ENCLOSURE 2

VOLUME 11

SEQUOYAH NUCLEAR PLANT UNIT 1 AND UNIT 2

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.6 CONTAINMENT SYSTEMS

LIST OF ATTACHMENTS

ATTACHMENT 1

ITS 3.6.1, CONTAINMENT

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 ~~PRIMARY~~ CONTAINMENT

CONTAINMENT ~~INTEGRITY~~

A02

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.1 ~~Primary~~ CONTAINMENT ~~INTEGRITY~~ shall be OPERABLE ~~maintained~~. A02

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A ~~Without primary~~ CONTAINMENT ~~INTEGRITY,~~ inoperable, restore CONTAINMENT ~~INTEGRITY~~ to OPERABLE status within one hour or

ACTION B be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

A02

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1 4.6.1.1 ~~Primary~~ CONTAINMENT ~~INTEGRITY~~ shall be demonstrated OPERABLE: A02

~~a.~~ ~~Delete.~~

b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3. See ITS 3.6.2

SR 3.6.1.1 c. Perform required visual examinations and leakage rate testing, except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program. A03

A01

CONTAINMENT SYSTEMS

SECONDARY CONTAINMENT BYPASS LEAKAGE (DELETED)

LIMITING CONDITION FOR OPERATION

CONTAINMENT SYSTEMS

SECONDARY CONTAINMENT BYPASS LEAKAGE (DELETED)

SURVEILLANCE REQUIREMENTS

Pages 3/4 6-4 through 3/4 6-6a intentionally deleted

CONTAINMENT SYSTEMS

CONTAINMENT VESSEL STRUCTURAL INTEGRITY

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.6 The structural integrity of the containment vessel shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6. A02

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTIONS A and B A04

ACTION A, ACTION B ~~With the structural integrity of the containment vessel not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.~~

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1 4.6.1.6 The structural integrity of the containment vessel shall be determined ~~during shutdown~~ by a visual inspection ~~of the exposed accessible interior and exterior surfaces of the vessel.~~ This inspection shall be performed in accordance with the Containment Leakage Rate Test Program ~~to verify no apparent changes in appearance of the surfaces or other abnormal degradation~~. LA01

CHANNEL FUNCTIONAL TEST

1.6 A CHANNEL FUNCTIONAL TEST shall be:

a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.

b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.

c. Digital channels - the injection of a simulated signal into the channel as close to the sensor input to the process racks as practicable to verify OPERABILITY including alarm and/or trip functions.

See ITS Chapter 1.0

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

~~a. All penetrations required to be closed during accident conditions are either:~~

~~1) Capable of being closed by an OPERABLE containment automatic isolation valve system, or~~

~~2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.~~

~~b. All equipment hatches are closed and sealed.~~

~~c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,~~

LA02

SR 3.6.1.1 d. The containment leakage rates are within the limits of Specification 4.6.1.1.c,

~~e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE, and~~

LA02

f. Secondary containment bypass leakage is within the limits of Specification 3.6.3.

See ITS 3.6.3

CONTROLLED LEAKAGE

1.8 This definition has been deleted.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

See ITS Chapter 1.0

CORE OPERATING LIMIT REPORT

1.10 The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.14. Unit operation within these operating limits is addressed in individual specifications.

ITS

A01

ITS 3.6.1

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 CONTAINMENT

CONTAINMENT ~~INTEGRITY~~

A02

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.1 ~~Primary~~ CONTAINMENT I~~NTEGRITY~~ shall be ~~maintained~~ OPERABLE.

A02

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A ~~Without primary~~ CONTAINMENT ~~INTEGRITY~~ inoperable, restore CONTAINMENT ~~INTEGRITY~~ to OPERABLE status within one hour or

ACTION B be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

A02

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1 4.6.1.1 ~~Primary~~ CONTAINMENT ~~INTEGRITY~~ shall be demonstrated OPERABLE:

A02

~~a.~~ ~~Deleted.~~

b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.

See ITS 3.6.2

SR 3.6.1.1 c. Perform required visual examinations and leakage rate testing except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program.

A03

A01

CONTAINMENT SYSTEMS

SECONDARY CONTAINMENT BYPASS LEAKAGE (DELETED)

LIMITING CONDITION FOR OPERATION

A01

CONTAINMENT SYSTEMS

SECONDARY CONTAINMENT BYPASS LEAKAGE (DELETED)

SURVEILLANCE REQUIREMENTS

A01

Pages 3/4 6-4 through 3/4 6-6a intentionally deleted

ITS

A01

ITS 3.6.1

CONTAINMENT SYSTEMS

CONTAINMENT VESSEL STRUCTURAL INTEGRITY

LIMITING CONDITION FOR OPERATION

LCO 3.6.1 3.6.1.6 The structural integrity of the containment vessel shall be maintained at a level consistent with the acceptance criteria in Specification 4.6.1.6. A02

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTIONS A and B A04

ACTION A, ACTION B ~~With the structural integrity of the containment vessel not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.~~

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1 4.6.1.6 The structural integrity of the containment vessel shall be determined ~~during shutdown~~ by a visual inspection ~~of the exposed accessible interior and exterior surfaces of the vessel~~. This inspection shall be performed in accordance with the Containment Leakage Rate Test ~~Program to verify no apparent changes in appearance of the surfaces or other abnormal degradation~~. LA01

A01

CHANNEL FUNCTIONAL TEST

1.6 A CHANNEL FUNCTIONAL TEST shall be:

a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.

b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.

c. Digital channels - the injection of a simulated signal into the channel as close to the sensor input to the process racks as practicable to verify OPERABILITY including alarm and/or trip functions.

See ITS Chapter 1.0

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

~~a. All penetrations required to be closed during accident conditions are either:~~

~~1) Capable of being closed by an OPERABLE containment automatic isolation valve system, or~~

~~2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.~~

~~b. All equipment hatches are closed and sealed.~~

~~c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,~~

LA02

SR 3.6.1.1 d. The containment leakage rates are within the limits of Specification 4.6.1.1.c,

~~e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE, and~~

LA02

f. Secondary containment bypass leakage is within the limits of Specification 3.6.3.

See ITS 3.6.3

CONTROLLED LEAKAGE

1.8 This definition has been deleted.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

See ITS Chapter 1.0

CORE OPERATING LIMITS REPORT

1.10 The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.14. Unit operation within these operating limits is addressed in individual specifications.

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG - 1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3/4.6.1 requires CONTAINMENT INTEGRITY. CTS 3.6.1.1 states "Primary CONTAINMENT INTEGRITY shall be maintained." CTS 3.6.1.1 ACTION requires, in part, without primary CONTAINMENT INTEGRITY to restore CONTAINMENT INTEGRITY within one hour." CTS 4.6.1.1.c requires primary CONTAINMENT INTEGRITY to be demonstrated by performance of a visual examination and leak rate testing in accordance with the Containment Leak Rate testing Program. CTS 3.6.1.6 requires the structural integrity of the containment to be maintained within specified parameters. ITS 3.6.1 is the containment specification. ITS LCO 3.6.1 requires the containment to be OPERABLE. ITS 3.6.1 ACTION A requires when containment is inoperable to restore the containment to OPERABLE status within 1 hour. ITS SR 3.6.1.1 requires performance of a visual examination and leak rate testing in accordance with the Containment Leak Rate Testing Program, with an exception for the containment air lock testing. This changes the CTS by replacing the specific CONTAINMENT INTEGRITY definition and all references to it with the requirement for Containment OPERABILITY. Additionally, it changes the CTS by combining CTS 3.6.1.1 and CTS 3.6.1.6 into one specification.

The purpose of CTS 3.6.1.1 and CTS 3.6.1.6 is to provide requirements pertaining to containment OPERABILITY. This portion of the change (combining CTS 3.6.1.1 and 3.6.1.6) is acceptable because moving these requirements into one LCO, ITS LCO 3.6.1, centralizes the requirements. The CTS 3/4.6.1 references to CONTAINMENT INTEGRITY have been deleted because the CTS definition of CONTAINMENT INTEGRITY in CTS 1.7 is incorporated into ITS 3.6.1, 3.6.2 and 3.6.3 and is no longer maintained as a separate definition in the ITS. ITS 3.6.1 requires that the containment shall be OPERABLE. The definition of OPERABLE and the subsequent ITS 3.6.1 LCO, ACTIONS, and Surveillance Requirements are sufficient to encompass the applicable requirements of the CTS definition. This change removes any confusion that may exist between the definition and the specific requirements of the LCO and is a presentation preference consistent with NUREG-1431, Rev. 4.0. Because the aspects of the CONTAINMENT INTEGRITY definition requirements, along with the remainder of the LCOs in the Containment Systems Primary Containment section (i.e., air locks and containment isolation valves), are maintained in subsequent Specifications of ITS, this change is considered acceptable. This change is designated as administrative because it does not result in technical changes to the CTS.

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

A03 CTS 4.6.1.1.c requires performance of visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program. ITS SR 3.6.1.1 requires this same test, but adds an exception for containment air lock testing. This changes the CTS by excluding the containment air lock testing in the required CTS surveillance.

This change is acceptable because ITS SR 3.6.2.1 requires performance of air lock leakage rate testing. Furthermore, ITS SR 3.6.2.1 is required to be evaluated against the acceptance criteria that are applicable to SR 3.6.1.1. This will ensure the airlock barrel leakage is accounted for in determining the combined Type B and C containment leakage rate. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS 3.6.1.6, ACTION, states, "With the structural integrity of the containment vessel not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F." CTS 3.6.1.6 ACTION does not state what action to take if the structural integrity limits are not met while in MODE 1, 2, 3, or 4. Thus, entry into CTS 3.0.3 is required if CTS 3.6.1.6 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for a shutdown and requires the unit to be in HOT STANDBY (ITS MODE 3) within the next 6 hours, HOT SHUTDOWN (ITS MODE 4) within the following 6 hours, and Cold Shutdown (similar to ITS MODE 5) within the subsequent 24 hours (37 hours total). ITS 3.6.1 ACTION A requires that if the containment is inoperable, it must be restored to OPERABLE status within 1 hour. ITS 3.6.1 ACTION B requires that if the Required Action and associated Completion Time are not met (i.e., the containment is not restored to OPERABLE status in 1 hour), the unit must be in MODE 3 within 6 hours and MODE 5 within 36 hours (37 hours total). This changes CTS by stating the ACTIONS rather than deferring to CTS 3.0.3. In addition, it deletes the CTS Actions to restore the limits prior to increasing the Reactor Coolant System temperature above 200°F.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.1.6 is silent on these actions, deferring to CTS 3.0.3 for the actions to accomplish this. This change is acceptable because the ACTIONS specified in ITS 3.6.1 adopt ISTS structure for placing the unit outside the MODE of Applicability while changing the time specified to enter MODE 3 and MODE 5 but still within the plants ability to safely shutdown. In addition, deletion of the current Actions of CTS 3.6.1.6 is acceptable, because CTS 4.0.4 (ITS SR 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met. Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.1. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

DISCUSSION OF CHANGES
ITS 3.6.1, CONTAINMENT

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the TRM, UFSAR, ODCM, NQAP, CLRT Program, IST Program, or ISI Program)* CTS 4.6.1.6 states , "The structural integrity of the containment vessel shall be determined during shutdown by a visual inspection of the exposed accessible interior and exterior surfaces of the vessel. This inspection shall be performed in accordance with the Containment Leakage Rate Test Program to verify no apparent changes in appearance of the surfaces or other abnormal degradation." ITS SR 3.6.1.1 requires the same visual examination in accordance with the Containment Leakage Rate Testing Program but does not include the details of when the testing is performed, what is verified and the acceptance criteria. This changes the CTS by moving the details of the visual examination to the Containment Leakage Rate Testing Program.

The removal of these details associated with the visual examination of the containment vessel is acceptable because this type of information is not necessary to be included in the Technical Specifications in order to provide adequate protection of public health and safety. ITS SR 3.6.1.1 retains the requirement to perform a visual examination in accordance with the Containment Leakage Rate Test Program. This change is acceptable because these types of procedural details will be adequately controlled in the Containment Leakage Rate Test Program requirements in ITS Chapter 5. This change is designated as a less restrictive removal of detail change because details associated with performance of the containment vessel visual examination are being removed from the Technical Specifications.

LA02 *(Type 2 – Removing Descriptions of System Operation)* CTS 1.7 states, in part, "CONTAINMENT INTEGRITY shall exist when: a. All penetrations required to be closed during accident conditions are either: 1) Capable of being closed by an OPERABLE containment automatic isolation valve system, or 2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3. b. All equipment hatches are closed and sealed. c. Each air lock is in compliance with the requirements of Specification 3.6.1.3, and e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or 0-rings) is OPERABLE. ITS 3.6.1 states "Containment shall be OPERABLE." This changes the CTS by moving the reference to penetration, equipment hatch and, air lock requirements to the Bases.

The removal of these details, that are related to system operation, from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement for the containment to be OPERABLE and the relocated material describes aspects of OPERABILITY. In addition, the ITS retains the requirement to perform required visual inspections and leakage rate testing in accordance with the Containment Leakage Rate Testing Program in accordance with 10 CFR 50 Appendix J, Part B, that would provide verification that the equipment hatch is closed and sealed and the sealing mechanisms are OPERABLE. Also, this change is acceptable, because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system operation is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

3.6.1.1.
3.6.1.6

LCO 3.6.1 Containment shall be OPERABLE.

Applicability
(3.6.1.1 &
3.6.1.6)

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.6.1.1 ACTION, 3.6.1.6 ACTION	A. Containment inoperable.	A.1 Restore containment to OPERABLE status.	1 hour
3.6.1.1 ACTION, 3.6.1.6 ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
		AND	
		B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.1.1.c, 4.6.1.6	SR 3.6.1.1	Perform required visual examinations and leakage rate testing, except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program	④
	~~SR 3.6.1.2~~	~~[Verify containment structural integrity in accordance with the Containment Tendon Surveillance Program.~~	~~In accordance with the Containment Tendon Surveillance Program]~~	③

3.6 CONTAINMENT SYSTEMS

3.6.1 Containment ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

3.6.1.1.
3.6.1.6 LCO 3.6.1 Containment shall be OPERABLE.

Applicability
(3.6.1.1 &
3.6.1.6) APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.6.1.1 ACTION, 3.6.1.6 ACTION	A. Containment inoperable.	A.1 Restore containment to OPERABLE status.	1 hour
3.6.1.1 ACTION, 3.6.1.6 ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
		<u>AND</u>	
		B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.1.1.c, 4.6.1.6	SR 3.6.1.1	Perform required visual examinations and leakage rate testing, except for containment air lock testing, in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program	④
	~~SR 3.6.1.2~~	~~[Verify containment structural integrity in accordance with the Containment Tendon Surveillance Program.~~	~~In accordance with the Containment Tendon Surveillance Program]~~	③

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.1, CONTAINMENT

1. The type of Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual) is deleted since it is unnecessary. This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants or may not be applicable to all Westinghouse plants. Since Sequoyah (SQN) does not have containment tendons, ISTS SR 3.6.1.2 is not included in SQN's ITS.

4. Editorial correction made.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.1~~C~~ Containment ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The containment is a free standing steel pressure vessel surrounded by a reinforced concrete shield building. The containment vessel, including all its penetrations, is a low leakage steel shell designed to contain the radioactive material that may be released from the reactor core following a design basis loss of coolant accident (LOCA). Additionally, the containment and shield building provide shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment vessel is a vertical cylindrical steel pressure vessel with hemispherical dome and a concrete base mat with steel membrane. It is completely enclosed by a reinforced concrete shield building. An annular space exists between the walls and domes of the steel containment vessel and the concrete shield building to provide for the collection, mixing, holdup, and controlled release of containment out leakage. Ice condenser containments utilize an outer concrete building for shielding and an inner steel containment for leak tightness.

Containment piping penetration assemblies provide for the passage of process, service, sampling, and instrumentation pipelines into the containment vessel while maintaining containment integrity. The shield building provides shielding and allows controlled release of the annulus atmosphere under accident conditions, as well as environmental missile protection for the containment vessel and Nuclear Steam Supply System.

The inner steel containment and its penetrations establish the leakage limiting boundary of the containment. Maintaining the containment OPERABLE limits the leakage of fission product radioactivity from the containment to the environment. SR 3.6.1.1 leakage rate requirements comply with 10 CFR 50, Appendix J, Option ~~[A][~~B~~]~~ (Ref. 1), as modified by approved exemptions. ③

The isolation devices for the penetrations in the containment boundary are a part of the containment leak tight barrier. To maintain this leak tight barrier:

BASES

BACKGROUND (continued)

a. All penetrations required to be closed during accident conditions are either:

1. Capable of being closed by an OPERABLE automatic containment isolation system or

2. Closed by manual valves, blind flanges, or de-activated automatic valves secured in their closed positions, except as provided in LCO 3.6.3, "Containment Isolation Valves,"

b. Each air lock is OPERABLE, except as provided in LCO 3.6.2, "Containment Air Locks,"

c. All equipment hatches are closed, and

INSERT 1

~~[~~d. ~~The pressurized sealing mechanism associated with a penetration is operable, except as provided in LCO 3.6.[ ].]~~ ③

APPLICABLE SAFETY ANALYSES

The safety design basis for the containment is that the containment must withstand the pressures and temperatures of the limiting Design Basis Accident (DBA) without exceeding the design leakage rates.

