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RBG-47851

March 28, 2018

Attn: Document Control Desk
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

SUBJECT: Response to License Amendment Request (LAR) Technical Specification 3.7.7,
"Control Building Air Conditioning (CBAC) System" NRC Request for Additional
Information (RAI)
River Bend Station, Unit 1
Docket No. 50-458
License No. NPF-47

References: 1) Entergy Letter: License Amendment Request (LAR) (RBG-47765 dated
September 8, 2017) (ADAMS Accession No. ML17255A463)

2) NRC email: River Bend Station, Unit 1, Request for Additional Information, -
dated March 1, 2018 (ADAMS Accession No. ML18060A153)

Dear Sir or Madam:

In Reference 1, Entergy Operations, Inc (Entergy) submitted a request for a license amendment to add a new Technical Specification (TS) related to "Control Building Air Conditioning (CBAC) System", TS Limiting Condition for Operation (LCO) 3.7.7, to specifically address the Air Conditioning (AC) function for switchgear and other electrical equipment located in the River Bend Station (RBS) Control Building. In an email dated March 1, 2018, (Reference 2) the NRC staff made a request for additional information (RAI), needed to complete the license amendment request. Enclosure 1 provides the responses to the RAIs. Enclosure 2 provides voluntary changes to the License Amendment Request (Reference 1). Enclosure 3 provides the Technical Specification Pages – Markups and Enclosure 4 provides the Technical Specification Pages – Clean. Enclosure 5 provides the Bases Pages - Markups (for information only) and Enclosure 6 provides the Bases Pages - Clean (for information only).

There are no commitments in this letter.

If you require additional information, please contact Mr. Tim Schenk at (225)-381-4177 or tschenk@entergy.com.

In accordance with 10 CFR 50.91(b)(1), Entergy is notifying the State of Louisiana and the State of Texas by transmitting a copy of this letter to the designated State Official.

I declare under penalty of perjury that the foregoing is true and correct. Executed on March 28, 2018.

Sincerely,



WFM/ALC

Enclosure 1: Responses to Request for Additional Information
Enclosure 2: Voluntary License Amendment Request Changes
Enclosure 3: Technical Specification Pages - Markups
Enclosure 4: Technical Specification Pages - Clean
Enclosure 5: Bases Pages - Markups (for information only)
Enclosure 6: Bases Pages - Clean (for information only)

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Enclosure 1

Responses to Request for Additional Information

**REQUEST FOR ADDITIONAL INFORMATION
APPLICATION TO ADD NEW TECHNICAL SPECIFICATION
TS 3.7.7, "CONTROL BUILDING AIR CONDITIONING (CBAC) SYSTEM
RIVER BEND STATION, UNIT 1 – SET 7
DOCKET NO.: 50-458
CAC NO.: MF9757**

Question 1

Background

The regulation at 10 CFR 50.36(c)(3) requires TSs to include items in the category of SRs, which are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met.

The licensee has proposed TS SR 3.7.7.1 which is related to the capability to remove the assumed heat load for the AC System. It states:

SR 3.7.7.1 - Verify the control building AC system has the capability to remove the assumed heat load. [emphasis added]

The licensee existing TS SR 3.7.3.1 (Control Room AC System) states:

SR 3.7.3.1 - Verify each control room AC subsystem has the capability to remove the assumed heat load. [emphasis added]

The RBS LAR also referenced TS 3.7.19, "Engineered Safety Feature (ESF) Room Coolers," for Farley Units 1 and 2, (LAR Enclosure 1, page 17) which has two SRs; one SR related to equipment position and one SR related to automatic fan starts on an actual or simulated signal.

It states:

Farley, SR 3.7.19.1 - Verify each ESF Room Cooler system manual valve servicing safety-related equipment that is not locked, sealed, or otherwise secured in position, is in the correct position.

Farley, SR 3.7.19.2 - Verify each ESF Room Cooler fan starts automatically on an actual or simulated actuation the Surveillance signal.

