) in the high pressure injection, low pressure injection, service water, reactor building spray and reactor building emergency cooling

systems which will not remove more than one train of each system from service. Maintenance shall not be performed on components which would make the affected system train inoperable for more than 24 consecutive hours. Prior to initiating maintenance on any component of a train in any system, the redundant component of that system shall be demonstrated to be operable within 24 hours prior to the maintenance.

3.3.6 If the conditions of Specifications 3.3.1, 3.3.2, 3.3.3, 3.3.4 and 3.3.5 cannot be met except as noted in 3.3.7 below, reactor shutdown shall be initiated and the reactor shall be in hot shutdown condition within 36 hours, and, if not corrected, in cold shutdown condition within an additional 72 hours.

3.3.7 Exceptions to 3.3.6 shall be as follows:

(A) If the conditions of Specification 3.3.1(F) cannot be met, reactor operation is permissible only during the succeeding seven days unless such components are sooner made operable, provided that during such seven days the other BWST level instrument channel shall be operable.

(B) If the conditions of Specification 3.3.3(D) cannot be met, reactor operation is permissible only during the succeeding seven days unless such components are sooner made operable, provided that during such seven days the other CFT instrument channel (pressure of level) shall be operable.

(C) If the conditions of Specification 3.3.4(A) cannot be met because one train of the required reactor building emergency cooling is inoperable but both reactor building spray systems are operable, restore the inoperable train of cooling to operable status within 7 days or be in at least hot shutdown within the next 6 hours and in cold shutdown within the following 30 hours.

(D) If the conditions of Specification 3.3.4(A) cannot be met because two trains of the required reactor building emergency cooling are inoperable but both reactor building spray systems are operable, restore at least one train of cooling to operable status within 72 hours or be in at least hot shutdown within the next 6 hours and in cold shutdown within the following 30 hours. Restore both above required cooling trains to operable status within 7 days of initial loss or be in at least hot shutdown within the next 6 hours and in cold shutdown within the following 30 hours.

(E) If the conditions of Specification 3.3.4(A) cannot be met because one train of the required reactor building emergency cooling is inoperable and one reactor building spray system is inoperable, restore the inoperable spray system to operable status within 72 hours or be in at least hot shutdown within the next 6 hours and in cold shutdown within the following 30 hours. Restore the inoperable reactor building emergency cooling train to operable status within 7 days of initial loss or be in at least hot shutdown within the next 6 hours and in cold shutdown within the following 30 hours.

Bases

The requirements of Specification 3.3.1 assure that below 350°F, adequate long term core cooling is provided. Two low pressure injection pumps are specified. However, only one is necessary to supply emergency coolant to the reactor in the event of a loss-of-coolant accident.

The post-accident reactor building emergency cooling and long-term pressure reduction may be accomplished by two spray units or by a combination of one cooling train and one spray unit. Post-accident iodine removal may be accomplished by one of the two spray system strings. The specified requirements assure that the required post-accident components are available for both reactor building emergency cooling and iodine removal. Specification 3.3.1 assures that the required equipment is operable.

A train consists of two coolers and their associated fans which have sufficient capacity to meet post accident heat removal requirements. Conservatively each reactor building emergency cooling train consists of two fans powered from the same emergency bus and their associated coils, but other combinations may be justified by an engineering evaluation.

The borated water storage tank is used for three purposes:

(A) As a supply of borated water for accident conditions.

(B) As an alternate supply of borated water for reaching cold shutdown.([2])

(C) As a supply of borated water for flooding the fuel transfer canal during refueling operation.([3])

370,100 gallons of borated water are supplied for emergency core cooling and reactor building spray in the event of a loss-of-coolant accident. This amount fulfills requirements for emergency core cooling. Approximately 16,000 gallons of borated water are required to reach cold shutdown. The original nominal borated water storage tank capacity of 380,000 gallons is based on refueling volume requirements. Heaters maintain the borated water supply at a temperature to prevent crystallization and local freezing of the boric acid. The boron concentration is set at a value that will maintain the core at least 1 percent Δk/k subcritical at 70°F without any control rods in the core. The concentration for 1% Δk/k subcriticality is 1609 ppm boron in the core, while the minimum value specified in the borated water storage tank is 2270 ppm boron.

Specification 3.3.2 assures that above 350°F two high pressure injection pumps are also available to provide injection water as the energy of the reactor coolant system is increased.

Specification 3.3.3 assures that above 800 psig both core flooding tanks are operational. Since their design pressure is 600 ± 25 psig, they are not brought into the operational state until 800 psig to prevent spurious injection of borated water. Both core flooding tanks are specified as a single core flood tank has insufficient inventory to reflood the core.([1])

Specification 3.3.4 assures that prior to going critical the redundant train of reactor building emergency cooling and spray train are operable.

The spray system utilizes common suction lines with the low pressure injection system. If a single train of equipment is removed from either system, the other train must be assured to be operable in each system.