The DBAs that result in a challenge to containment OPERABILITY from high pressures and temperatures are a LOCA, a steam line break, and a rod ejection accident (REA) (Ref. 2). In addition, release of significant fission product radioactivity within containment can occur from a LOCA or REA. In the DBA analyses, it is assumed that the containment is OPERABLE such that, for the DBAs involving release of fission product radioactivity, release to the environment is controlled by the rate of containment leakage. The containment was designed with an allowable leakage rate of ~~[0.1]~~ 0.25 % of containment air weight per day (Ref. 3). This leakage rate, used in the evaluation of offsite doses resulting from accidents, is defined in 10 CFR 50, Appendix J, Option ~~[A][~~B~~]~~ (Ref. 1), as L_a: the maximum allowable containment leakage rate at the calculated peak containment internal pressure (P_a) resulting from the limiting design basis LOCA. The allowable leakage rate represented by L_a forms the basis for the acceptance criteria imposed on all containment leakage rate testing. L_a is assumed to be ~~[0.1]~~ 0.25 % per day in the safety analysis at P_a ~~= [14.4] psig~~ (Ref. 3). ③ ③ ③

Satisfactory leakage rate test results are a requirement for the establishment of containment OPERABILITY.

The containment satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

③ INSERT 1

The sealing mechanism associated with each containment penetration (e.g., welds, bellows, or O-rings) is OPERABLE (i.e., OPERABLE such that the containment leakage limits are met).

①

BASES

LCO

Containment OPERABILITY is maintained by limiting leakage to ≤ 1.0 L_a, except prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test. At this time the applicable leakage limits must be met.

Compliance with this LCO will ensure a containment configuration, including equipment hatches, that is structurally sound and that will limit leakage to those leakage rates assumed in the safety analysis.

Individual leakage rates specified for the containment air lock (LCO 3.6.2) ~~[~~, purge valves with resilient seals, and secondary bypass leakage (LCO 3.6.3)~~]~~ are not specifically part of the acceptance criteria of 10 CFR 50, Appendix J. Therefore, leakage rates exceeding these individual limits only result in the containment being inoperable when the leakage results in exceeding the overall acceptance criteria of the Containment Leakage Rate Testing Program ~~1.0 L_a~~.

③

⑦

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material into containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, containment is not required to be OPERABLE in MODE 5 to prevent leakage of radioactive material from containment. The requirements for containment during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

ACTIONS

A.1

In the event containment is inoperable, containment must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining containment OPERABLE during MODES 1, 2, 3, and 4. This time period also ensures that the probability of an accident (requiring containment OPERABILITY) occurring during periods when containment is inoperable is minimal.

B.1 and B.2

If containment cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1

Maintaining the containment OPERABLE requires compliance with the visual examinations and leakage rate test requirements of the Containment Leakage Rate Testing Program. The containment concrete visual examinations may be performed during either power operation~~, e.g., performed concurrently with other containment inspection-related activities such as tendon testing,~~ or during a maintenance or refueling outage. The visual examinations of the steel liner plate inside containment are performed during maintenance or refueling outages since this is the only time the liner plate is fully accessible. ⑥

Failure to meet air lock ~~[~~, shield building ~~secondary containment~~ bypass leakage path, and purge valve with resilient seal~~]~~ leakage limits specified in LCO 3.6.2 ~~[~~and LCO 3.6.3~~]~~ does not invalidate the acceptability of these overall leakage determinations unless their contribution to overall Type A, B, and C leakage causes that to exceed limits. ③ As left leakage prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test is required to be ≤ ~~<~~ 0.6 L_a for combined Type B and C leakage, and ~~[< 0.75 L_a for Option A~~] ~~[~~≤ 0.75 L_a ~~for Option B]~~ for overall Type A leakage. ② ③ At all other times between required leakage rate tests, the acceptance criteria is based on an overall Type A leakage limit of ≤ 1.0 L_a. At ≤ 1.0 L_a the offsite dose consequences are bounded by the assumptions of the safety analysis.

SR Frequencies are as required by the Containment Leakage Rate Testing Program. These periodic testing requirements verify that the containment leakage rate does not exceed the leakage rate assumed in the safety analysis.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Regulatory Guide 1.163 and NEI 94-01 include acceptance criteria for as-left and as-found Type A leakage rates and combined Type B and C leakage rates, which may be reflected in the Bases.~~ ④
~~--~~

~~[SR 3.6.1.2~~

~~For ungrouted, post tensioned tendons, this SR ensures that the structural integrity of the containment will be maintained in accordance with the provisions of the Containment Tendon Surveillance Program. Testing and Frequency are in accordance with the ASME Code, Section XI, Subsection IWL (Ref. 4), and applicable addenda as required by 10CFR 50.55a.]~~ ⑤

BASES

REFERENCES

U

1. 10 CFR 50, Appendix J, Option ~~[A]~~[B]. ③

2. FSAR, Chapter ~~[~~15~~]~~. ②

3. FSAR, Section ~~[~~6.2~~]~~.

~~4. ASME Code, Section XI, Subsection IWL.~~ ⑤

B 3.6 CONTAINMENT SYSTEMS

B 3.6.1~~C~~ Containment ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The containment is a free standing steel pressure vessel surrounded by a reinforced concrete shield building. The containment vessel, including all its penetrations, is a low leakage steel shell designed to contain the radioactive material that may be released from the reactor core following a design basis loss of coolant accident (LOCA). Additionally, the containment and shield building provide shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment vessel is a vertical cylindrical steel pressure vessel with hemispherical dome and a concrete base mat with steel membrane. It is completely enclosed by a reinforced concrete shield building. An annular space exists between the walls and domes of the steel containment vessel and the concrete shield building to provide for the collection, mixing, holdup, and controlled release of containment out leakage. Ice condenser containments utilize an outer concrete building for shielding and an inner steel containment for leak tightness.

Containment piping penetration assemblies provide for the passage of process, service, sampling, and instrumentation pipelines into the containment vessel while maintaining containment integrity. The shield building provides shielding and allows controlled release of the annulus atmosphere under accident conditions, as well as environmental missile protection for the containment vessel and Nuclear Steam Supply System.

The inner steel containment and its penetrations establish the leakage limiting boundary of the containment. Maintaining the containment OPERABLE limits the leakage of fission product radioactivity from the containment to the environment. SR 3.6.1.1 leakage rate requirements comply with 10 CFR 50, Appendix J, Option ~~[A][~~B~~]~~ (Ref. 1), as modified by approved exemptions. ③

The isolation devices for the penetrations in the containment boundary are a part of the containment leak tight barrier. To maintain this leak tight barrier:

BASES

BACKGROUND (continued)

a. All penetrations required to be closed during accident conditions are either:

1. Capable of being closed by an OPERABLE automatic containment isolation system or

2. Closed by manual valves, blind flanges, or de-activated automatic valves secured in their closed positions, except as provided in LCO 3.6.3, "Containment Isolation Valves,"

b. Each air lock is OPERABLE, except as provided in LCO 3.6.2, "Containment Air Locks,"

c. All equipment hatches are closed, and

INSERT 1

~~[~~d. ~~The pressurized sealing mechanism associated with a penetration is operable, except as provided in LCO 3.6.[ ].]~~ ③

APPLICABLE SAFETY ANALYSES

The safety design basis for the containment is that the containment must withstand the pressures and temperatures of the limiting Design Basis Accident (DBA) without exceeding the design leakage rates.

The DBAs that result in a challenge to containment OPERABILITY from high pressures and temperatures are a LOCA, a steam line break, and a rod ejection accident (REA) (Ref. 2). In addition, release of significant fission product radioactivity within containment can occur from a LOCA or REA. In the DBA analyses, it is assumed that the containment is OPERABLE such that, for the DBAs involving release of fission product radioactivity, release to the environment is controlled by the rate of containment leakage. The containment was designed with an allowable leakage rate of 0.25 ~~[0.1]~~% of containment air weight per day (Ref. 3). This leakage rate, used in the evaluation of offsite doses resulting from accidents, is defined in 10 CFR 50, Appendix J, Option ~~[A][~~B~~]~~ (Ref. 1), as L_a: the maximum allowable containment leakage rate at the calculated peak containment internal pressure (P_a) resulting from the limiting design basis LOCA. The allowable leakage rate represented by L_a forms the basis for the acceptance criteria imposed on all containment leakage rate testing. L_a is assumed to be ~~[0.1]~~ 0.25% per day in the safety analysis at P_a ~~= [14.4] psig~~ (Ref. 3). ③ ③ ③

Satisfactory leakage rate test results are a requirement for the establishment of containment OPERABILITY.

The containment satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

③ INSERT 1

The sealing mechanism associated with each containment penetration (e.g., welds, bellows, or O-rings) is OPERABLE (i.e., OPERABLE such that the containment leakage limits are met).

BASES

LCO

Containment OPERABILITY is maintained by limiting leakage to ≤ 1.0 L_a, except prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test. At this time the applicable leakage limits must be met.

Compliance with this LCO will ensure a containment configuration, including equipment hatches, that is structurally sound and that will limit leakage to those leakage rates assumed in the safety analysis.

Individual leakage rates specified for the containment air lock (LCO 3.6.2) ~~[~~, purge valves with resilient seals, and secondary bypass leakage (LCO 3.6.3)~~]~~ are not specifically part of the acceptance criteria of 10 CFR 50, Appendix J. Therefore, leakage rates exceeding these individual limits only result in the containment being inoperable when the leakage results in exceeding the overall acceptance criteria of the Containment Leakage Rate Testing Program ~~1.0 L_a~~. ③ ⑦

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material into containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, containment is not required to be OPERABLE in MODE 5 to prevent leakage of radioactive material from containment. The requirements for containment during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

ACTIONS

A.1

In the event containment is inoperable, containment must be restored to OPERABLE status within 1 hour. The 1 hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining containment OPERABLE during MODES 1, 2, 3, and 4. This time period also ensures that the probability of an accident (requiring containment OPERABILITY) occurring during periods when containment is inoperable is minimal.

B.1 and B.2

If containment cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1

Maintaining the containment OPERABLE requires compliance with the visual examinations and leakage rate test requirements of the Containment Leakage Rate Testing Program. The containment concrete visual examinations may be performed during either power operation~~, e.g., performed concurrently with other containment inspection-related activities such as tendon testing,~~ or during a maintenance or refueling outage. The visual examinations of the steel liner plate inside containment are performed during maintenance or refueling outages since this is the only time the liner plate is fully accessible. ⑥

Failure to meet air lock ~~[~~, ~~secondary containment~~ shield building bypass leakage path, and purge valve with resilient seal~~]~~ leakage limits specified in LCO 3.6.2 ~~[~~and LCO 3.6.3~~]~~ does not invalidate the acceptability of these overall leakage determinations unless their contribution to overall Type A, B, and C leakage causes that to exceed limits. ③ As left leakage prior to the first startup after performing a required Containment Leakage Rate Testing Program leakage test is required to be ~~<~~ ≤ 0.6 L_a for combined ② Type B and C leakage, and ~~[< 0.75 L_a for Option A~~] ~~[~~≤ 0.75 L_a ~~for Option B]~~ ③ for overall Type A leakage. At all other times between required leakage rate tests, the acceptance criteria is based on an overall Type A leakage limit of ≤ 1.0 L_a. At ≤ 1.0 L_a the offsite dose consequences are bounded by the assumptions of the safety analysis.

SR Frequencies are as required by the Containment Leakage Rate Testing Program. These periodic testing requirements verify that the containment leakage rate does not exceed the leakage rate assumed in the safety analysis.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Regulatory Guide 1.163 and NEI 94-01 include acceptance criteria for as-left and as-found Type A leakage rates and combined Type B and C leakage rates, which may be reflected in the Bases.~~ ④
~~--~~

~~[SR 3.6.1.2~~

~~For ungrouted, post tensioned tendons, this SR ensures that the structural integrity of the containment will be maintained in accordance with the provisions of the Containment Tendon Surveillance Program. Testing and Frequency are in accordance with the ASME Code, Section XI, Subsection IWL (Ref. 4), and applicable addenda as required by 10CFR 50.55a.]~~ ⑤

BASES

REFERENCES

U

1. 10 CFR 50, Appendix J, Option ~~[A]~~[B]. ③

2. FSAR, Chapter ~~[~~15~~]~~. ②

3. FSAR, Section ~~[~~6.2~~]~~.

~~4. ASME Code, Section XI, Subsection IWL.~~ ⑤

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.1 Bases, CONTAINMENT

1. The heading for ISTS 3.6.1 includes the parenthetical expression (Atmospheric, Subatmospheric, Ice Condenser, and Dual). This identifying information is not included in the Sequoyah Nuclear (SQN) Plant ITS. This information is provided in the NUREG to assist in identifying the appropriate Specification to be used as a model for a plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

4. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

5. This bracketed requirement regarding Containment Tendon Surveillance Program is deleted because it is not applicable to SQN Unit 1 and Unit 2. The SQN containments do not utilize containment tendons.

6. The SQN Safety Analysis Report (SAR) is titled, "Sequoyah Nuclear Plant Updated Final Safety Analysis Report." Therefore, the proper acronym is UFSAR and is changed to reflect the SQN title.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.1, CONTAINMENT

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 2

ITS 3.6.2, CONTAINMENT AIR LOCKS

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

CONTAINMENT SYSTEMS

CONTAINMENT AIR LOCKS

LIMITING CONDITION FOR OPERATION

LCO 3.6.2 3.6.1.3 ~~Each~~ Two containment air lock shall be OPERABLE* ~~with both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed.~~ A02 LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTION Note 1 L01

Add proposed ACTION Note 2 A03

ACTION:

Add proposed ACTION A Required Action Note 1 L02

Add proposed ACTION A Required Action Note 2

ACTION A a. With one containment air lock door inoperable:

Add proposed Required Action A.1 Completion Time M01

1. Maintain at least the OPERABLE air lock door closed and ~~either restore the inoperable air lock door to OPERABLE status~~ within 24 hours or lock the OPERABLE air lock door closed. A04

Add proposed Required Action A.3 Note L02

2. Operation may then continue until performance of the next required overall air lock leakage test provided that the OPERABLE air lock door is verified to be locked closed at least once per 31 days.

Add proposed ACTION B L01

ACTION D 3. Otherwise, be in at least HOT STANDBY within the next six hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed Required Action C.1 M02

ACTION C b. With the containment air lock inoperable, except as the result of an inoperable air lock door, maintain at least one air lock door closed; restore the inoperable air lock to OPERABLE status within 24 hours

ACTION D or be in at least HOT STANDBY within the next six hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed Required Action C.2 Completion Time M01

SR 3.6.2.1 Note 1 *1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test.

ACTIONS Note 3 2. Enter the ACTION of LCO 3.6.1.1, "Primary Containment" when air lock leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

Add proposed SR 3.6.2.1 Note 2 — A05

SR 3.6.2.1 a. By verifying leakage rates in accordance with the Containment Leakage Rate Test Program.

In accordance with the Surveillance Frequency Control Program — LA02

SR 3.6.2.2 b. ~~At least once per 6 months~~ by verifying that only one door in each air lock can be opened at a time.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.6.1

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

a. Delete.

See ITS 3.6.1

SR 3.6.2.1 b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.

c. Perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program.

See ITS 3.6.1

CONTAINMENT SYSTEMS

CONTAINMENT AIR LOCKS

LIMITING CONDITION FOR OPERATION

Two A02

LCO 3.6.2 3.6.1.3 ~~Each~~ containment air lock shall be OPERABLE* ~~with both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed~~. LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

Add proposed ACTION Note 1 L01

Add proposed ACTION Note 2 A03

ACTION:

Add proposed ACTION A Required Action Note 1 L02

Add proposed ACTION A Required Action Note 2

Add proposed Required Action A.1 Completion Time M01

A04

ACTION A

a. With one containment air lock door inoperable:

1. Maintain at least the OPERABLE air lock door closed and ~~either restore the inoperable air lock door to OPERABLE status~~ within 24 hours or lock the OPERABLE air lock door closed.

Add proposed Required Action A.3 Note L02

2. Operation may then continue until performance of the next required overall air lock leakage test provided that the OPERABLE air lock door is verified to be locked closed at least once per 31 days.

Add proposed ACTION B L01

ACTION D

3. Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed Required Action C.1 M02

ACTION C

ACTION D

b. With the containment air lock inoperable, except as the result of a inoperable air lock door, maintain at least one air lock door closed; restore the inoperable air lock to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

Add proposed Required Action C.2 Completion Time M01

SR 3.6.2.1 Note 1

*1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test.