Questions:

1) Provide a discussion with justification that the proposed SR 3.7.7.1 is sufficient to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits and that the LCO will be met per the requirements of 10 CFR 50.36(c)(3).

Specifically;

- a) Discuss why the proposed TS SR 3.7.7.1, which requires verification of the system's heat removal capability is sufficient when River Bend TS SR 3.7.3.1, requires verification of each

subsystem's heat removal capability for similar purposes. Alternately, provide proposed changes to SR 3.7.7.1 text to align with SR 3.7.3.1 text.

- b) Discuss why a SR, which includes verifications of automatic starts of equipment, such as fans or chillers, is not necessary. If such SRs are necessary for TS 3.7.7, please provide proposed SRs.
- c) Discuss why a SR which includes verification of correct valve positions is not necessary. If such SRs are necessary for TS 3.7.7, please provide proposed SRs.

Response

1a) River Bend TS SR 3.7.7.1 should require verification of each subsystem's heat removal. TS SR 3.7.7.1 will be revised to align with SR 3.7.3.1 text. The changes to the proposed TS 3.7.7 are as followed with additions underlined and deletions lined through. Markups are included in Enclosure 3 and a clean copy is included in Enclosure 4.

SR 3.7.7.1 Verify the ~~the~~ each ~~e~~Control ~~b~~Building ~~AG~~ Air Conditioning subsystem has the capability to remove the assumed heat load.

- 1b) For HVC-ACU1A/B, HVC-ACU2A/B, HVC-ACU3A/B, one division is always running with one division in standby as opposed to only running during an event or testing. Every time a divisional swap occurs, the system is effectively tested. If a low flow of air were to occur or loss of chilled water (chiller), the division would automatically swap to the standby division. Division swaps occur as needed throughout the year.
- 1c) System alignment is controlled by SOP-0066 and dampers automatically align with the automatic start of the division. Manual dampers for ACUs are used as balancing dampers and are not normally manipulated except to rebalance the air flows or equipment Lock-outs.

Question 2

Background

The regulation at 10 CFR 50.36(c)(3) requires TSs to include items in the category of SRs, which are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met.

In Enclosure 1, Page 9, Section 3.4, SR, states;

The proposed SR verifies that the heat removal capability of the system is sufficient to remove the control building heat load assumed in the safety analysis. The SR consists of a combination of testing and calculation. The 24 month Frequency is appropriate since significant degradation of the Control Building AC System is not expected over this time period, and is consistent with TS SR 3.7.3.1 for Control Room AC.

A new STP would not be required on the Control Building Chilled Water System, as they are tested to meet the calculated heat load for the entire Control Building for a LOCA. STP-410-3601/2/3/4, "Performance Monitoring Program for Control Building

Chiller HVK-CHL 1A/1B/C/D" would require updating to include in the purpose that this surveillance partially satisfies the new SR.

Currently, no PM or Surveillance exists for testing HVC-ACU2A/B and HVC-ACU3A/B flow. Using SR 3.7.3.1 as a model, a new flow test will be generated for HVC-ACU2A/B, similarly to the current flow test for HVK-ACU1A/B (STP-402-4203/4). Using 3.7.3.1 as a model, a new flow test will be generated for HVC-ACU3A/B, similarly to the current flow test for HVR-UC1A/B (STP-403-0301/3).

Question:

The above excerpt is not clear as to the specific testing to be performed under the current system testing program STP-410-3601/2/3/4. Also, it is not clear what specific testing will be performed once this procedure is revised based on the proposed TS 3.7.7 and SRs. Clarify the specific testing performed under the existing program and the how that will change under the new TS. Provide justification for any changes.

Response

The current Surveillance Test Procedure (STP) STP-410-3601/2/3/4 "Performance Monitoring Program for Control Building Chiller HVK-CHL1A/B/C/D" tests the heat removal capability of the chillers. This STP currently satisfies SR 3.7.3.1 for the Control Room Air Conditioning. A statement similar to the following will be added to STP-410-3601/2/3/4.