When the reactor is critical, maintenance is allowed per Specification 3.3.5. Operability of the specified components shall be based on the results of testing as required by Technical Specification 4.5. The maintenance period of up to 24 hours is acceptable if the operability of equipment redundant to that removed from service is demonstrated within 24 hours prior to removal. Exceptions to Specification 3.3.6 permit continued operation for seven days if one of two BWST level instrument channels is operable or if either the pressure or level instrument channel in the CFT instrument channel is operable.

In the event that the need for emergency core cooling should occur, functioning of one train (one high pressure injection pump, one low pressure injection pump, and both core flooding tanks) will protect the core and in the event of a main coolant loop severance, limit the peak clad temperature to less than 2300°F and the metal-water reaction to that representing less than 1 percent of the clad.

The service water system consists of two independent but interconnected, full capacity, 100% redundant systems, to ensure continuous heat removal.([4])

One service water pump is required for normal operation. The normal operating requirements are greater than the emergency requirements following a loss-of-coolant accident.

REFERENCES

(1) FSAR, Section 14.2.5

(2) FSAR, Section 3.2

(3) FSAR, Section 9.5.2

(4) FSAR, Section 9.3.1

(5) FSAR, Section 6.3

4.5.2 Reactor Building Cooling Systems

Applicability

Applies to testing of the reactor building emergency cooling systems.

Objective

To verify that the reactor building emergency cooling systems are operable.

Specification

4.5.2.1 System Tests

4.5.2.1.1 Reactor Building Spray System

(a) Once every 18 months, a system test shall be conducted to demonstrate proper operation of the system. A test signal will be applied to demonstrate actuation of the reactor building spray system (except for reactor building inlet valves to prevent water entering nozzles).

(b) Station compressed air or smoke will be introduced into the spray headers to verify the availability of the headers and spray nozzles at least every five years.

(c) The test will be considered satisfactory if visual observation and control board indication verifies that all components have responded to the actuation signal properly.

4.5.2.1.2 Reactor Building Cooling System

(a) At least once per 14 days, each reactor building emergency cooling train shall be tested to demonstrate proper operation of the system. The test shall be performed in accordance with the procedure summarized below:

(1) Verifying a service water flow rate of ≥ 1200 gpm to each train of the reactor building emergency cooling.

(2) Addition of a biocide to the service water during the surveillance in 4.5.2.1.2.a.1 above, whenever service water temperature is between 60F and 80F.

(b) At least once per 31 days, each reactor building emergency cooling train shall be tested to demonstrate proper operation of the system. The test shall be performed in accordance with the procedure summarized below:

(1) Starting (unless already operating) each operational cooling fan from the control room.

(2) Verifying that each operational cooling fan operates for at least 15 minutes.

(c) Once every 18 months, a system test shall be conducted to demonstrate proper operation of the system. The test shall be performed in accordance with the procedure summarized below:

(1) A test signal will be applied to actuate the reactor building emergency cooling operation.

(2) Verification of the engineered safety features function of the service water system which supplies the reactor building emergency coolers shall be made to demonstrate operability of the coolers.

(3) The test will be considered satisfactory if control board indication verifies that all components have responded to the actuation signal properly.

4.5.2.2 Component Tests

4.5.2.2.1 Pumps

At intervals not to exceed 3 months the reactor building spray pumps shall be started and operated to verify proper operation. Acceptable performance will be indicated if the pump starts, operates for fifteen minutes, and the discharge pressure and flow are within ±10% of a point on the pump head curve.

4.5.2.2.2 Valves

At intervals not to exceed three months each engineered safety features valve in the reactor building spray and reactor building emergency cooling system and each engineered safety features valve associated with reactor building emergency cooling in the service water system shall be tested to verify that it is operable.

Bases

The reactor building emergency cooling system and reactor building spray system are redundant to each other in providing post-accident cooling of the reactor building atmosphere to prevent the building pressure from exceeding the design pressure. As a result of this redundancy in cooling capability, the allowable out of service time requirements for the reactor building emergency cooling system have been appropriately adjusted. However, the allowable out of service time requirements for the reactor building spray system have been maintained consistent with that assigned other inoperable engineered safeguard equipment since the reactor building spray system also provides a mechanism for removing iodine from the reactor building atmosphere.

Addition of a biocide to service water is performed during reactor building emergency cooler surveillance to prevent buildup of Asian clams in the coolers when service water is pumped through the cooling coils. This is performed when service water temperature is between 60F and 80F since in this water temperature range Asian clams can spawn and produce larva which could pass through service water system strainers.

The delivery capability of one reactor building spray pump at a time can be tested by opening the valve in the line from the borated water storage tank, opening the corresponding valve in the test line, and starting the corresponding pump. Pump discharge pressure and flow indication demonstrate performance.

With the pumps shut down and the borated water storage tank outlet closed, the reactor building spray injection valves can each be opened and closed by operator action. With the reactor building spray inlet valves closed, low pressure air or smoke can be blown through the test connections of the reactor building spray nozzles to demonstrate that the flow paths are open.

The equipment, piping, valves, and instrumentation of the reactor building emergency cooling system are arranged so that they can be visually inspected. The cooling fans and coils and associated piping are located outside the secondary concrete shield. Personnel can enter the reactor building during power operations to inspect and maintain this equipment. The service water piping and valves outside the reactor building are inspectable at all times. Operational tests and inspections will be performed prior to initial startup.