ACTIONS Note 3

2. Enter the ACTION of LCO 3.6.1.1, "Primary Containment" when air lock leakage results in exceeding the overall containment leakage rate acceptance criteria.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

Add proposed SR 3.6.2.1 Note 2 A05

SR 3.6.2.1 a. By verifying leakage rates in accordance with the Containment Leakage Rate Test Program.

SR 3.6.2.2 b. ~~At least once per 6 months~~ by verifying that only one door in each air lock can be opened at a time.

In accordance with the Surveillance Frequency Control Program LA02

A01

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

See ITS 3.6.1

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

a. Deleted.

See ITS 3.6.1

SR 3.6.2.1 b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.

c. Perform required visual examinations and leakage rate testing in accordance with the Containment Leakage Rate Testing Program.

See ITS 3.6.1

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG - 1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.1.3 states, in part, "Each containment air lock shall be OPERABLE. ITS LCO 3.6.2 states, "Two containment air locks shall be OPERABLE. This changes the CTS by identifying the total number of airlocks that are required to be OPERABLE.

This change is acceptable because SQN has two containment air locks. Therefore, requiring two containment air locks to be OPERABLE in ITS 3.6.2 is the same as requiring each containment air lock to be OPERABLE in CTS 3.6.1.3. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 3.6.1.3 states, in part, "Each containment air lock shall be OPERABLE." CTS 3.6.1.3 ACTION a states, in part, "With one containment air lock door inoperable" and specifies ACTIONS to be taken. CTS 3.6.1.3 ACTION b states, in part, "With the containment air lock inoperable, except as the result of an inoperable air lock door" and specifies ACTIONS to be taken. ITS 3.6.2 ACTIONS Note 2 states "Separate Condition entry is allowed for each airlock." ITS 3.6.2 ACTION A states "One or more containment air locks with one containment air lock door inoperable." ITS 3.6.2 ACTION C states "One or more containment air locks inoperable for reasons other than Condition A or B." This changes the CTS by clarifying the current intent of applying the CTS Actions to each air lock separately.

The purpose of the CTS 3.6.1.3 is to ensure containment air locks meet their requirements for CONTAINMENT INTEGRITY (changed to containment OPERABILITY in the ITS). One OPERABLE air lock door in each containment air lock provides a pressure boundary, and applying the CTS Actions for an inoperable air lock to each of the air locks separately is appropriate. ITS 3.6.2 ACTIONS Note 2 clearly states this. The Required Actions for each Condition provides appropriate compensatory action for each air lock. This change is acceptable because it clarifies existing requirements and better describes how the requirements are currently used. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS 3.6.1.3 ACTION a.1 states in part, to either restore the inoperable air lock door to OPERABLE status within 24 hours or lock the OPERABLE air lock door closed. ITS 3.6.2 ACTION A does not contain the statement to restore the inoperable air lock door to OPERABLE status. This changes CTS by not including the statement to restore the inoperable air lock door to OPERABLE status.

This change is acceptable because the technical requirements have not changed. Restoration to compliance with the LCO is always an available Required Action and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. This change is designated as administrative because it does not result in technical changes to the CTS.

A05 CTS 4.6.1.3.a requires demonstrating each containment air lock is OPERABLE by verifying leakage rates are in accordance with the Containment Leakage Rate Testing Program. ITS 3.6.2.1 requires the same test, but adds a Note (SR 3.6.2.1 Note 2) requiring that the results be evaluated against acceptance criteria of ITS SR 3.6.1.1. This changes the CTS by specifically requiring verification of the air lock leakage rates against the Containment leakage rates.

The purpose of leak rate testing requirements for air lock leakage (Type B leakage test) is to verify that the air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. Evaluating the containment air lock leakage with the containment leakage rates ensures that the air lock leakage is accounted for in determining the combined Type B and C containment leakage rate. In the CTS, this evaluation is performed as part of the Containment Leakage Rate Testing Program, but is not specifically addressed in CTS 4.6.1.3.a. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.1.3 ACTION a requires, in part, maintaining at least the OPERABLE air lock door closed when one containment air lock door is inoperable. CTS 3.6.1.3 ACTION b requires, in part, maintaining at least one air lock door closed when the containment air lock is inoperable. ITS 3.6.2 ACTIONS A and C require similar actions (Required Action A.1 and C.2, respectively), and require verifying the door is closed in the affected air lock within 1 hour. This changes the CTS by adding a new Completion Time.

The purpose of ITS 3.6.2 Required Actions A.1 and C.2 is to verify that the overall leakage rate aspect of containment OPERABILITY is met in the event an airlock is inoperable for a reason other than an interlock mechanism being inoperable. An additional purpose of ITS 3.6.2 Required Actions A.1 and C.2 is to minimize, to the extent possible, the leakage through the inoperable air lock. This change is acceptable because if the inoperability is something that could cause the overall containment leakage rate limits to be exceeded, this should be evaluated immediately, commensurate with the importance of the limits. Furthermore, the one hour Completion Time is commensurate with the Completion Time in ITS 3.6.1 (CTS 3.6.1.1) for restoring containment to OPERABLE status when the containment is inoperable. This change is considered more restrictive because it provides a new Completion Time.

DISCUSSION OF CHANGES
ITS 3.6.2, CONTAINMENT AIR LOCKS

M02 CTS 3.6.1.3 ACTION b requires maintaining at least one air lock door closed and restoration of an inoperable air lock within 24 hours. ITS 3.6.2 ACTION C requires one additional Required Action. When one or more containment air locks are inoperable for reasons other than Condition A or B, ITS 3.6.2 Required Action C.1 requires initiation of action to evaluate overall containment leakage rate per LCO 3.6.1, immediately. This changes the CTS by adding a new Required Action.

The purpose of ITS 3.6.2 Required Action C.1 is to verify that the overall leakage rate aspect of containment OPERABILITY is met in the event an airlock is inoperable for a reason other than one door or an interlock mechanism being inoperable. An additional purpose of ITS 3.6.2 Required Action C.2 is to minimize, to the extent possible, the leakage through the inoperable air lock. This change is acceptable because if the inoperability is something that could cause the overall containment leakage rate limits to be exceeded, this should be evaluated immediately, commensurate with the importance of the limits. This change is considered more restrictive because it provides a new Required Action.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.1.3 states each containment air lock shall be OPERABLE with both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed. ITS 3.6.2 does not contain this level of detail. This changes the CTS by moving details concerning what constitutes an OPERABLE containment air lock to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the information and is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.1.3.b requires verification that only one door in each air lock can be opened at time, at least once per 6 months. ITS SR 3.6.2.2 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for this SR and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.6.1.3 ACTION b states "With the containment air lock inoperable, except as the result of an inoperable air lock door, maintain at least one air lock door closed; restore the inoperable air lock to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next six hours and in COLD SHUTDOWN within the following 30 hours." ITS 3.6.2 ACTION B provides a separate ACTION for inoperability of the air lock with an air lock interlock mechanism inoperable, ITS 3.6.2 ACTION B allows unlimited operation provided an OPERABLE door in the air lock is closed in 1 hour, locked closed in 24 hours, and verification is performed every 31 days that an OPERABLE air lock door in the air lock remains closed. For air lock doors in high radiation areas, this 31 day verification can be performed by administrative means. In addition, containment entry and exit through the air lock is permissible (i.e., the closed and locked door can be opened) under administrative control. Additionally, a new Note which applies to ITS 3.6.2 ACTIONS A, B, and C has been added. This Note, ITS 3.6.2 ACTIONS Note 1, stated entry and exit (i.e., the closed and locked OPERABLE air locks can be opened) is permissible to perform repairs on the affected air lock components. This changes the CTS by allowing unlimited operation, with certain restrictions, for air locks that are inoperable due to an inoperable lock mechanism and allows entry and exit to repair an inoperable door.

The purpose of CTS air lock ACTION b is to ensure the containment is not allowed to operate indefinitely in a condition such that it cannot perform its safety function. The changes are acceptable because the proposed ACTION will still ensure the containment safety function is met. Since there are two redundant doors in each air lock, only one OPERABLE air lock door is needed to be maintained closed to ensure the leak tightness requirements are met. The leak tightness of each door is verified, as required by ITS SR 3.6.2.1, in accordance with the Containment Leakage Rate Testing Program. In addition, the interlock mechanism only ensures that both doors in the air lock are not inadvertently opened at the same time. With either an OPERABLE air lock door locked closed, or a dedicated individual ensuring that only one door at a time is opened, the function of the interlock mechanism is being met. The allowances to open the air lock doors to perform repairs or other reasons is acceptable since the time the door is opened is short and the opening is under administrative controls. Also, for the case where the air lock door is opened for reasons other than to effect repairs, the time period (7 days) is short. These changes are designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.6.1.3 ACTION a states "With one containment air lock inoperable, maintain at least the OPERABLE air lock door closed and either restore the inoperable air lock door to OPERABLE status within 24 hours or lock the OPERABLE air lock door closed and operation may then continue until performance of the next required overall air lock leakage test provided that the OPERABLE air lock door is verified to be locked closed at least once per 31 days." ITS 3.6.2 ACTION A contains similar requirements, but contains two Required Action Notes stating "Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered" and "Entry and exit is permissible for 7 days under administrative controls if both air locks are inoperable." Additionally ITS 3.6.2 Required Action A.3 contains a Note stating "Air lock doors in high radiation areas may be verified locked closed by administrative means." This changes the CTS by ensuring that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable, allowing use of the air lock for entry and exit for 7 days under administrative controls if both air locks have an inoperable door, and allowing air lock doors in high radiation areas to be verified locked close by administrative means.

The addition of ITS 3.6.2 Condition A, Required Action Note 1 is acceptable since it ensures that only the Required Actions and associated Completion Times of Condition C are performed if both doors in the same air lock are inoperable. This is acceptable since Condition C contains the appropriate remedial actions to take when both doors are inoperable. The addition of ITS 3.6.2 Condition A, Required Action Note 2 is acceptable since it allows entry and exit to perform Technical Specification Surveillance and Required Action as well as other activities on equipment inside containment that are required by Technical Specifications or activities on equipment that support Technical Specification required equipment. This change is acceptable since the time duration is short and the doors are opened under administrative controls. The addition of ITS 3.6.2 Required Action A.3 Note is acceptable since it allows verifying that air lock doors in high radiation areas by administrative means. Additionally, this change is acceptable since accesses to these areas are typically restricted and the probability of a misalignment of the doors is small. These changes are designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

3.6.1.3 LCO 3.6.2 ~~[~~Two~~]~~ containment air lock~~[~~s~~]~~ shall be OPERABLE. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

--NOTES--

DOC L01 1. Entry and exit is permissible to perform repairs on the affected air lock components.

DOC A03 2. Separate Condition entry is allowed for each air lock.

footnote 2 3. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate.

ACTION a
DOC L02

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment air locks with one containment air lock door inoperable.	--------------------NOTES----------------- 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls ~~[~~if both air locks are inoperable~~]~~. ③ -- A.1 Verify the OPERABLE door is closed in the affected air lock. <u>AND</u>	 1 hour

①

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a	A.2 Lock the OPERABLE door closed in the affected air lock.	24 hours
	AND	
	A.3 --------------NOTE-------------- Air lock doors in high radiation areas may be verified locked closed by administrative means. --------------------------------------	
	Verify the OPERABLE door is locked closed in the affected air lock.	Once per 31 days
DOC L01, DOC L02 B. One or more containment air locks with containment air lock interlock mechanism inoperable.	-------------------NOTES------------------ 1. Required Actions B.1, B.2, and B.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit of containment is permissible under the control of a dedicated individual. ---	
DOC L01	B.1 Verify an OPERABLE door is closed in the affected air lock.	1 hour
	AND	

②

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
DOC L01		B.2	Lock an OPERABLE door closed in the affected air lock.	24 hours
		AND		
DOC L02		B.3	--------------NOTE-------------- Air lock doors in high radiation areas may be verified locked closed by administrative means. -------------------------------------	
DOC L01			Verify an OPERABLE door is locked closed in the affected air lock.	Once per 31 days
ACTION b DOC M01 DOC M02	C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1	Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
		AND		
		C.2	Verify a door is closed in the affected air lock.	1 hour
		AND		
		C.3	Restore air lock to OPERABLE status.	24 hours
ACTION a, ACTION b	D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
		AND		
		D.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY	
footnote 1 DOC A05 4.6.1.3.a, 4.6.1.1.b	SR 3.6.2.1	-----------------------------NOTES---------------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. --- Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program	
4.6.1.3.b	SR 3.6.2.2	~~[~~ Verify only one door in the air lock can be opened at a time.	~~[24 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ~~]~~	③ ④ ④ ③

3.6 CONTAINMENT SYSTEMS

3.6.2 Containment Air Locks ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

3.6.1.3 LCO 3.6.2 ~~[~~Two~~]~~ containment air lock~~[s]~~ shall be OPERABLE. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

--NOTES--

DOC L01 1. Entry and exit is permissible to perform repairs on the affected air lock components.

DOC A03 2. Separate Condition entry is allowed for each air lock.

footnote 2 3. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when air lock leakage results in exceeding the overall containment leakage rate.

ACTION a
DOC L02

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment air locks with one containment air lock door inoperable.	--------------------NOTES----------------- 1. Required Actions A.1, A.2, and A.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit is permissible for 7 days under administrative controls ~~[~~if both air locks are inoperable~~]~~. ③ --	
	A.1 Verify the OPERABLE door is closed in the affected air lock.	1 hour
	AND	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a	A.2 Lock the OPERABLE door closed in the affected air lock.	24 hours
	AND	
	A.3 --------------NOTE-------------- Air lock doors in high radiation areas may be verified locked closed by administrative means. ------------------------------------- Verify the OPERABLE door is locked closed in the affected air lock.	Once per 31 days
DOC L01, DOC L02 B. One or more containment air locks with containment air lock interlock mechanism inoperable.	-------------------NOTES------------------ 1. Required Actions B.1, B.2, and B.3 are not applicable if both doors in the same air lock are inoperable and Condition C is entered. 2. Entry and exit of containment is permissible under the control of a dedicated individual. ---	
DOC L01	B.1 Verify an OPERABLE door is closed in the affected air lock.	1 hour
	AND	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01		B.2 Lock an OPERABLE door closed in the affected air lock.	24 hours
		AND	
DOC L02		B.3 --------------NOTE-------------- Air lock doors in high radiation areas may be verified locked closed by administrative means. -------------------------------------	
DOC L01		Verify an OPERABLE door is locked closed in the affected air lock.	Once per 31 days
ACTION b DOC M01 DOC M02	C. One or more containment air locks inoperable for reasons other than Condition A or B.	C.1 Initiate action to evaluate overall containment leakage rate per LCO 3.6.1.	Immediately
		AND	
		C.2 Verify a door is closed in the affected air lock.	1 hour
		AND	
		C.3 Restore air lock to OPERABLE status.	24 hours
ACTION a, ACTION b	D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
		AND	
		D.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
footnote 1 DOC A05	SR 3.6.2.1	-----------------------------NOTES---------------------------- 1. An inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. 2. Results shall be evaluated against acceptance criteria applicable to SR 3.6.1.1. --		
4.6.1.3.a, 4.6.1.1.b		Perform required air lock leakage rate testing in accordance with the Containment Leakage Rate Testing Program.	In accordance with the Containment Leakage Rate Testing Program	
4.6.1.3.b	SR 3.6.2.2	~~[~~ Verify only one door in the air lock can be opened at a time.	~~[24 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ④ ④ ③

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.2, CONTAINMENT AIR LOCKS

1. The type of Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual) is deleted since it is unnecessary. This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.6.2.2 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.6.2.2 is "In accordance with the Surveillance Frequency Control Program."

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.2 Containment Air Locks ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

BASES

BACKGROUND

Containment air locks form part of the containment pressure boundary and provide a means for personnel access during all MODES of operation.

Each air lock is nominally a right circular cylinder, ~~10 ft~~ approximately 8 feet 7 inches in diameter, with a ② door at each end. The doors are interlocked to prevent simultaneous opening. During periods when containment is not required to be OPERABLE, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment entry is necessary. Each air lock door has been designed and tested to certify its ability to withstand a pressure in excess of the maximum expected pressure following a Design Basis Accident (DBA) in containment. As such, closure of a single door supports containment OPERABILITY. Each of the doors contains double gasketed seals and local leakage rate testing capability to ensure pressure integrity. ~~To effect a leak tight seal, the air lock design uses pressure seated doors (i.e., an increase in containment internal pressure results in increased sealing force on each door).~~ ②

Each personnel air lock is provided with limit switches on both doors that provide control room indication of door position. Additionally, control room indication is provided to alert the operator whenever an air lock door interlock mechanism is defeated.

The containment air locks form part of the containment pressure boundary. As such, air lock integrity and leak tightness is essential for maintaining the containment leakage rate within limit in the event of a DBA. Not maintaining air lock integrity or leak tightness may result in a leakage rate in excess of that assumed in the unit safety analyses.