This procedure verifies that the Control Building Air Conditioning has the capability to remove the assumed heat load. The purpose of this procedure is to provide instructions and test the A/B/C/D train of the Control Building Air Conditioning subsystem through HVK-CHL1A/B/C/D. This test partially implements the requirements of Technical Specification SR 3.7.7.1.

A new STP will be created to flow test HVC-ACU2A/B Control Building Air Handling Unit 2A/B. The purpose of this procedure will be to provide instructions for collecting test data necessary to satisfy a portion of SR 3.7.7.1. The new STP will be modeled after the current STP-402-4203/4 "HVC-ACU1A/B Performance Monitoring" for HVC-ACU1A/B Control Room Air Handling Unit 1A/B.

A new STP will be created to flow test HVC-ACU3A/B Chiller Equipment Room Air Handling Unit 3A/B. The purpose of this procedure will be to provide instructions for collecting test data necessary to satisfy a portion of SR 3.7.7.1. The new STP will be modeled after the current STP-403-0301/3 "Containment Unit Cooler HVR-UC1A/B Flow Rate Verification".

As stated in response 1, current STPs verify automatic starts of equipment and correct valve positions.

Question 3

Background:

In Enclosure 1, page 4, Section 2.1.2, *Control Building Chilled Water System (HVK)* states, in part, that "[d]uring a LOCA, with loss of offsite power, one 100 -percent chiller is capable of removing the heat load generated in the control building."

Questions:

- 1) Specify whether the heat generating in the control building also includes normal operating room heat loads in all applicable Modes (1, 2, & 3), and/or, accident room heat loads with or without loss of offsite power.
- 2) Confirm, with respect to the proposed SR 3.7.7.1, that the control building AC system capability includes both trains of the standby switchgear rooms, standby 125Vdc battery rooms, battery charger rooms (standby DC equipment rooms), cable vaults / chases and general areas of the control building.

Response

- 1) The heat generated in the control building includes all normal operating room heat loads in all applicable Modes (1, 2, & 3). Accident room heat loads are for a Loss of Coolant Accident (LOCA) without a Loss of Offsite Power (LOP). The heat generated does not include normal equipment that trips under accident conditions.
- 2) With respect to the proposed SR 3.7.7.1, that the control building AC system capability does include both trains of the standby switchgear rooms, standby 125Vdc battery rooms, battery charger rooms (standby DC equipment rooms), cable vaults / chases and general areas of the control building.

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Enclosure 2

Voluntary License Amendment Request Changes

Enclosure 1, page 9, Section 3.4

In enclosure 1, page 9, Section 3.4, the text incorrectly references HVK-ACU1A/B. The correct component is HVC-AUC1A/B.

The changes to enclosure 1, page 9, Section 3.4 are as followed with additions underlined and deletions lined through.

Currently, no PM or Surveillance exists for testing HVC-ACU2A/B and HVC-ACU3A/B flow. Using SR 3.7.3.1 as a model, a new flow test will be generated for HVC-ACU2A/B, similarly to the current flow test for ~~HVK-ACU1A/B~~ HVC-ACU1A/B (STP-402-4203/4). Using 3.7.3.1 as a model, a new flow test will be generated for HVC-ACU3A/B, similarly to the current flow test for HVR-UC1A/B (STP-403-0301/3).

Bases

The proposed Bases (information only) Applicable Safety Analysis did not include a reference to Criteria 3. The changes to the Bases Applicable Safety Analysis are as followed with additions underlined. Markups are included in Enclosure 5 and a clean copy is included in Enclosure 6.

The Control Building Air Conditioning System satisfies Criteria 3 of the NRC Policy Statement.

The proposed Bases (information only) used the acronym AC for Air Conditioning. To be consistent, AC acronyms will be replaced with the wording "Air Conditioning". The changes to the Bases are provided in Enclosure 5 with additions underlined and deletions lined through and a clean copy is included in Enclosure 6.