Two service water pumps are normally operating. At least once per month operation of one pump is shifted to the third pump, so testing will be unnecessary.

As the reactor building fans are normally operating, starting for testing is unnecessary for those verified to be operating.

Reference

FSAR, Section 6

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 145 TO

FACILITY OPERATING LICENSE NO. DPR-51

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 1

DOCKET NO. 50-313

INTRODUCTION

By letter dated January 29, 1991, Entergy Operations, Inc. (the licensee) requested an amendment to the Technical Specifications (TSs) appended to Facility Operating License No. DPR-51 for Arkansas Nuclear One, Unit No. 1 (ANO-1). The proposed amendment would revise TSs 3.3 and 4.5.2 regarding the reactor building emergency cooling system. Specifically, the TSs would be clarified by defining a reactor building cooling train in terms of equivalent cooling capacity to meet the design requirements as specified in the Safety Analysis Report (SAR).

BACKGROUND

During the 1R9 refueling outage several leaks were discovered in the Loop 2 ("C" & "D") reactor building emergency coolers. There are four essentially identical coolers, two per service water loop. Each cooler has eight service water coils (four 12 row and four 8 row coils). During the outage, the service water system was chemically cleaned to improve thermal performance. All of the reactor building emergency coolers were hydrostatically tested following the cleaning. During this test, leaks were identified in the "C" and "D" coolers. The 12 row coil sets in "D" cooler and the 8 row coil sets in "C" cooler were replaced with new coils. To reduce the potential for leakage the remaining old coils in "C" and "D" were blanked off. "A" and "B" coolers were hydrostatically tested and had no leaks.

The licensee's analysis in support of these activities has shown that with both fans and a complete set of coils split between the two coolers, the design heat removal requirement is exceeded. Therefore, to continue complying with the TSs, a cooling group for Loop 2 was considered to be both the "C" and "D" coolers and their associated fans. If either the "C" or "D" coolers becomes inoperable due to either a single fan failure or further degradation in the coils, such that the heat removal capabilities as specified in the SAR are not met, Loop 2 will be declared inoperable and the actions required by TS 3.3.6 followed. As a result of a review of the current TSs in light of these activities, it was determined that the current TSs require clarification.

EVALUATION

The licensee proposes to replace the nomenclature of "reactor building cooling fan and its associated cooling unit" in TSs 3.3.1(B) and 3.3.4(A) with "train of reactor building emergency cooling." This is acceptable because the licensee is also proposing to revise the Bases to define a train as, "conservatively... two fans powered from the same emergency bus and their associated coils, but other combinations may be justified by an engineering evaluation." The proposed Bases also state that a train has sufficient capacity to meet post-accident heat removal requirements, and a reference to SAR Section 6.3, "Reactor Building Cooling System" is added to the Bases. Thus, a train of reactor building emergency cooling is the more appropriate nomenclature because it is defined in terms of its safety function (necessary cooling capacity). It also more clearly illustrates that other subsets of a train such as the subset discussed in the background section, in addition to the subset in the present TSs, are acceptable.

The term "emergency" has also been inserted with the proposed nomenclature. This change clarifies the fact that the TSs are only addressing the emergency (as opposed to the normal) portion of the reactor building cooling system. This change is administrative in nature since the existing TSs are only intended for the emergency portion of the reactor building cooling system, and is, therefore, acceptable.

The licensee proposes to replace the nomenclature of "group of the required reactor building emergency cooling units" in TSs 3.3.7(C), (D) and (E) with "train of the required reactor building emergency cooling." This change is acceptable because the existing TSs are clearly implying that the "train" of emergency cooling is required to be operable even though the word "group" is used and a train is defined as discussed previously while the word "group" is not.

The licensee proposes to delete TS 3.3.7(F) because of the previously discussed proposed changes. This TS is intended to have the licensee verify that if a portion (fan) of a train (group) is inoperable, thereby rendering one-half of the train inoperable, that the other operable cooling unit in that train has a service water flow rate of a least 1200 gallons per minute (to ensure that the other half of the train is operable). However, with the proposed upgrading of the affected TSs in terms of an operable train, this TS is redundant to TS 3.3.7(C) and is, therefore, unnecessary.

The licensee proposes to replace the word "group" with "train" in TS 4.5.2.1.2(b). This is acceptable since the wording of the existing TS implies that a group is synonymous to a train, however, the use of train is better because it is defined in the Bases (as discussed previously).

The licensee proposes to replace the word "unit" with the word "fan" in TSs 4.5.2.1.2(b)(1) and (2). This is acceptable because the intent of these TSs is to test the fan. Additionally, the service water flow rate is already being verified in TS 4.5.2.1.2.

The licensee is also proposing changes to other TSs. They are, however, similar to those changes previously discussed and are therefore acceptable as well.

ENVIRONMENTAL CONSIDERATION

The amendment involves a change in 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 and changes in surveillance requirements. 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 exposures. 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. Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 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.

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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: April 10, 1991

Principal Contributor: T. Alexion, PDIV-1