APPLICABLE SAFETY ANALYSES

The DBAs that result in a release of radioactive material within
containment are a loss of coolant accident (LOCA) and a rod ejection accident ③
(Ref. 2). In the analysis of each of these accidents, it is assumed that
containment is OPERABLE such that release of fission products to the
environment is controlled by the rate of containment leakage. The
containment was designed with an allowable leakage rate of ~~[0.1]~~ 0.25% of ④
containment air weight per day (Ref. ~~2~~ 3). This leakage rate is defined in ②
10 CFR 50, Appendix J, Option ~~A~~ B (Ref. 1), as L_a = ~~[0.1]~~ 0.25% of containment ② ④
air weight per day, the maximum allowable containment leakage rate at
the calculated peak containment internal pressure P_a ~~= [14.4] psig~~ ④

BASES

APPLICABLE SAFETY ANALYSES (continued)

following a design basis LOCA. This allowable leakage rate forms the basis for the acceptance criteria imposed on the SRs associated with the air locks.

The containment air locks satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Each containment air lock forms part of the containment pressure boundary. As part of the containment pressure boundary, the air lock safety function is related to control of the containment leakage rate resulting from a DBA. Thus, each air lock's structural integrity and leak tightness are essential to the successful mitigation of such an event.

Each air lock is required to be OPERABLE. For the air lock to be considered OPERABLE, the air lock interlock mechanism must be OPERABLE, the air lock must be in compliance with the Type B air lock leakage test, and both air lock doors must be OPERABLE. The interlock allows only one air lock door of an air lock to be opened at one time. This provision ensures that a gross breach of containment does not exist when containment is required to be OPERABLE. Closure of a single door in each air lock is sufficient to provide a leak tight barrier following postulated events. Nevertheless, both doors are kept closed when the air lock is not being used for normal entry into or exit from containment.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment air locks are not required in MODE 5 to prevent leakage of radioactive material from containment. The requirements for the containment air locks during MODE 6 are addressed in LCO 3.9.~~3~~, "Containment Penetrations." ⑤
4

ACTIONS

The ACTIONS are modified by a Note that allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed for most repairs. It is preferred that the air lock be accessed from inside primary containment by entering through the other OPERABLE air lock. However, if this is not practicable, or if repairs on either door must be performed from the barrel side of the door then it is permissible to enter the air lock through the OPERABLE door, which means there is a short time during which the containment boundary is not intact (during access through the OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is

BASES

ACTIONS (continued)

expected to be open. After each entry and exit, the OPERABLE door must be immediately closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each air lock. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable air lock. Complying with the Required Actions may allow for continued operation, and a subsequent inoperable air lock is governed by subsequent Condition entry and application of associated Required Actions.

In the event the air lock leakage results in exceeding the overall containment leakage rate, Note 3 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1, "Containment."

A.1, A.2, and A.3

With one air lock door in one or more containment air locks inoperable, the OPERABLE door must be verified closed (Required Action A.1) in each affected containment air lock. This ensures that a leak tight containment barrier is maintained by the use of an OPERABLE air lock door. This action must be completed within 1 hour. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires containment be restored to OPERABLE status within 1 hour.

In addition, the affected air lock penetration must be isolated by locking closed the OPERABLE air lock door within the 24 hour Completion Time. The 24 hour Completion Time is reasonable for locking the OPERABLE air lock door, considering the OPERABLE door of the affected air lock is being maintained closed.

Required Action A.3 verifies that an air lock with an inoperable door has been isolated by the use of a locked and closed OPERABLE air lock door. This ensures that an acceptable containment leakage boundary is maintained. The Completion Time of once per 31 days is based on engineering judgment and is considered adequate in view of the low likelihood of a locked door being mispositioned and other administrative controls. Required Action A.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

BASES

ACTIONS (continued)

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required Actions C.1 and C.2 are the appropriate remedial actions. The exception of Note 1 does not affect tracking the Completion Time from the initial entry into Condition A; only the requirement to comply with the Required Actions. Note 2 allows use of the air lock for entry and exit for 7 days under administrative controls if both air locks have an inoperable door. This 7 day restriction begins when the second air lock is discovered inoperable. Containment entry may be required on a periodic basis to perform Technical Specifications (TS) Surveillances and Required Actions, as well as other activities on equipment inside containment that are required by TS or activities on equipment that support TS-required equipment. This Note is not intended to preclude performing other activities (i.e., non-TS required activities) if the containment is entered, using the inoperable air lock, to perform an allowed activity listed above. This allowance is acceptable due to the low probability of an event that could pressurize the containment during the short time that the OPERABLE door is expected to be open.

B.1, B.2, and B.3

With an air lock interlock mechanism inoperable in one or more air locks, the Required Actions and associated Completion Times are consistent with those specified in Condition A.

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required Actions C.1 and C.2 are the appropriate remedial actions. Note 2 allows entry into and exit from containment under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock).

Required Action B.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

BASES

ACTIONS (continued)

C.1, C.2, and C.3

With one or more air locks inoperable for reasons other than those described in Condition A or B, Required Action C.1 requires action to be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation is acceptable, since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed a seal test or if the overall air lock leakage is not within limits. In many instances (e.g., only one seal per door has failed), containment remains OPERABLE, yet only 1 hour (per LCO 3.6.1) would be provided to restore the air lock door to OPERABLE status prior to requiring a plant shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits.

Required Action C.2 requires that one door in the affected containment air lock must be verified to be closed within the 1 hour Completion Time. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

D.1 and D.2

If the inoperable containment air lock cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1

Maintaining containment air locks OPERABLE requires compliance with the leakage rate test requirements of the Containment Leakage Rate Testing Program. This SR reflects the leakage rate testing requirements with regard to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the

BASES

SURVEILLANCE REQUIREMENTS (continued)

air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The Frequency is required by the Containment Leakage Rate Testing Program.

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 has been added to this SR requiring the results to be evaluated against the acceptance criteria which is applicable to SR 3.6.1.1. This ensures that air lock leakage is properly accounted for in determining the combined Type B and C containment leakage rate.

~~[~~ SR 3.6.2.2 ⑥

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and outer doors will not inadvertently occur. ~~[Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the containment air lock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 24 months. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, and the potential for loss of containment OPERABILITY if the Surveillance were performed with the reactor at power. The 24 month Frequency for the interlock is justified based on generic operating experience. The 24 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged during the use of the airlock.~~

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑦

REFERENCES

1. 10 CFR 50, Appendix J, Option ~~[A][~~B~~]~~. ④
2. U FSAR, Section ~~[6.2]~~ 15.4. ② ④
3. UFSAR, Section 6.2.4.1. ②

B 3.6 CONTAINMENT SYSTEMS

B 3.6.2 Containment Air Locks ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

BASES

BACKGROUND

Containment air locks form part of the containment pressure boundary and provide a means for personnel access during all MODES of operation.

Each air lock is nominally a right circular cylinder, ~~10 ft~~ approximately 8 feet 7 inches in diameter, with a door at each end. ② The doors are interlocked to prevent simultaneous opening. During periods when containment is not required to be OPERABLE, the door interlock mechanism may be disabled, allowing both doors of an air lock to remain open for extended periods when frequent containment entry is necessary. Each air lock door has been designed and tested to certify its ability to withstand a pressure in excess of the maximum expected pressure following a Design Basis Accident (DBA) in containment. As such, closure of a single door supports containment OPERABILITY. Each of the doors contains double gasketed seals and local leakage rate testing capability to ensure pressure integrity. ~~To effect a leak tight seal, the air lock design uses pressure seated doors (i.e., an increase in containment internal pressure results in increased sealing force on each door).~~ ②

Each personnel air lock is provided with limit switches on both doors that provide control room indication of door position. Additionally, control room indication is provided to alert the operator whenever an air lock door interlock mechanism is defeated.

The containment air locks form part of the containment pressure boundary. As such, air lock integrity and leak tightness is essential for maintaining the containment leakage rate within limit in the event of a DBA. Not maintaining air lock integrity or leak tightness may result in a leakage rate in excess of that assumed in the unit safety analyses.

APPLICABLE SAFETY ANALYSES

The DBAs that result in a release of radioactive material within
containment are a loss of coolant accident (LOCA) and a rod ejection accident ③
(Ref. 2). In the analysis of each of these accidents, it is assumed that
containment is OPERABLE such that release of fission products to the
environment is controlled by the rate of containment leakage. The
containment was designed with an allowable leakage rate of ~~[0.1]~~ 0.25% of ④
containment air weight per day (Ref. ~~2~~ 3). This leakage rate is defined in ②
10 CFR 50, Appendix J, Option ~~A~~ B (Ref. 1), as L_a = ~~[0.1]~~ 0.25% of containment ② ④
air weight per day, the maximum allowable containment leakage rate at
the calculated peak containment internal pressure P_a ~~= [14.4] psig~~ ④

BASES

APPLICABLE SAFETY ANALYSES (continued)

following a design basis LOCA. This allowable leakage rate forms the basis for the acceptance criteria imposed on the SRs associated with the air locks.

The containment air locks satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Each containment air lock forms part of the containment pressure boundary. As part of the containment pressure boundary, the air lock safety function is related to control of the containment leakage rate resulting from a DBA. Thus, each air lock's structural integrity and leak tightness are essential to the successful mitigation of such an event.

Each air lock is required to be OPERABLE. For the air lock to be considered OPERABLE, the air lock interlock mechanism must be OPERABLE, the air lock must be in compliance with the Type B air lock leakage test, and both air lock doors must be OPERABLE. The interlock allows only one air lock door of an air lock to be opened at one time. This provision ensures that a gross breach of containment does not exist when containment is required to be OPERABLE. Closure of a single door in each air lock is sufficient to provide a leak tight barrier following postulated events. Nevertheless, both doors are kept closed when the air lock is not being used for normal entry into or exit from containment.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment air locks are not required in MODE 5 to prevent leakage of radioactive material from containment. The requirements for the containment air locks during MODE 6 are addressed in LCO 3.9.~~3~~, "Containment Penetrations." ⑤

4

ACTIONS

The ACTIONS are modified by a Note that allows entry and exit to perform repairs on the affected air lock component. If the outer door is inoperable, then it may be easily accessed for most repairs. It is preferred that the air lock be accessed from inside primary containment by entering through the other OPERABLE air lock. However, if this is not practicable, or if repairs on either door must be performed from the barrel side of the door then it is permissible to enter the air lock through the OPERABLE door, which means there is a short time during which the containment boundary is not intact (during access through the OPERABLE door). The ability to open the OPERABLE door, even if it means the containment boundary is temporarily not intact, is acceptable due to the low probability of an event that could pressurize the containment during the short time in which the OPERABLE door is

BASES

ACTIONS (continued)

expected to be open. After each entry and exit, the OPERABLE door must be immediately closed. If ALARA conditions permit, entry and exit should be via an OPERABLE air lock.

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each air lock. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable air lock. Complying with the Required Actions may allow for continued operation, and a subsequent inoperable air lock is governed by subsequent Condition entry and application of associated Required Actions.

In the event the air lock leakage results in exceeding the overall containment leakage rate, Note 3 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1, "Containment."

A.1, A.2, and A.3

With one air lock door in one or more containment air locks inoperable, the OPERABLE door must be verified closed (Required Action A.1) in each affected containment air lock. This ensures that a leak tight containment barrier is maintained by the use of an OPERABLE air lock door. This action must be completed within 1 hour. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires containment be restored to OPERABLE status within 1 hour.

In addition, the affected air lock penetration must be isolated by locking closed the OPERABLE air lock door within the 24 hour Completion Time. The 24 hour Completion Time is reasonable for locking the OPERABLE air lock door, considering the OPERABLE door of the affected air lock is being maintained closed.

Required Action A.3 verifies that an air lock with an inoperable door has been isolated by the use of a locked and closed OPERABLE air lock door. This ensures that an acceptable containment leakage boundary is maintained. The Completion Time of once per 31 days is based on engineering judgment and is considered adequate in view of the low likelihood of a locked door being mispositioned and other administrative controls. Required Action A.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

BASES

ACTIONS (continued)

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required Actions C.1 and C.2 are the appropriate remedial actions. The exception of Note 1 does not affect tracking the Completion Time from the initial entry into Condition A; only the requirement to comply with the Required Actions. Note 2 allows use of the air lock for entry and exit for 7 days under administrative controls if both air locks have an inoperable door. This 7 day restriction begins when the second air lock is discovered inoperable. Containment entry may be required on a periodic basis to perform Technical Specifications (TS) Surveillances and Required Actions, as well as other activities on equipment inside containment that are required by TS or activities on equipment that support TS-required equipment. This Note is not intended to preclude performing other activities (i.e., non-TS required activities) if the containment is entered, using the inoperable air lock, to perform an allowed activity listed above. This allowance is acceptable due to the low probability of an event that could pressurize the containment during the short time that the OPERABLE door is expected to be open.

B.1, B.2, and B.3

With an air lock interlock mechanism inoperable in one or more air locks, the Required Actions and associated Completion Times are consistent with those specified in Condition A.

The Required Actions have been modified by two Notes. Note 1 ensures that only the Required Actions and associated Completion Times of Condition C are required if both doors in the same air lock are inoperable. With both doors in the same air lock inoperable, an OPERABLE door is not available to be closed. Required Actions C.1 and C.2 are the appropriate remedial actions. Note 2 allows entry into and exit from containment under the control of a dedicated individual stationed at the air lock to ensure that only one door is opened at a time (i.e., the individual performs the function of the interlock).

Required Action B.3 is modified by a Note that applies to air lock doors located in high radiation areas and allows these doors to be verified locked closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Therefore, the probability of misalignment of the door, once it has been verified to be in the proper position, is small.

BASES

ACTIONS (continued)

C.1, C.2, and C.3

With one or more air locks inoperable for reasons other than those described in Condition A or B, Required Action C.1 requires action to be initiated immediately to evaluate previous combined leakage rates using current air lock test results. An evaluation is acceptable, since it is overly conservative to immediately declare the containment inoperable if both doors in an air lock have failed a seal test or if the overall air lock leakage is not within limits. In many instances (e.g., only one seal per door has failed), containment remains OPERABLE, yet only 1 hour (per LCO 3.6.1) would be provided to restore the air lock door to OPERABLE status prior to requiring a plant shutdown. In addition, even with both doors failing the seal test, the overall containment leakage rate can still be within limits.

Required Action C.2 requires that one door in the affected containment air lock must be verified to be closed within the 1 hour Completion Time. This specified time period is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

Additionally, the affected air lock(s) must be restored to OPERABLE status within the 24 hour Completion Time. The specified time period is considered reasonable for restoring an inoperable air lock to OPERABLE status, assuming that at least one door is maintained closed in each affected air lock.

D.1 and D.2

If the inoperable containment air lock cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.2.1

Maintaining containment air locks OPERABLE requires compliance with the leakage rate test requirements of the Containment Leakage Rate Testing Program. This SR reflects the leakage rate testing requirements with regard to air lock leakage (Type B leakage tests). The acceptance criteria were established during initial air lock and containment OPERABILITY testing. The periodic testing requirements verify that the

BASES

SURVEILLANCE REQUIREMENTS (continued)

air lock leakage does not exceed the allowed fraction of the overall containment leakage rate. The Frequency is required by the Containment Leakage Rate Testing Program.

The SR has been modified by two Notes. Note 1 states that an inoperable air lock door does not invalidate the previous successful performance of the overall air lock leakage test. This is considered reasonable since either air lock door is capable of providing a fission product barrier in the event of a DBA. Note 2 has been added to this SR requiring the results to be evaluated against the acceptance criteria which is applicable to SR 3.6.1.1. This ensures that air lock leakage is properly accounted for in determining the combined Type B and C containment leakage rate.

~~[~~ SR 3.6.2.2 ⑥

The air lock interlock is designed to prevent simultaneous opening of both doors in a single air lock. Since both the inner and outer doors of an air lock are designed to withstand the maximum expected post accident containment pressure, closure of either door will support containment OPERABILITY. Thus, the door interlock feature supports containment OPERABILITY while the air lock is being used for personnel transit in and out of the containment. Periodic testing of this interlock demonstrates that the interlock will function as designed and that simultaneous opening of the inner and outer doors will not inadvertently occur. ~~[Due to the purely mechanical nature of this interlock, and given that the interlock mechanism is not normally challenged when the containment air lock door is used for entry and exit (procedures require strict adherence to single door opening), this test is only required to be performed every 24 months. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage, and the potential for loss of containment OPERABILITY if the Surveillance were performed with the reactor at power. The 24 month Frequency for the interlock is justified based on generic operating experience. The 24 month Frequency is based on engineering judgment and is considered adequate given that the interlock is not challenged during the use of the airlock.~~

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑦

REFERENCES

1. 10 CFR 50, Appendix J, Option ~~[A][~~B~~]~~. ④
2. U FSAR, Section ~~[6.2]~~ 15.4. ② ④
3. UFSAR, Section 6.2.4.1. ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.2 BASES, CONTAINMENT AIR LOCKS

1. The type of Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual) is deleted since it is unnecessary. This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Editorial changes have been made to be consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 4.1.7.g.