Proposed TS

The proposed TS and TS Table of Contents used the acronym AC for Air Conditioning. To be consistent, AC acronyms will be replaced with the wording "Air Conditioning" and acronyms will be CBAC. The changes to the proposed TS are provided in Enclosure 3 with additions underlined and deletions lined through and a clean copy is included in Enclosure 4.

The proposed TS is missing several periods. The changes to the proposed TS are provided in Enclosure 3 with additions underlined and a clean copy is included in Enclosure 4.

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Enclosure 3

Technical Specification Pages - Markups

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B 3.7 PLANT SYSTEMS

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3.7 PLANT SYSTEMS

3.7.7 Control Building Air Conditioning (CBAC) System

LCO 3.7.7 Two eControl bBuilding AC Air Conditioning subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. One control building AC air conditioning subsystem inoperable. | A.1 Restore control building AC air conditioning subsystem to OPERABLE status. | 72 hours |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3. | 12 hours |
| | <u>AND</u> | |
| | B.2 Be in MODE 4. | 36 hours |
| <u>OR</u> | | |
| Two control building AC air conditioning subsystems inoperable. | | |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|-----------|
| SR 3.7.7.1 Verify the each eControl bBuilding AC Air Conditioning subsystem has the capability to remove the assumed heat load. | 24 months |

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| B 3.6.3.1 | DELETED B 3.6-66 | |
| B 3.6.3.2 | Primary Containment and Drywell Hydrogen Igniters | B 3.6-72 |
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| B 3.6.4.1 | Secondary Containment - Operating..... | B 3.6-83 |
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| B 3.6.4.3 | Standby Gas Treatment (SGT) System..... | B 3.6-96 |
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3.7 PLANT SYSTEMS

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B 3.7 PLANT SYSTEMS

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3.7 PLANT SYSTEMS

3.7.7 Control Building Air Conditioning (CBAC) System

LCO 3.7.7 Two Control Building Air Conditioning subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| C. One control building air conditioning subsystem inoperable. | A.1 Restore control building air conditioning subsystem to OPERABLE status. | 72 hours |
| D. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 3. | 12 hours |
| | <u>AND</u> | |
| | B.2 Be in MODE 4. | 36 hours |
| <u>OR</u> | | |
| Two control building air conditioning subsystems inoperable. | | |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|--|-----------|
| SR 3.7.7.1 Verify each Control Building Air Conditioning subsystem has the capability to remove the assumed heat load. | 24 months |

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Enclosure 5

Bases Pages - Markups (for information only)

B 3.7 PLANT SYSTEMS

B 3.7.7 Control Building Air Conditioning (AG) (CBAC) System

BASES

BACKGROUND The Control Building AG Air Conditioning (CBAC) System provides temperature control for the standby switchgear rooms, standby 125Vdc battery rooms, DC equipment rooms, cable vaults, chiller equipment rooms, and general areas of the control building.

The Control Building AG Air Conditioning System consists of two independent, redundant subsystems that provided cooling and heating of the control building air. Each subsystem consists of two AC units, each of 100% capacity to serve their designated areas. One AC unit (standby switchgear room AC unit) serves the standby switchgear rooms, standby 125Vdc battery rooms, DC equipment rooms, cable vaults, and general areas of the control building. The other AC unit (chiller equipment room AC unit) serves the chiller equipment rooms. The associated control building chilled water subsystem supplies chilled water to both of the subsystem AC units, as well as to the Main Control Room AC units (governed by separate TS 3.7.3).

The standby switchgear room AC unit consists of a fan, filter, chilled water coil, and electric heating coils. The chiller equipment room AC unit consists of an outside air supply, room exhaust, and chilled water coils. An electric heating coil is provided to maintain minimum supply air temperature.

The Control Building AG Air Conditioning System is designed to operate during normal, shutdown, loss of offsite power, and DBA conditions without a loss of function.

While the Control Room AC system (Technical Specification 3.7.3) is supported by portions of the Control Building AG Air Conditioning System this specification is not applicable to Control Room AC.

**APPLICABLE
SAFETY
ANALYSIS**

The design basis of the Control Building AG Air Conditioning System is to maintain the control building temperature for 30 days

The Control Building AG Air Conditioning System components are arranged in redundant safety related subsystems. During emergency operation, the Control Building AG Air Conditioning System maintains the appropriate environment and ensures the OPERABILITY of components in the control building. A single active failure of a component of the Control Building AG Air Conditioning System,

(continued)

BASES (Continued)

assuming a loss of offsite power, does not impair the ability of the system to perform its design function.

The Control Building Air Conditioning System satisfies Criteria 3 of the NRC Policy Statement.

LCO

Two independent and redundant subsystems of the Control Building AG Air Conditioning System are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other subsystem. Total system failure could result in the equipment operating temperature exceeding limits.

The Control Building AG Air Conditioning System is considered OPERABLE when the individual components necessary to maintain the control building rooms / areas are OPERABLE in both subsystems. These components include the cooling coils, fans, chillers, compressors, ductwork, dampers, and associated instrumentation and controls.

APPLICABILITY

In MODE 1, 2, or 3, the Control Building AG Air Conditioning System must be OPERABLE to ensure that the control building temperature will not exceed equipment OPERABILITY limits.

In MODES 4 and 5, this specification is no longer applicable. The supported systems technical specifications will be applicable. The applicable technical specifications are;

- DC Sources – Operating (TS 3.8.4),
 - Inverters – Operating (TS 3.8.7), and
 - Distribution Systems – Operating (TS 3.8.9)
-

(continued)

BASES (continued)

ACTIONS

A.1

In MODES 1, 2, or 3, with one Control Building AG Air Conditioning subsystem inoperable, the inoperable subsystem must be restored to OPERABLE status within 72 hours. With the unit in this condition, the remaining OPERABLE Control Building AG Air Conditioning subsystem is adequate to perform the control building air conditioning function and maintain required safety functions. However, the overall reliability is reduced because a single failure in the operable subsystem could result in loss of the control building air conditioning function. The TS 72 hour CT is based on TS 3.7.1 Standby Service Water (SSW) and Ultimate Heat Sink (UHS) and on the low probability of an event occurring resulting in a loss of all cooling to the building, the consideration that the remaining subsystem can provide the required protection, and the availability of alternate cooling methods.

B.1

In MODES 1, 2, or 3, if the inoperable Control Building AG Air Conditioning subsystem cannot be restored to OPERABLE status within the associated Completion Time or if both Control Building AG Air Conditioning subsystems are inoperable, the Control Building AG Air Conditioning System may not be capable of performing its intended function, the unit must be placed in a MODE that minimizes risk. To achieve this status the unit must be placed in at least MODE 3 within 12 hours.

SURVEILLANCE
REQUIREMENTS

SR 3.7.7.1

This SR verifies that the heat removal capability of each subsystem is sufficient to remove the control building heat load assumed in the safety analysis. The SR consists of a combination of testing and calculation. The 24 month Frequency is appropriate since significant degradation of the Control Building AG Air Conditioning System is not expected over this time period.

REFERENCES

1. USAR, Section 9.2
 2. USAR, Section 9.4
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-

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B 3.7 PLANT SYSTEMS

B 3.7.7 Control Building Air Conditioning (CBAC) System

BASES

BACKGROUND The Control Building Air Conditioning (CBAC) System provides temperature control for the standby switchgear rooms, standby 125Vdc battery rooms, DC equipment rooms, cable vaults, chiller equipment rooms, and general areas of the control building.