4. The ISTS Bases contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. Changes have been made to reflect the actual Specification number.

6. ISTS SR 3.6.2.2 Bases provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency description which is being removed will be included in the Surveillance Frequency Control Program.

7. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.2, CONTAINMENT AIR LOCKS

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 3

ITS 3.6.3, CONTAINMENT ISOLATION VALVES

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

LCO 3.6.3 3.6.3 Each containment isolation valve shall be OPERABLE.*

--- NOTES ---

ACTIONS Note 1 *1. Penetration flow path(s) may be unisolated intermittently under administrative controls.

ACTIONS Note 4 *2. Enter the ACTION of LCO 3.6.1.1, "Primary Containment" when containment isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

ACTIONS Note 5 *3. No more than one pair of Containment purge lines (one set of supply valves and one set of exhaust valves) may be opened.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTION Note 2 A02

Add proposed ACTION Note 3 A03

--- NOTES ---

Required Actions A.2 and G.2 Note 1 #1. Isolation devices in high radiation areas may be verified by use of administrative means.

Required Actions A.2 and G.2 Note 2 #2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.

~~##3. A check valve with flow through the valve secured is only applicable to penetration flow paths with two containment isolation valves.~~ L04

----

a. With one or more penetration flow paths with one containment isolation valve inoperable for reasons other than:
1. leakage rate limits of containment purge isolation valve(s),
2. leakage rate limit of shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~, or A05
3. inoperable containment vacuum relief isolation valve(s),

Add proposed Categories and Completion Times L03

ACTION A ACTION C isolate the affected penetration ~~within 4 hours~~ by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve~~##~~ with flow through the valve secured; and, L04

verify# the affected penetration flow path is isolated once per 31 days for isolation devices outside containment, and prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment.

CONTAINMENT SYSTEMS

ACTIONS (continued)

ACTION D — b. With more than one pair of containment purge lines open

or

Condition B Note — with one or more penetration flow paths with two containment isolation valves inoperable for reasons other than:

ACTION B —
1. leakage rate limits of containment purge isolation valve(s),
2. leakage rate limit of shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~, or (A05)
3. inoperable containment vacuum relief isolation valve(s),

ACTION B, ACTION D, ACTION A — isolate the affected penetration within 1 hour by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange and verify# the affected penetration flow path is isolated once per 31 days. (A04) (L02)

ACTION E — c. With one or more containment vacuum relief isolation valve(s) inoperable, the valve(s) must be returned to OPERABLE status within 72 hours.

ACTION F — d. With one or more shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~ not within limit, restore within limit within 4 hours. (A05)

ACTION G — e. With one or more penetration flow paths with one or more containment purge supply and/or exhaust isolation-valves not within leakage limits, isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange within 24 hours. Verify# the affected penetration flow path is isolated once per 31 days for isolation devices outside containment and prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment. Perform SR 4.6.3.6 once per 92 days for the valve used to isolate the affected penetration flow path.

ACTION A, ACTION C — f. With one or more penetration flow paths of a closed system design with one containment isolation valve inoperable, isolate the affected penetration flow path within ~~72 hours~~ by use of at least one closed and de-activated automatic valve, closed manual valve, check valve, or blind flange, and verify# the affected penetration is isolated once per 31 days. (A08)

Add proposed Categories and Completion Times (M01) (L03)

ACTION H — g. With any of the above ACTIONS not met, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. (L04)

SURVEILLANCE REQUIREMENTS

SR 3.6.3.2, SR 3.6.3.3

-- NOTE --

* Valves and blind flanges in high radiation areas may be verified by use of administrative means.

SR 3.6.3.1 — 4.6.3.1 Verify each purge supply and/or exhaust isolation valve is closed, except when containment purge valves (only one set of supply and one set of exhaust valves) are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open, ~~at least once per 31 days~~ In accordance with the Surveillance Frequency Control Program. (LA01)

CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.6 4.6.3.2 Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal, ~~at least once per 18 months~~ In accordance with the Surveillance Frequency Control Program. LA01

SR 3.6.3.4 4.6.3.3 The isolation time of each power operated ~~or~~ automatic containment isolation valve shall be determined to be within its limit when tested ~~pursuant to Specification 4.0.5~~ in accordance with the Inservice Testing Program. L01 A06

SR 3.6.3.3 4.6.3.4 Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls prior to entering Mode 4 from Mode 5 if not performed within the previous 92 days.*

SR 3.6.3.2 4.6.3.5 Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls, ~~at least once per 31 days~~ In accordance with the Surveillance Frequency Control Program.* LA01

SR 3.6.3.5 4.6.3.6 Perform leakage rate testing for each containment purge supply and exhaust isolation valve with a resilient seal ~~at least once per 3 months~~ In accordance with the Surveillance Frequency Control Program. A07 LA01

SR 3.6.3.7 4.6.3.7 Verify each containment purge valve is blocked to restrict the valve from opening greater than or equal to 50 degrees, ~~at least once per 18 months~~ In accordance with the Surveillance Frequency Control Program. LA01

SR 3.6.3.8 4.6.3.8 Verify the combined leakage rate for all shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~ is less than or equal to 0.25 L_a when pressurized to greater than or equal to P_a in accordance with the Containment Leakage Rate Test Program. A05

Pages 3/4 6-19 through 3/4 6-23 intentionally deleted

CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

HYDROGEN MONITORS

LIMITING CONDITION FOR OPERATION

3.6.4.1 This Specification is Deleted.

CONTAINMENT SYSTEMS

ELECTRIC HYDROGEN RECOMBINERS - W

LIMITING CONDITION FOR OPERATION

3.6.4.2 This Specification is Deleted.

A01

1.0 DEFINITIONS

DEFINED TERMS

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications.

ACTION

1.1 ACTION shall be that part of a Specification which prescribes remedial measures required under designated conditions.

AXIAL FLUX DIFFERENCE

1.2 AXIAL FLUX DIFFERENCE shall be the difference in normalized flux signals between the top and bottom halves of a two section excore neutron detector.

See ITS 1.0

~~BYPASS LEAKAGE PATH~~

~~1.3 A BYPASS LEAKAGE PATH is a potential path for leakage to escape from both the primary containment and annulus pressure boundary. Only one type of BYPASS LEAKAGE PATH is recognized:~~

~~a. BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING are those paths that would potentially allow leakage from the primary containment to circumvent the annulus secondary containment enclosure and escape directly to the Auxiliary Building secondary containment enclosure.~~

LA02

CHANNEL CALIBRATION

1.4 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated.

CHANNEL CHECK

1.5 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

See ITS 1.0

A01

CHANNEL FUNCTIONAL TEST

1.6 A CHANNEL FUNCTIONAL TEST shall be:

a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.

b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.

See ITS Chapter 1.0

c. Digital channels - the injection of a simulated signal into the channel as close to the sensor input to the process racks as practicable to verify OPERABILITY including alarm and/or trip functions.

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

a. All penetrations required to be closed during accident conditions are either:

1) Capable of being closed by an OPERABLE containment automatic isolation valve system, or

2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.

See ITS 3.6.1

b. All equipment hatches are closed and sealed.

c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,

d. The containment leakage rates are within the limits of Specification 4.6.1.1.c,

e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE, and

SR 3.6.3.8 f. Secondary containment bypass leakage is within the limits of Specification 3.6.3.

CONTROLLED LEAKAGE

1.8 This definition has been deleted.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

See ITS Chapter 1.0

CORE OPERATING LIMIT REPORT

1.10 The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.14. Unit operation within these operating limits is addressed in individual specifications.

CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

LCO 3.6.3

3.6.3 Each containment isolation valve shall be OPERABLE.*

-- NOTES --

ACTIONS Note 1

*1. Penetration flow path(s) may be unisolated intermittently under administrative controls.

ACTIONS Note 4

*2. Enter the ACTION of LCO 3.6.1.1, "Primary Containment" when containment isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

ACTIONS Note 5

*3. No more than one pair of Containment purge lines (one set of supply valves and one set of exhaust valves) may be opened.

Applicability

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTION Note 2 A02

Add proposed ACTION Note 3 A03

-- NOTES --

Required Action A.2 and G.2 Note 1

#1. Isolation devices in high radiation areas may be verified by use of administrative means.

Required Action A.2 and G.2 Note 2

#2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.

Condition A Note

~~##3. A check valve with flow through the valve secured is only applicable to penetration flow paths with two containment isolation valves.~~ L04

ACTION A
ACTION C

a. With one or more penetration flow paths with one containment isolation valve inoperable for reasons other than:
1. leakage rate limits of containment purge isolation valve(s),
2. leakage rate limit of shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~, or
3. inoperable containment vacuum relief isolation valve(s),

A05

Add proposed Categories and Completion Times L03

isolate the affected penetration ~~within 4 hours~~ by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve~~##~~ with flow through the valve secured; and,

L04

verify# the affected penetration flow path is isolated once per 31 days for isolation devices outside containment, and prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment.

CONTAINMENT SYSTEMS

ACTIONS (continued)

ACTION D

Condition B Note

ACTION B

b. With more than one pair of containment purge lines open

or

with one or more penetration flow paths with two containment isolation valves inoperable for reasons other than:
1. leakage rate limits of containment purge isolation valve(s),
2. leakage rate limit of shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~, or
3. inoperable containment vacuum relief isolation valve(s),

A05

ACTION B, ACTION D

ACTION A

isolate the affected penetration within 1 hour by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange and verify# the affected penetration flow path is isolated once per 31 days.

A04 L02

ACTION E

c. With one or more containment vacuum relief isolation valve(s) inoperable, the valve(s) must be returned to OPERABLE status within 72 hours.

ACTION F

d. With one or more shield building BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~ not within limit, restore within limit within 4 hours.

A05

ACTION G

e. With one or more penetration flow paths with one or more containment purge supply and/or exhaust isolation valves not within leakage limits, isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange within 24 hours. Verify# the affected penetration flow path is isolated once per 31 days for isolation devices outside containment and prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment. Perform SR 4.6.3.6 once per 92 days for the valve used to isolate the affected penetration flow path.

A08

ACTION A, ACTION C

f. With one or more penetration flow paths of a closed system design with one containment isolation valve inoperable, isolate the affected penetration flow path within ~~72 hours~~ Add proposed Categories and Completion Times by use of at least one closed and de-activated automatic valve, closed manual valve, check valve, or blind flange, and verify# the affected penetration is isolated once per 31 days.

M01 L03 L04

ACTION H

g. With any of the above ACTIONS not met, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.3.2, SR 3.6.3.3

-- NOTE --

* Valves and blind flanges in high radiation areas may be verified by use of administrative means.

SR 3.6.3.1

4.6.3.1 Verify each purge supply and/or exhaust isolation valve is closed, except when containment purge valves (only one set of supply valves and one set of exhaust valves) are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open, ~~at least once per 31 days~~ In accordance with the Surveillance Frequency Control Program.

LA01

ITS A01 ITS 3.6.3

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.3.6 4.6.3.2 Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal, ~~at least once per 18 months~~.

In accordance with the Surveillance Frequency Control Program LA01

SR 3.6.3.4 4.6.3.3 The isolation time of each power operated ~~or~~ automatic containment isolation valve shall be determined to be within its limit when tested ~~pursuant to Specification 4.0.5~~.

L01

in accordance with the Inservice Testing Program A06

SR 3.6.3.3 4.6.3.4 Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls prior to entering Mode 4 from Mode 5 if not performed within the previous 92 days.*

SR 3.6.3.2 4.6.3.5 Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls, ~~at least once per 31 days~~.*

In accordance with the Surveillance Frequency Control Program LA01

with a resilient seal A07

SR 3.6.3.5 4.6.3.6 Perform leakage rate testing for each containment purge supply and exhaust isolation valve ~~at least once per 3 months~~.

In accordance with the Surveillance Frequency Control Program LA01

SR 3.6.3.7 4.6.3.7 Verify each containment purge valve is blocked to restrict the valve from opening greater than or equal to 50 degrees, ~~at least once per 18 months~~.

In accordance with the Surveillance Frequency Control Program LA01

shield building A05

SR 3.6.3.8 4.6.3.8 Verify the combined leakage rate for all BYPASS LEAKAGE PATHS ~~TO THE AUXILIARY BUILDING~~ is less than or equal to 0.25 L_a when pressurized to greater than or equal to P_a in accordance with the Containment Leakage Rate Test Program.

A01

Pages 3/4 6-19 through 6-23 intentionally deleted

A01

CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

HYDROGEN MONITORS

LIMITING CONDITION FOR OPERATION

3.6.4.1 This Specification is Deleted.

CONTAINMENT SYSTEMS

ELECTRIC HYDROGEN RECOMBINERS - W

LIMITING CONDITION FOR OPERATION

3.6.4.2 This Specification is Deleted.

1.0 DEFINITIONS

DEFINED TERMS

The defined terms of this section appear in capitalized type and are applicable throughout these Technical Specifications.

ACTION

1.1 ACTION shall be that part of a Specification which prescribes remedial measures required under designated conditions.

See ITS 1.0

AXIAL FLUX DIFFERENCE

1.2 AXIAL FLUX DIFFERENCE shall be the difference in normalized flux signals between the top and bottom halves of a two section excore neutron detectors.

~~BYPASS LEAKAGE PATH~~

~~1.3 A BYPASS LEAKAGE PATH is a potential path for leakage to escape from both the primary containment and annulus pressure boundary. Only one type of BYPASS LEAKAGE PATH is recognized:~~

~~a. BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING are those paths that would potentially allow leakage from the primary containment to circumvent the annulus secondary containment enclosure and escape directly to the auxiliary building secondary containment enclosure.~~

LA02

CHANNEL CALIBRATION

1.4 A CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping or total channel steps such that the entire channel is calibrated.

See ITS 1.0

CHANNEL CHECK

1.5 A CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

A01

CHANNEL FUNCTIONAL TEST

1.6 A CHANNEL FUNCTIONAL TEST shall be:

a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.

b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.

c. Digital channels - the injection of a simulated signal into the channel as close to the sensor input to the process racks as practicable to verify OPERABILITY including alarm and/or trip functions.

See ITS Chapter 1.0

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

a. All penetrations required to be closed during accident conditions are either:

  1) Capable of being closed by an OPERABLE containment automatic isolation valve system, or
  2) Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except for valves that are open under administrative control as permitted by Specification 3.6.3.

b. All equipment hatches are closed and sealed.
c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,
d. The containment leakage rates are within the limits of Specification 4.6.1.1.c,
e. The sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) is OPERABLE, and

See ITS 3.6.1

SR 3.6.3.8 f. Secondary containment bypass leakage is within the limits of Specification 3.6.3.

CONTROLLED LEAKAGE

1.8 This definition has been deleted.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the head removed and fuel in the vessel. Suspension of CORE ALTERATIONS shall not preclude completion of movement of a component to a safe position.

CORE OPERATING LIMITS REPORT

1.10 The CORE OPERATING LIMITS REPORT (COLR) is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.14. Unit operation within these operating limits is addressed in individual specifications.

See ITS Chapter 1.0

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG - 1431, Rev. 4.0, "Standard Technical Specifications - Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.3 ACTIONS provide requirements to be taken for each inoperable containment isolation valve. ITS 3.6.3 includes an explicit Note (ACTION Note 2) that states, "Separate Condition entry is allowed for each penetration flow path." This Note provides instructions for the proper application of the ACTIONS for ITS compliance. This changes the CTS by providing explicit direction for using the ACTIONS when a containment isolation valve is inoperable.

This change is acceptable because the addition of the Note reflects the CTS allowance to take appropriate Actions. This change is designated as administrative since it does not result in a technical change to the CTS.

A03 CTS 3.6.3 does not specifically require Conditions to be entered for systems supported by inoperable containment isolation valves. OPERABILITY of supported systems is addressed through the definition of OPERABILITY for each system, and appropriate LCO Actions are taken. ITS 3.6.3 ACTIONS Note 3 states "Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves." ITS LCO 3.0.6 provides an exception to ITS LCO 3.0.2 stating "When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered." This changes the CTS by adding a specific statement to require supported system Conditions and Required Actions to be entered; whereas, in the CTS this would be done without the Note.

This change is acceptable because the addition of the ITS Note reflects the CTS requirement to take applicable Actions for inoperable systems. The ITS Note is required because of the addition of ITS LCO 3.0.6, and because the requirement to declare supported system inoperable is retained. This change is designated as administrative because it does not result in any technical changes to the CTS.