The Control Building Air Conditioning System consists of two independent, redundant subsystems that provided cooling and heating of the control building air. Each subsystem consists of two AC units, each of 100% capacity to serve their designated areas. One AC unit (standby switchgear room AC unit) serves the standby switchgear rooms, standby 125Vdc battery rooms, DC equipment rooms, cable vaults, and general areas of the control building. The other AC unit (chiller equipment room AC unit) serves the chiller equipment rooms. The associated control building chilled water subsystem supplies chilled water to both of the subsystem AC units, as well as to the Main Control Room AC units (governed by separate TS 3.7.3).

The standby switchgear room AC unit consists of a fan, filter, chilled water coil, and electric heating coils. The chiller equipment room AC unit consists of an outside air supply, room exhaust, and chilled water coils. An electric heating coil is provided to maintain minimum supply air temperature.

The Control Building Air Conditioning System is designed to operate during normal, shutdown, loss of offsite power, and DBA conditions without a loss of function.

While the Control Room AC system (Technical Specification 3.7.3) is supported by portions of the Control Building Air Conditioning System this specification is not applicable to Control Room AC.

**APPLICABLE
SAFETY
ANALYSIS**

The design basis of the Control Building Air Conditioning System is to maintain the control building temperature for 30 days

The Control Building Air Conditioning System components are arranged in redundant safety related subsystems. During emergency operation, the Control Building Air Conditioning System maintains the appropriate environment and ensures the OPERABILITY of components in the control building. A single active failure of a component of the Control Building Air Conditioning System,

(continued)

BASES (Continued)

assuming a loss of offsite power, does not impair the ability of the system to perform its design function.

The Control Building Air Conditioning System satisfies Criteria 3 of the NRC Policy Statement.

LCO

Two independent and redundant subsystems of the Control Building Air Conditioning System are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other subsystem. Total system failure could result in the equipment operating temperature exceeding limits.

The Control Building Air Conditioning System is considered OPERABLE when the individual components necessary to maintain the control building rooms / areas are OPERABLE in both subsystems. These components include the cooling coils, fans, chillers, compressors, ductwork, dampers, and associated instrumentation and controls.

APPLICABILITY

In MODE 1, 2, or 3, the Control Building Air Conditioning System must be OPERABLE to ensure that the control building temperature will not exceed equipment OPERABILITY limits.

In MODES 4 and 5, this specification is no longer applicable. The supported systems technical specifications will be applicable. The applicable technical specifications are;

- DC Sources – Operating (TS 3.8.4),
 - Inverters – Operating (TS 3.8.7), and
 - Distribution Systems – Operating (TS 3.8.9)
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(continued)

BASES (continued)

ACTIONS

A.1

In MODES 1, 2, or 3, with one Control Building Air Conditioning subsystem inoperable, the inoperable subsystem must be restored to OPERABLE status within 72 hours. With the unit in this condition, the remaining OPERABLE Control Building Air Conditioning subsystem is adequate to perform the control building air conditioning function and maintain required safety functions. However, the overall reliability is reduced because a single failure in the operable subsystem could result in loss of the control building air conditioning function. The TS 72 hour CT is based on TS 3.7.1 Standby Service Water (SSW) and Ultimate Heat Sink (UHS) and on the low probability of an event occurring resulting in a loss of all cooling to the building, the consideration that the remaining subsystem can provide the required protection, and the availability of alternate cooling methods.

B.1

In MODES 1, 2, or 3, if the inoperable Control Building Air Conditioning subsystem cannot be restored to OPERABLE status within the associated Completion Time or if both Control Building Air Conditioning subsystems are inoperable, the Control Building Air Conditioning System may not be capable of performing its intended function, the unit must be placed in a MODE that minimizes risk. To achieve this status the unit must be placed in at least MODE 3 within 12 hours.

SURVEILLANCE
REQUIREMENTS

SR 3.7.7.1

This SR verifies that the heat removal capability of each subsystem is sufficient to remove the control building heat load assumed in the safety analysis. The SR consists of a combination of testing and calculation. The 24 month Frequency is appropriate since significant degradation of the Control Building Air Conditioning System is not expected over this time period.

REFERENCES

3. USAR, Section 9.2
 4. USAR, Section 9.4
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