A04 CTS 3.6.3 ACTION b states, in part, with one or more penetration flow paths with two containment isolation valves inoperable, isolate the affected penetration within 1 hour by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange and verify the affected penetration flow path is isolated once per 31 days. ITS 3.6.3 ACTION B states, in part, with one or more penetration flow paths with two containment isolation valves inoperable to isolate the affected penetration within 1 hour by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange. This changes the CTS by not stating in ITS 3.6.3 ACTION B to verify the affected penetration flow path is isolated once per 31 days.

The purpose of the CTS 3.6.3 ACTION b is to isolate the affected penetration and to verify that isolated penetration remains isolated. This is accomplished in the ITS 3.6.3 by use of both ACTION A and ACTION B. This is acceptable because the rules of usage for ITS require that both ITS 3.6.3 ACTION A and ACTION B are entered when one or more penetration flow paths with two containment isolation valves are inoperable. This means that ITS 3.6.3 Required Action A.2 is in effect when one or more penetration flow paths with one containment isolation valve is inoperable and when one or more penetration flow paths with two containment isolation valves are inoperable. Therefore, ITS 3.6.3 Required Action B.1 will isolate the penetration within the 1 hour and ITS 3.6.3 Required Action A.2 will verify the penetration remains isolated every 31 days. This change is considered a change in presentation. It is therefore designated as an administrative change since it does not result in a technical change to the CTS.

A05 CTS 3.6.3 ACTION a provides required actions for one or more penetration flow paths with one containment isolation valve inoperable, and lists three exclusions for entry into the ACTION. CTS 3.6.3 ACTION a.2 provides the exclusion of "leakage rate limit of BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING." CTS 3.6.3 ACTION b provides required actions for more than one pair of containment purge lines open or with one or more penetration flow paths with two containment isolation valves inoperable, and lists three exclusions to the second condition for entry into the ACTION. CTS 3.6.3 ACTION b.2 provides the exclusion of "leakage rate limit of BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING." CTS 3.6.3 ACTION d states "With one or more BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING not within limit, restore within limit within 4 hours." CTS 4.6.3.8 requires verifying the combined leakage rate for all BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING is less than or equal to 0.25 L_a when pressurized to greater than or equal to P_a in accordance with the Containment Leakage Rate Test Program. ITS 3.6.3 ACTION F and SR 3.6.3.8 refer to shield building bypass leakage paths instead of BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING. ITS 3.6.3 ACTIONS A and B specify Conditions that exclude ITS 3.6.3 Condition F. This changes the CTS by changing the name BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING to shield building bypass leakage paths.

This change is acceptable because CTS 1.3 defines a BYPASS LEAKAGE PATH as "a potential path for leakage to escape from both the primary containment and annulus pressure boundary." Furthermore, it states the only recognized type of leakage is BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING. BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING are those paths that would potentially allow leakage from the primary containment to circumvent the annulus secondary containment enclosure and escape directly to the auxiliary building secondary containment enclosure. The annulus secondary containment enclosure is the shield building. Therefore, "BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING" is "shield building bypass leakage."

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

This change is designated as administrative since it does not result in a technical change to the CTS.

A06 CTS 4.6.3.3 requires the isolation time of each power operated or automatic containment isolation valve to be determined to be within limits when tested pursuant to Specification 4.0.5. ITS SR 3.6.3.4 requires the isolation time of each automatic power operated containment isolation valve to be verified within limits with a Frequency of "In accordance with the Inservice Testing Program." This changes the CTS by stating containment isolation valve testing is performed at a Frequency that is in accordance with the Inservice Testing Program.

The purpose of CTS 4.6.3.3 is to verify the isolation time of each power operated or automatic containment isolation valve is within limit pursuant to Specification 4.0.5, which provides the requirements for the Inservice Testing Program. This change is acceptable, because the Frequency regarding the containment isolation valve testing remains the same. The inservice testing requirements of CTS 4.0.5 have been moved to the Inservice Testing Program contained in Section 5.5 of the ITS. This change is designated as administrative, because it does not result in a technical change to the CTS.

A07 CTS 4.6.3.6 requires a performance of a leakage rate test for each containment purge supply and exhaust isolation valve at least once per 3 months. ITS SR 3.6.3.5 requires performance of a leakage rate test for containment purge valves with resilient seals at a Frequency of "In accordance with the Surveillance Frequency Control Program." This changes the CTS by specifying that the leakage rate test is only required to be performed on isolation valves with resilient seals. Moving the specified Surveillance Frequency to the Surveillance Frequency Control Program is discussed in DOC LA01.

The purpose of CTS 4.6.3.6 is to verify the leakage rate of each containment purge supply and exhaust isolation valve is within limits. CTS 4.6.3.6 does not specify that the Surveillance Requirement only applies to containment purge supply and exhaust isolation valves with resilient seals, because each of the purge supply and exhaust isolation valves at SQN has a resilient seal. Specifying within ITS SR 3.6.3.5 that the SR only applies to containment purge valves with resilient seals, aligns the text with the ISTS, and is consistent with the Bases justifying the increased leakage test Frequency for purge valves with resilient seals. This change is designated as administrative, because it does not result in a technical change to the CTS.

A08 CTS 3.6.3 ACTION a, in part, provides a required action to isolate one inoperable containment isolation valve in one or more penetration flow paths with two containment isolation valves. CTS 3.6.3 ACTION f, in part, provides a required action to isolate one inoperable containment isolation valve in one or more penetration flow paths of a closed system design. ITS 3.6.3 ACTION A, in part, provides a required action to isolate one inoperable containment isolation valve in one or more penetration flow paths. This changes the CTS by combining the required actions for one inoperable containment isolation valve in penetration flow paths with either one or two containment isolation valves.

DISCUSSION OF CHANGES
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

This change is acceptable because ITS 3.6.3 ACTION A retains the required action to isolate an inoperable containment isolation valve, regardless of whether the penetration flow path has one or two containment isolation valves. (Adoption of risk-informed extended Completion Times is discussed in DOC L03.) This change is designated as administrative, because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.3 ACTION f requires inoperable containment isolation valves (CIVs) associated with one or more penetration flow paths of a closed system design to be isolated within 72 hours. ITS 3.6.3 ACTION C requires all but one penetration flow paths to be isolated within 4 hours when two or more penetration flow paths have an inoperable CIV. (See DOC L03 for the discussion regarding changes to the Completion Times for isolating one penetration flow path with an inoperable CIV.) This changes the CTS by reducing the amount of time allowed to isolate multiple penetration flow paths of a closed system design with an inoperable CIV.

The purpose of CTS 3.6.3 ACTION f is to provide assurance that penetration flow paths with inoperable CIVs are isolated. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. ITS 3.6.3 ACTION C, which provides 4 hours to isolate all but one penetration flow paths when two or more penetration flow paths have an inoperable CIV, is acceptable, since the risk analysis performed to establish the CIV Categories and Completion Times assumes only one CIV is inoperable at a time. Additional inoperable CIVs are not subject to the risk-informed Completion Times, but rather require the associated penetration flow path to be isolated within 4 hours. This change is designated as more restrictive, because the time to isolate a penetration flow path with an inoperable CIV in the ITS is less than the time provided in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.3.1 requires verifying that each purge valve is closed, with exceptions, at least once per 31 days. CTS 4.6.3.2 requires verifying each automatic containment isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal at least once per 18 months. CTS 4.6.3.5 requires verifying each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, with exceptions, at least once per 31 days. CTS 4.6.3.6 requires performing leakage rate testing for each containment purge valve at least once per 3 months. CTS 4.6.3.7 requires verifying each containment purge valve is blocked to restrict the valve from opening greater than or equal to 50 degrees at least once per 18 months. ITS SR 3.6.3.1, SR 3.6.3.2, SR 3.6.3.5, SR 3.6.3.6, and SR 3.6.3.7 require similar Surveillances and specify the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 1.3 defines a BYPASS LEAKAGE PATH as a potential path for leakage to escape from both the primary containment and annulus pressure boundary. CTS 1.3.a defines BYPASS LEAKAGE PATH as BYPASS LEAKAGE PATHS TO THE AUXILIARY BUILDING are those paths that would potentially allow leakage from the primary containment to circumvent the annulus secondary containment enclosure and escape directly to the auxiliary building secondary containment enclosure. ITS 1.0 and 3.6.3 do not contain this definition. This changes the CTS by moving this definition to the ITS 3.6.3 Bases.

The purpose of the CTS 1.3 definition is to identify all bypass leakage paths. As stated in the definition, there is only one type of bypass leakage paths. A bypass leakage path is the pathway between the annulus secondary containment and the Auxiliary Building secondary containment. Therefore, it is not necessary to maintain this definition in the ITS. Furthermore, the bypass leakage path described is the Shield Building bypass leakage paths. ITS 3.6.3 contains appropriate ACTIONS to take if the shield building bypass leakage does not meet the requirements of ITS SR 3.6.3.8. Therefore, the BYPASS LEAKAGE PATH described in CTS 1.3 will be verified to be acceptable in ITS 3.6.3. The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the information. Therefore, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the

Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.3.3 states that the isolation time of each "power operated or automatic" containment isolation valve shall be determined to be within its limit. ITS SR 3.6.3.4 requires the isolation time of each automatic power operated containment isolation valve to be verified within limits. This changes the CTS by deleting the reference to the power operated containment isolation valves that are not automatic.

The purpose of CTS 4.6.3.3 is to provide assurance that automatic containment isolation valves actuate within the times assumed in the DBA analyses. This change is acceptable, because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Remote manual (i.e., non-automatic) power operated valves do not have an isolation time assumed in the DBA analyses, since they require operator action. Deleting reference to power operated, non-automatic isolation valve stroke time testing reduces the potential for misinterpreting the requirements of the Surveillance Requirement, while maintaining the assumptions of the accident analysis. This change is designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation Of Required Action)* CTS 3.6.3 ACTION b requires, in part, with more than one pair of containment purge lines open, the affected penetration is isolated in 1 hour and verified to be isolated once per 31 days. ITS 3.6.3 ACTION D requires, in part, with two or more pairs of containment purge lines open, all but one penetration is isolated in 1 hour. This changes the CTS by deleting the required action to verify the affected penetration flow path is isolated every 31 days.

The purpose of CTS 3.6.3 is to take action to isolate open containment purge lines in excess of those assumed to be open at the onset of an accident. This change is acceptable, because the action to isolate containment purge lines beyond those allowed to be open, restores compliance with the LCO. Per ITS LCO 3.0.2, "If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated." Therefore, the action of isolating excess open containment purge lines removes the Condition whereby the LCO was not met and further action is not required. Additionally, ITS SR 3.6.3.1 will continue to verify containment purge supply and exhaust valves are closed, with the exception of the one set that is allowed to be open for pressure control, ALARA, or air quality considerations for personnel entry, or Surveillances that require the valves to be open. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 3 – Relaxation of Completion Time)* CTS 3.6.3 ACTION a requires, in part, with one or more penetration flow paths with one containment isolation valve inoperable for reasons other than containment purge isolation valves with leakage in excess of the limits, bypass leakage paths to the auxiliary building in excess of the limits, or an inoperable containment vacuum relief isolation valve, to isolate the penetration flow path within 4 hours. CTS 3.6.3 ACTION f requires, in part, with one or more penetration flow paths of a closed system with one containment isolation valve inoperable, to isolate the penetration flow path within 72 hours. ITS 3.6.3 ACTION A requires, in part, with one or more penetration flow paths with one containment isolation valve inoperable, for reasons other than Condition E (containment vacuum relief isolation valves inoperable), Condition F (shield building bypass leakage not within limit), or Condition G (containment purge valve leakage not within limit), to isolate the affected penetration flow path within a specified risk-informed Completion Time. This changes the CTS by allowing extended Completion Times for inoperable containment isolation valves based on the results of a risk-informed analysis.

The proposed change would modify CTS requirements for Completion Times for CIVs with the adoption of Risk Informed Technical Specifications Task Force Initiative 4a regarding TSTF-446, Revision 3, "Risk Informed Evaluation of Extensions to Containment Isolation Valve Completion Times (WCAP- 15791)." The changes are consistent with the U.S. Nuclear Regulatory Commission (NRC) approved TSTF-446, Revision 3. The Federal Register notice published on July 13, 2010 (75 FR 39991) announced the availability of this TS improvement.

TVA has reviewed the model safety evaluation (SE) dated June 24, 2010. TVA has reviewed the NRC staff SE (ADAMS Accession No. ML080170680) approving Topical Report (TR) WCAP-15791-P-A, Revision 2, and the requirements specified in Nuclear Energy Institute (NEI) 99-04, "Guidelines for Managing NRC Commitment Changes." TVA has concluded that the justifications and Probabilistic Risk Assessment (PRA) assumptions presented in the TR and the SE are applicable to SQN and justifies this amendment for the incorporation of the changes based on the generic analysis to the SQN TS.

TVA is not proposing any variations or deviations from the Standard Technical Specifications (STS) changes described in TSTF-446, Revision 3, and the NRC staff model SE, dated June 24, 2010, for implementation of the Completion Times based on the generic analysis.

TVA has demonstrated the applicability of the generic Completion Times contained in TSTF-446, Revision 3, to SQN by addressing requirements specified in TR WCAP-15791-PA, Revision 2 (Proprietary), in this license amendment request (LAR). This LAR provides the plant-specific information on limitations and conditions specified in Section 4.0 and the additional information specified in Section 5.0 of the SE approving TR WCAP-15791-P-A, Revision 2. In addition, consistent with TSTF-446, TVA must provide information for Items 3.2.1 through 3.2.8 as discussed below in this amendment request.

3.2.1 Demonstration (Penetration and CIV Configuration)

TVA has confirmed that (a) the penetration and CIV configurations for SQN, Unit 1 and Unit 2 either match the configurations in TR WCAP-15791-P-A, Revision 2, or plant specific analysis has been performed as described in WCAP-15791-P-A, Revision 2, and (b) the input parameter values used in the TR are representative or bounding for SQN Unit 1 and Unit 2.

3.2.2 Demonstration (Tier 2 Evaluation)

TVA has confirmed the conclusion in the TR that no Tier 2 requirements are needed other than a requirement to ensure that before maintenance or corrective maintenance (repair) is performed on a CIV, any other CIVs in the penetration flow path have been checked to ensure that they are in their proper position.

3.2.3 Demonstration (Tier 3 Evaluation)

During online operation, in accordance with the requirements of 10 CFR 50.65(a)(4), SQN assesses and manages plant configurations prior to performing planned maintenance. The proposed plant configuration during maintenance is modeled in the computer code EOOS (Equipment Out Of Service) to determine the change in the Core Damage Frequency (CDF) and the Large Early Release Frequency (LERF). The initial risk assessment is performed six to nine weeks prior to implementation to allow for risk-informed sequencing of activities as necessary and for other actions determined based on risk insights gleaned from the initial assessment. The well defined process is governed by SQN procedures NPG-SPP-07.1, "On Line Work Management," NPG-SPP-07.2, "Outage Management," and NPG-SPP-07.3, "Work Activity Risk Management Process." The quantified change in risk is used as one input with respect to configuration risk management (see Enclosure 5, Section 4.7.3). SQN's conformance to the requirements of the maintenance rule 10 CFR 50.65(a)(4) is also demonstrated by SQN procedure NPG-SPP-03.4, "Maintenance Rule Performance Indicator Monitoring, Trending and Reporting – 10 CFR 50.65," which provides requirements and guidance for the initiation, analysis, retrieval, trending, and reporting of data relative to the Plant Level, Specific Level, and Repetitive Preventable Functional Failure indicators of performance required by the Maintenance Rule. The requirements of this Instruction are in compliance with 10 CFR 50.65, Regulatory Guide (RG) 1.160, RG 1.182, NUMARC 93-01, and NPG-SPP-03.4.

During shutdown, a deterministic risk assessment approach is used to assess and manage plant configurations prior to performing planned maintenance per Technical Instruction (TI)-4, "Maintenance Rule Performance Indicator Monitoring, Trending and Reporting – 10 CFR 50.65." TI-4, Attachment 2, "Shutdown Monitoring Requirements," specifies the requirements for shutdown monitoring beyond those in NPG-SPP-03.4 and provides additional guidance for the monitoring (thus allowing for the balancing of unavailability/unreliability) of risk significant functions during shutdown. This attachment also provides a cross reference to other attachments within TI-4 that implement the shutdown monitoring for risk significant functions. The risk significance of the functions were determined by the Maintenance Rule Expert Panel using their knowledge, experience, and the ORAM program as insight for determining relative risk.

3.2.4 Demonstration (Plant-Specific PRA Quality)

TVA has demonstrated in Enclosure 5, Section 4.7.3, that the plant-specific PRA quality is acceptable for Tier 3 assessments associated with implementing the CIV completion time changes in this application, in accordance with the guidelines given in RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," November 2002, and RG 1.177.

3.2.5 Demonstration (external events risk)

TVA has demonstrated in Enclosure 5, Section 4.6.1, that external events risk is bounded by the assumptions in TR WCAP-15791-P-A, Revision 2, and will not have an adverse impact on the conclusions of the SQN analysis for extending the CIV CTs.

3.2.6 Demonstration (CIV Availability Monitoring)

SQN plant-specific CIV availability is monitored and assessed by SQN TI-4, Attachment 30, "Containment Isolation System – System 80." This provides requirements and guidance beyond that provided in NPG-SPP-03.4 for initiation, analysis, retrieval, trending, and reporting of data relative to "Plant Level", "Function/Train Specific" and “Component Level” indicators of performance required by the Maintenance Rule. The requirements of this Instruction are in compliance with 10 CFR 50.65, RG 1.160, RG 1.182, NUMARC 93-01, and NPG-SPP-03.4.

3.2.7 Demonstration (Cumulative Risk Evaluation)

The SQN PRA has been updated multiple times since the completion of the Individual Plant Evaluation (IPE) and Individual Plant Evaluation for External Events (IPEEE) from the 1990’s. The technical adequacy of the PRA was established by Peer Review in early 2011. The current model of record represents a significantly more mature PRA as compared to the IPE and IPEEE.

TVA procedure NPG-SPP-09.11, "Probabilistic Risk Assessment (PRA) Program," requires plant modifications or design changes that result in new configurations, alignments, and capabilities of plant system to be assessed for inclusion in model updates. Furthermore TVA procedure NEDP-26, "Probabilistic Risk Assessment (PRA)," provides the requirements for assessing the cumulative impact of plant configuration changes, including plant-specific design, procedure and operational changes that require an update to the PRA Model of Record.

The cumulative risk has been evaluated for SQN in accordance with guidance in RG 1.174, with respect to past risk-informed SQN license amendments and additional SQN applications for a risk-informed TS change under the NRC review that have not been incorporated into the PRA Model of Record (MOR). This submittal includes the adoption of the following risk-informed changes to the SQN CTS: TSTF-411 (Surveillance Test Interval Extensions for Components of the Reactor Protection System (WCAP-15376-P)), TSTF-418 (RPS and ESFAS Test Times and Completion Times (WCAP-14333)), TSTF-425 (Relocate Surveillance Frequencies to Licensee Control), TSTF-427 (Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY), and TSTF-446 (Risk Informed Evaluation of Extensions to Containment Isolation Valve Completion Times (WCAP-15791)). As of this submittal, there are no outstanding plant changes that necessitate a change to the PRA Model of Record dated June 3, 2011.

The evaluation for technical specification changes related to the RTS and ESFAS Instrumentation was performed generically in WCAP-14333-P-A, Revision 1, "Probabilistic Risk Analysis of the RPS and ESFAS Test Times and Completion Times," and WCAP-15376-P-A, Revision 1, "Risk-Informed Assessment of the RTS and ESFAS Surveillance Test Intervals and Reactor Trip Breaker Test and Completion Times." As described in Enclosure 4, Attachment 1, "Sequoyah Nuclear Plant, Units 1 and 2 Implementation of Master and Slave Relays Technical Specification Changes Justified in WCAP-14333-P-A, Rev. 1 and WCAP-15376-P-A, Rev. 1," the increase in CDF is 8.50E-07/yr and the increase in LERF is 5.70E-08/yr. Additionally, in Enclosure 4 Attachment 2, "Sequoyah Nuclear Plant, Units 1 and 2 Implementation of Technical Specification Changes Justified in WCAP-14333-P-A, Rev. 1 and WCAP-15376-P-A, Rev. 1," the increase in CDF is 6.10E-07/yr and the increase in LERF is 2.20E-08/yr. The impact of the proposed changes on risk from external events is very small and will not impact the acceptability of adopting the TS changes justified in WCAP-14333-P-A, Rev. 1 and WCAP-15376-P-A, Rev. 1.

The evaluation for adoption of TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control," is described in Enclosure 10. When the surveillance requirement frequencies change, the impact on CDF and LERF will be determined and subsequently, the new periodicity will be included in the PRA model. The SQN PRA exhibits the technical adequacy to risk-inform (i.e., make changes) surveillance test intervals (STI) in accordance with the SQN-controlled program. These analyses will follow the NRC-approved process and methodology as described in NEI 04-10, Revision 1, "Risk-Informed Method for Control of Surveillance Frequencies."

The evaluation for adoption of TSTF-427, Revision 2, "Allowance for Non Technical Specification Barrier Degradation on Supported System OPERABILITY," considers PRA methods, in combination with deterministic and defense-in-depth arguments, to identify and justify delay times for entering the actions for the supported equipment associated with unavailable barriers at SQN. This is in accordance with guidance provided in RGs 1.174 and 1.177. The impact on CDF and LERF as a result of a degraded barrier(s) will be determined on a case-by-case basis and evaluated and managed under the Maintenance Rule plant configuration control requirement, 10 CFR 50.65(a)(4), and the associated industry guidance (NUMARC 93-01, Revision 3).

The evaluation for adoption of TSTF-446, Revision 3, "Risk Informed Evaluation of Extensions to Containment Isolation Valve Completion Times (WCAP-15791)," is described in Enclosure 5. While specific cumulative CDF and LERF values for CIV CT extensions were not determined, the cumulative impact of this risk-informed change along with past risk-informed changes and proposed risk-informed changes are recognized and understood.

The calculated increase in CDF for all these changes is 1.46E-06. The calculated change in LERF for all these changes is 7.90E-08.

Per Regulatory Guidance (RG) 1.174, Rev. 2, for a total CDF of 1E-04/yr, changes to CDF of 1E-05/yr are acceptable; and for a total LERF of 1E-05/yr, changes to LERF of 1E-06/yr are acceptable. The SQN CDFs for internal events are 1.59E-05/yr (Unit 1) and 1.48E-05/yr (Unit 2) and LERFs for internal events are 2.20E-06/yr (Unit 1) and 2.23E-06 (Unit 2); therefore, this is consistent with the guidelines in RG 1.174, Rev. 2 that allows small increases in CDF and LERF.

The CDF and LERF impact from the CIV CT extension will be very small, and when combined with the acceptably small quantified CDF and LERF impact from past and proposed risk-informed applications, it is concluded that the implementation of these changes will have an impact on CDF of less than 1.0E-05/yr and on LERF of less than 1.0E-06/yr which meets the guidance in RG 1.174, Rev. 2. Therefore, cumulative risk has been evaluated for SQN in accordance with guidance in RG 1.174, with respect to past SQN license amendments and additional SQN proposed applications under NRC review that have not been incorporated into the PRA MOR.

3.2.8 Demonstration (Regulatory commitment)

TVA has incorporated a regulatory commitment addressing how LERF/ICLERP is assessed and has provided documentation in the SQN submittal, Enclosure 8.

This change is designated as less restrictive, because less stringent Completion Times are being applied in the ITS than were applied in the CTS.

L04 *(Category 4 – Relaxation of Required Action)* CTS 3.6.3 Action a requires, in part, with one or more penetration flow paths with one containment isolation valve inoperable, that each affected penetration be isolated within 4 hours by use of at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. CTS Note ## modifies the use of the check valve to specify it is only to be used for penetration flow paths with two containment isolation valves. CTS 3.6.3 Action f requires, in part, with one or more penetration flow paths of a closed system design with one containment isolation valve inoperable, that each affected penetration be isolated within 72 hours by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange. ITS 3.6.3 ACTION A combines the CTS ACTIONS for inoperable containment isolation valves for penetration flow paths with one or two containment isolation valves. Required Action A.1 requires that with one or more penetration flow paths with one containment isolation valve inoperable, the affected penetration flow path be isolated by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. This changes the CTS by allowing penetration flow paths of a closed system design with one containment isolation valve that have one containment isolation valve inoperable to use a check valve with flow through the valve secured as the means of isolating the penetration flow path.

The purpose of CTS 3.6.3 ACTIONS a and f is to provide assurance that the affected penetration flow path is isolated. This change is acceptable because the ITS Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The ITS Required Actions are consistent with safe operation under the specified Condition, considering the operability status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the repair period. This change allows the flow path to be isolated by one check valve with flow through the valve secured. The requirement to isolate the flow path is retained, and using a check valve with flow through the valve secured is an appropriate method of isolation. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

3.6.3 LCO 3.6.3 Each containment isolation valve (CIV) shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

--NOTES--

3.6.3 Note *1 1. Penetration flow path(s) ~~[except for [42] inch purge valve flow paths]~~ may be unisolated intermittently under administrative controls. ③

DOC A02 2. Separate Condition entry is allowed for each penetration flow path.

DOC A03 3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.

3.6.3 Note *2 4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

INSERT 1 ④

----

④ INSERT 1

3.6.3 Note *3 5. No more than one pair of containment purge lines (one set of supply valves and one set of exhaust valves) may be opened.

ACTIONS (continued)

ACTION a
ACTION f

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~[~~ One or more penetration flow paths with one containment isolation valve inoperable ~~[~~for reasons other than Condition~~[s]~~ E, F, ~~[~~and ~~F]]~~ G. ~~AND~~ ~~Containment isolation valve pressure boundary intact.~~	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours for Category 1 or 8 CIVs AND 8 hours for Category 2 or 9 CIVs AND 12 hours for Category 3 or 10 CIVs AND 24 hours for Category 4 or 11 CIVs AND 48 hours for Category 5 or 12 CIVs AND 72 hours for Category 6 or 13 CIVs AND 7 days for Category 7 or 14 CIVs

③

CTS

①

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.2 -------------NOTES------------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ------------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment ~~]~~

ACTION Note #1

ACTION Note #2

ACTION a
ACTION b

③

②

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B. [One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] E [and F]].~~ ~~AND~~ ~~Containment isolation valve pressure boundary not intact.~~	~~B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.~~ ~~AND~~	~~4 hours for Category 8 CIVs~~ ~~AND~~ ~~8 hours for Category 9 CIVs~~ ~~AND~~ ~~12 hours for Category 10 CIVs~~ ~~AND~~ ~~24 hours for Category 11 CIVs~~ ~~AND~~ ~~48 hours for Category 12 CIVs~~ ~~AND~~ ~~72 hours for Category 13 CIVs~~ ~~AND~~ ~~7 days for Category 14 CIVs~~ ③

CTS

Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①
3.6.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	~~B.2~~ ~~-------------NOTES----------~~ ~~1. Isolation devices in high radiation areas may be verified by use of administrative means.~~ ~~2. Isolation devices that are locked, sealed, or otherwise secured may be verified by administrative means.~~ ~~--------------------------------~~ ~~Verify the affected penetration flow path is isolated.~~	~~Once per 31 days for isolation devices outside containment~~ ~~AND~~ ~~Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment]~~
~~C~~B. ------------NOTE------------ Only applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves. -------------------------------- One or more penetration flow paths with two ~~[or more]~~ containment isolation valves inoperable ~~[~~for reasons other than Condition~~[~~s~~]~~ E, F, ~~[~~and G ~~F]]~~.	~~C~~B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour

ACTION b

ACTION b

③ ⑤ ③ ③ ⑤

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION a ACTION f	~~D~~ C. Two or more penetration flow paths with one containment isolation valve inoperable ~~[~~for reasons other than Condition~~[s]~~ E, F, ~~[~~and ~~F]]~~ G.	~~D~~ C.1 Isolate all but one penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	4 hours	⑤ ⑤
			INSERT 2	⑥
ACTION d	~~E~~ F. ~~[~~ One or more shield building bypass leakage paths ~~[or purge valve leakage]~~ not within limit.	~~E~~ F.1 Restore leakage within limit.	4 hours ~~for shield building bypass leakage~~ ~~AND~~ ~~24 hours for purge valve leakage]~~	⑥ ③
ACTION e	~~F~~ G. ~~[~~ One or more penetration flow paths with one or more containment purge supply or exhaust valves not within purge supply and exhaust valve leakage limits.	~~F~~ G.1 Isolate the affected penetration flow path by use of at least one ~~[~~closed and de-activated automatic valve, closed manual valve, or blind flange~~]~~. AND	24 hours	⑥ ③

⑥ INSERT 2

ACTION b	D. Two or more pairs of containment purge lines open.	D.1	Isolate all but one penetration flow paths by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
ACTION c	E. One or more containment vacuum relief isolation valves inoperable.	E.1	Restore containment vacuum relief isolation valve(s) to OPERABLE status.	72 hours

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION Note #1 ACTION Note #2		~~F~~ G.2 -------------NOTES------------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. -------------------------------------		⑥
ACTION e		Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment	
		AND		
ACTION e		~~F~~ G.3 Perform SR 3.6.3.~~7~~ 5 for the resilient seal purge valves closed to comply with Required Action ~~F~~ G.1.	Once per ~~[~~92~~]~~ days ~~]~~	⑨ ③ ⑥
ACTION g	~~G~~ H. Required Action and associated Completion Time not met.	~~G~~ H.1 Be in MODE 3.	6 hours	⑥
		AND		
		~~G~~ H.2 Be in MODE 5.	36 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
	~~SR 3.6.3.1~~	~~[Verify each [42] inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition E of this LCO.~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	⑦
4.6.3.1	SR 3.6.3.~~2~~ 1	~~[~~ Verify each ~~[8] inch~~ containment purge supply and exhaust valve is closed, except when the ~~[8] inch~~ containment purge valves INSERT 3 are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	⑧ ③ ⑧
4.6.3.5, SR Note *	SR 3.6.3.~~3~~ 2	-------------------------------NOTE------------------------------ Valves and blind flanges in high radiation areas may be verified by use of administrative controls. --- Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	⑦ ⑧ ⑧

③ INSERT 3

4.6.3.1 (only one set of supply and one set of exhaust valves)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.6.3.4, SR Note *	SR 3.6.3.~~4~~ 3	------------------------------NOTE----------------------------- Valves and blind flanges in high radiation areas may be verified by use of administrative means. --- Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days	⑦
4.6.3.3	SR 3.6.3.~~5~~ 4	Verify the isolation time of each automatic power operated containment isolation valve is within limits.	~~[~~In accordance with the Inservice Testing Program ~~OR~~ ~~[92 days]~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	⑦ ③
	~~SR 3.6.3.6~~	~~[Cycle each weight or spring loaded check valve testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.~~	~~[92 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	⑨

CTS

Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①
3.6.3

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.6.3.6	SR 3.6.3.~~7~~ 5	~~[~~ Perform leakage rate testing for containment purge valves with resilient seals.	~~[184 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ~~AND~~ ~~Within 92 days after opening the valve]~~	⑨ ⑧ ⑧ ⑩
4.6.3.2	SR 3.6.3.~~8~~ 6	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	⑨ ⑧ ⑧
	~~SR 3.6.3.9~~	~~[Cycle each weight or spring loaded check valve not testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.~~	~~[18 months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	⑪

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY	
4.6.3.7	SR 3.6.3.~~10~~ 7	[Verify each ~~[ ] inch~~ containment purge valve is blocked to restrict the valve from opening ~~≥~~ ≥ [50]~~%~~ degrees.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program]]	⑪ ⑧ ③ ⑧
4.6.3.8	SR 3.6.3.~~11~~ 8	[Verify the combined leakage rate for all shield building bypass leakage paths is ≤ [L_a] 0.25 when pressurized to ≥ ~~[psig]~~ P_a.	In accordance with the Containment Leakage Rate Testing Program]	⑪ ③

3.6 CONTAINMENT SYSTEMS

3.6.3 Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

3.6.3 LCO 3.6.3 Each containment isolation valve (CIV) shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

---NOTES---

3.6.3 Note *1 1. Penetration flow path(s) ~~[except for [42] inch purge valve flow paths]~~ may be unisolated intermittently under administrative controls. ③

DOC A02 2. Separate Condition entry is allowed for each penetration flow path.

DOC A03 3. Enter applicable Conditions and Required Actions for systems made inoperable by containment isolation valves.

3.6.3 Note *2 4. Enter applicable Conditions and Required Actions of LCO 3.6.1, "Containment," when isolation valve leakage results in exceeding the overall containment leakage rate acceptance criteria.

INSERT 1 ④

----

④ INSERT 1

3.6.3 Note *3 5. No more than one pair of containment purge lines (one set of supply valves and one set of exhaust valves) may be opened.

ACTIONS (continued)

ACTION a
ACTION f

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~[~~ One or more penetration flow paths with one containment isolation valve inoperable ~~[~~for reasons other than Condition~~[~~s~~]~~ E, F, ~~[~~and G ~~F]]~~. ~~AND~~ ~~Containment isolation valve pressure boundary intact.~~	A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. AND	4 hours for Category 1 or 8 CIVs AND 8 hours for Category 2 or 9 CIVs AND 12 hours for Category 3 or 10 CIVs AND 24 hours for Category 4 or 11 CIVs AND 48 hours for Category 5 or 12 CIVs AND 72 hours for Category 6 or 13 CIVs AND 7 days for Category 7 or 14 CIVs

③

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	A.2 -------------NOTES------------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. ------------------------------------- Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment AND Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment ~~]~~ ③

ACTION Note #1

ACTION Note #2

ACTION a
ACTION b

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B. [One or more penetration flow paths with one containment isolation valve inoperable [for reasons other than Condition[s] E [and F]].~~ ~~AND~~ ~~Containment isolation valve pressure boundary not intact.~~	~~B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.~~ ~~AND~~	~~4 hours for Category 8 CIVs~~ ~~AND~~ ~~8 hours for Category 9 CIVs~~ ~~AND~~ ~~12 hours for Category 10 CIVs~~ ~~AND~~ ~~24 hours for Category 11 CIVs~~ ~~AND~~ ~~48 hours for Category 12 CIVs~~ ~~AND~~ ~~72 hours for Category 13 CIVs~~ ~~AND~~ ~~7 days for Category 14 CIVs~~

③

CTS

Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①
3.6.3

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
	~~B.2~~ ~~-------------NOTES----------~~ ~~1. Isolation devices in high radiation areas may be verified by use of administrative means.~~ ~~2. Isolation devices that are locked, sealed, or otherwise secured may be verified by administrative means.~~ ~~---------------------------------~~ ~~Verify the affected penetration flow path is isolated.~~	~~Once per 31 days for isolation devices outside containment~~ ~~AND~~ ~~Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment]~~ ③
ACTION b ~~C~~ B. ------------NOTE------------ Only applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves. --------------------------------- ACTION b One or more penetration flow paths with two ~~[or more]~~ containment isolation valves inoperable ~~[~~for reasons other than Condition~~[s]~~ E , F, ~~[~~and ~~F]]~~ G.	~~C~~ B.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour ⑤ ③ ③ ⑤

ACTIONS (continued)

INSERT 2 ⑥

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
ACTION a ACTION f	~~D~~ C. Two or more penetration flow paths with one containment isolation valve inoperable ~~[~~for reasons other than Condition~~[s]~~ E, F, ~~[~~and ~~F]]~~ G.	~~D~~ C.1	Isolate all but one penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	4 hours	⑤ ⑤
ACTION d	~~E~~ F. ~~[~~ One or more shield building bypass leakage paths ~~[or purge valve leakage]~~ not within limit.	~~E~~ F.1	Restore leakage within limit.	4 hours ~~for shield building bypass leakage~~ ~~AND~~ ~~24 hours for purge valve leakage]~~	⑥ ③
ACTION e	~~F~~ G. ~~[~~ One or more penetration flow paths with one or more containment purge supply or exhaust valves not within purge supply and exhaust valve leakage limits.	~~F~~ G.1 AND	Isolate the affected penetration flow path by use of at least one ~~[~~closed and de-activated automatic valve, closed manual valve, or blind flange~~]~~.	24 hours	⑥ ③

⑥ INSERT 2

ACTION b	D. Two or more pairs of containment purge lines open.	D.1	Isolate all but one penetration flow paths by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange.	1 hour
ACTION c	E. One or more containment vacuum relief isolation valves inoperable.	E.1	Restore containment vacuum relief isolation valve(s) to OPERABLE status.	72 hours

CTS

Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①
3.6.3

ACTIONS (continued)

ACTION Note #1

ACTION Note #2

ACTION e

ACTION e

ACTION g

CONDITION	REQUIRED ACTION		COMPLETION TIME
	~~F~~G.2	-------------NOTES------------- 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means. -------------------------------------	
		Verify the affected penetration flow path is isolated.	Once per 31 days for isolation devices outside containment <u>AND</u> Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days for isolation devices inside containment
	<u>AND</u>		
	~~F~~G.3	Perform SR 3.6.3.~~7~~5 for the resilient seal purge valves closed to comply with Required Action ~~F~~G.1.	Once per ~~[~~92~~]~~ days ~~]~~
~~G~~H. Required Action and associated Completion Time not met.	~~G~~H.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	~~G~~H.2	Be in MODE 5.	36 hours

⑥ ⑨ ③ ⑥ ⑥

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
	~~SR 3.6.3.1~~	~~[Verify each [42] inch purge valve is sealed closed, except for one purge valve in a penetration flow path while in Condition E of this LCO.~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	⑦
4.6.3.1	SR 3.6.3.~~2~~ 1 ①	~~[~~ Verify each ~~[8] inch~~ containment purge supply and exhaust valve is closed, except when the ~~[8] inch~~ containment purge valves INSERT 3 are open for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	⑧ ③ ⑧
4.6.3.5, SR Note *	SR 3.6.3.~~3~~ 2 ②	------------------------------NOTE------------------------------ Valves and blind flanges in high radiation areas may be verified by use of administrative controls. --- Verify each containment isolation manual valve and blind flange that is located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	⑦ ⑧ ⑧

③ INSERT 3

4.6.3.1 (only one set of supply and one set of exhaust valves)

CTS

Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①
3.6.3

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.6.3.4, SR Note *	SR 3.6.3.~~4~~ 3	------------------------------NOTE------------------------------ Valves and blind flanges in high radiation areas may be verified by use of administrative means. -- Verify each containment isolation manual valve and blind flange that is located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls.	Prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days	⑦
4.6.3.3	SR 3.6.3.~~5~~ 4	Verify the isolation time of each automatic power operated containment isolation valve is within limits.	~~[~~In accordance with the Inservice Testing Program ~~OR~~ ~~[92 days]~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	⑦ ③
	~~SR 3.6.3.6~~	~~[Cycle each weight or spring loaded check valve testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.~~	~~[92 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~	⑨

CTS

Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①
3.6.3

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.6.3.6	SR 3.6.3.~~7~~ 5	~~[~~ Perform leakage rate testing for containment purge valves with resilient seals.	~~[184 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ~~AND~~ ~~Within 92 days after opening the valve]~~	⑨ ⑧ ⑧ ⑩
4.6.3.2	SR 3.6.3.~~8~~ 6	Verify each automatic containment isolation valve that is not locked, sealed or otherwise secured in position, actuates to the isolation position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	⑨ ⑧ ⑧
	~~SR 3.6.3.9~~	~~[Cycle each weight or spring loaded check valve not testable during operation through one complete cycle of full travel, and verify each check valve remains closed when the differential pressure in the direction of flow is ≤ [1.2] psid and opens when the differential pressure in the direction of flow is ≥ [1.2] psid and < [5.0] psid.~~	~~[18 months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	⑪

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.6.3.7	SR 3.6.3.~~10~~ 7	[Verify each ~~[ ] inch~~ containment purge valve is blocked to restrict the valve from opening ~~≥~~ ≥ [50~~]%~~ degrees.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	⑪ ⑧ ③ ⑧
4.6.3.8	SR 3.6.3.~~11~~ 8	[Verify the combined leakage rate for all shield building bypass leakage paths is ≤ 0.25 [L_a] when pressurized to ≥ ~~[psig]~~ P_a.	In accordance with the Containment Leakage Rate Testing Program]	⑪ ③

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

1. The type of Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual) is deleted since it is unnecessary. This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS 3.6.3 ACTIONS has been modified to include a new Note. ITS 3.6.3 ACTION Note 5 prohibits more than one pair of containment purge lines (one set of supply valves and one set of exhaust valves) to be opened. The addition of this Note maintains the current SQN accident analysis assumptions for the amount of containment volume released through the open purge lines prior to automatic isolation in the event of DBA.

5. As a result of combining ACTIONS A and B into one ACTION, as provided in the ISTS 3.6.3 Bases Reviewer's Note, subsequent ACTIONS (ISTS 3.6.3 ACTIONS C and D) have been renumbered. The renumbering of ISTS 3.6.3 ACTIONS E, F, and G is discussed in JFD 6.

6. ISTS 3.6.3 has been modified to include two new ACTIONS (ITS 3.6.3 ACTIONS D and E). ITS 3.6.3 ACTION D requires when two or more pairs of containment purge lines are open, to isolate all but one penetration flow paths by use of at least one closed and deactivated automatic valve, closed manual valve, or blind flange. ITS 3.6.3 ACTION E requires when one or more containment vacuum relief isolation valves are inoperable, to restore the containment vacuum relief isolation valves to OPERABLE status within 72 hours. This change is required because the vacuum relief isolation valves are containment isolation valves. Furthermore, this change reflects the current licensing bases. Additionally, due to the addition of ITS 3.6.3 ACTIONS D and E, subsequent ACTIONS (ISTS 3.6.3 ACTIONS E, F and G) have been renumbered.

7. ISTS SR 3.6.3.1 is a bracketed Surveillance Requirement. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. Since Sequoyah Nuclear Plant (SQN) has 24 inch purge valves for upper and lower compartment purge (supply and exhaust) and 12 inch purge valves for instrument room purge (supply and exhaust), ISTS SR 3.6.3.1 was not incorporated. Additionally, subsequent Surveillances (ISTS SR 3.6.3.2, SR 3.6.3.3, SR 3.6.3.4, and SR 3.6.3.5) were renumbered (ITS SR 3.6.3.1, SR 3.6.3.2, SR 3.6.3.3, and SR 3.6.3.4, respectively) because of the deletion of ISTS SR 3.6.3.1.

8. ISTS SR 3.6.3.2, SR 3.6.3.3, SR 3.6.3.7, SR 3.6.3.8, and SR 3.6.3.10 (ITS SR 3.6.3.1, SR 3.6.3.2, SR 3.6.3.5, SR 3.6.3.6, and SR 3.6.3.7, respectively) provides two options for controlling the Frequencies of Surveillance Requirements.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

9. ISTS SR 3.6.3.6 is a bracketed Surveillance Requirement. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. Since Sequoyah Nuclear Plant (SQN) does not have weight or spring loaded check valves, this Surveillance is not required. Additionally, subsequent Surveillances (ISTS SR 3.6.3.7 and SR 3.6.3.8) were renumbered (ITS SR 3.6.3.5 and SR 3.6.3.6, respectively) because of the deletion of ISTS SR 3.6.3.6.

10. ISTS SR 3.6.3.7 requires performance of leakage testing for containment purge valves with resilient seals every 184 days and within 92 days after opening the valve. ITS SR 3.6.3.5 performs this Surveillance every 92 days instead of every 184 days. Therefore, the Surveillance will be performed within 92 days after the opening of the valve and it is not necessary to maintain this Frequency in the ITS. (JFD 6 provides the justification for changing the Frequency to in accordance with the Surveillance Frequency Control Program.)

11. ISTS SR 3.6.3.9 is a bracketed Surveillance Requirement. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. Since SQN does not have weight or spring loaded check valves, this Surveillance is not required. Additionally, subsequent Surveillances (ISTS SR 3.6.3.10 and SR 3.6.3.11) were renumbered (ITS SR 3.6.3.7 and SR 3.6.3.8, respectively) because of the deletion of ISTS SR 3.6.3.6.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3 Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

BASES

BACKGROUND

, or an approved exemption is provided,

The containment isolation valves form part of the containment pressure boundary and provide a means for fluid penetrations not serving accident consequence limiting systems to be provided with two isolation barriers that are closed on a containment isolation signal. These isolation devices are either passive or active (automatic). Manual valves, de-activated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive devices. Check valves, or other automatic valves designed to close without operator action following an accident, are considered active devices. Two barriers in series are provided for each penetration so that no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. One of these barriers may be a closed system. These barriers (typically containment isolation valves) make up the Containment Isolation System. ②

Automatic isolation signals are produced during accident conditions. Containment Phase "A" isolation occurs upon receipt of a safety injection signal. The Phase "A" isolation signal isolates nonessential process lines in order to minimize leakage of fission product radioactivity. Containment Phase "B" isolation occurs upon receipt of a containment pressure High-High signal and isolates the remaining process lines, except systems required for accident mitigation. In addition to the isolation signals listed above, the purge and exhaust valves receive an isolation signal on a containment high radiation condition. As a result, the containment isolation valves (and blind flanges) help ensure that the containment atmosphere will be isolated from the environment in the event of a release of fission product radioactivity to the containment atmosphere as a result of a Design Basis Accident (DBA).

The OPERABILITY requirements for containment isolation valves help ensure that containment is isolated within the time limits assumed in the safety analyses. Therefore, the OPERABILITY requirements provide assurance that the containment function assumed in the safety analyses will be maintained.

BASES

BACKGROUND (continued)

Reactor Building
Ventilation (RBPV)

~~Shutdown~~ Purge System ~~([42] inch purge valves)~~

RBPV

The ~~Shutdown Purge~~ System operates to supply outside air into the containment for ventilation and cooling or heating and may also be used to reduce the concentration of noble gases within containment prior to and during personnel access. INSERT 1 ~~The supply and exhaust lines each contain two isolation valves. Because of their large size, the [42] inch purge valves in some units are not qualified for automatic closure from their open position under DBA conditions. Therefore, the [42] inch purge valves are normally maintained closed in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained.~~

~~Minipurge System ([8] inch purge valves)~~

~~The Minipurge System operates to:~~

~~a. Reduce the concentration of noble gases within containment prior to and during personnel access and~~

~~b. Equalize internal and external pressures.~~ ③

RBPV

Since the valves used in the ~~Minipurge~~ System are designed to meet the requirements for automatic containment isolation valves, these valves may be opened as needed in MODES 1, 2, 3, and 4.

APPLICABLE SAFETY ANALYSES

The containment isolation valve LCO was derived from the assumptions related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during major accidents. As part of the containment boundary, containment isolation valve OPERABILITY supports leak tightness of the containment. Therefore, the safety analyses of any event requiring isolation of containment is applicable to this LCO.

The DBAs that result in a release of radioactive material within containment are a loss of coolant accident (LOCA) and a rod ejection accident (Ref. 1). In the analyses for each of these accidents, it is assumed that containment isolation valves are either closed or function to close within the required isolation time following event initiation. This ensures that potential paths to the environment through containment isolation valves (including containment purge valves) are minimized. The bounding safety analyses assume that ~~the [42] inch~~ one pair of containment purge INSERT 2 ~~valves are closed at event initiation~~. ②

③ INSERT 1

The RBPV System provides for mechanical ventilation of the primary containment, the instrument room located within the containment, and the annulus secondary containment located between primary containment and the Shield Building.

The RBPV System includes one supply duct penetration through the Shield Building wall into the annulus area. There are four purge air supply penetrations through the containment vessel, two to the upper compartment and two to the lower containment. Two normally closed 24-inch purge supply isolation valves at each penetration through the containment vessel provide containment isolation.

The RBPV System includes one exhaust duct penetration through the Shield Building wall from the annulus area. There are three purge air exhaust penetrations through the containment vessel, two from the upper compartment and one from the lower containment. There is one pressure relief penetration through the containment vessel. Two normally closed 24-inch purge exhaust isolation valves at each penetration through the containment vessel provide containment isolation. Two normally closed 8-inch pressure relief isolation valves through the containment vessel provide containment isolation.

The RBPV System includes one supply and one exhaust duct penetration through the Shield Building wall and one supply and one exhaust duct penetration through the containment vessel wall for ventilation of the instrument room inside containment. Two normally closed 12-inch purge isolation valves at each supply and exhaust penetration through the containment vessel provide containment isolation.

③ INSERT 2

system lines are open at event initiation. The open purge system lines include one set of supply valves (i.e., inboard and outboard) and one set of exhaust valves (i.e., inboard and outboard).

BASES

APPLICABLE SAFETY ANALYSES (continued)

The DBA analysis assumes that, within ~~60~~ 85 seconds after the accident, ④ isolation of the containment is complete and leakage terminated except for the design leakage rate, L_a. The containment isolation total response time of ~~60~~ 85 seconds includes signal delay, diesel generator startup (for ④ loss of offsite power), and containment isolation valve stroke times.

~~[~~ The single failure criterion required to be imposed in the conduct of plant safety analyses was considered in the original design of the containment purge valves. Two valves (i.e., one set) in series on each purge line provide assurance that both the supply and exhaust lines could be isolated even if a single failure occurred. The inboard and outboard isolation valves on each line are provided with diverse power sources, ~~motor operated and~~ pneumatically operated to open and spring closed~~, respectively~~. This arrangement was designed to preclude common mode failures from disabling both valves on a purge line. ~~]~~ ⑤

~~[The purge valves may be unable to close in the environment following a LOCA. Therefore, each of the purge valves is required to remain sealed closed during MODES 1, 2, 3, and 4. In this case, the single failure criterion remains applicable to the containment purge valves due to failure in the control circuit associated with each valve. Again, the purge system valve design precludes a single failure from compromising the containment boundary as long as the system is operated in accordance with the subject LCO.]~~

The containment isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. The ~~[42]~~ containment isolation ~~inch~~ purge valves ~~must be maintained sealed closed [or~~ have blocks installed to prevent full opening~~]~~. ~~[~~Blocked purge valves also actuate on an automatic signal.~~]~~ The valves covered by this LCO are ⑤ listed along with their associated stroke times in the UFSAR (Ref. 2). ②

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves/devices are those listed in Reference 2.

BASES

LCO (continued)

shield building

leakage paths

Purpose valves with resilient seals ~~[~~and ~~secondary containment~~ bypass ~~valves]~~ must meet additional leakage rate requirements. The other containment isolation valve leakage rates are addressed by LCO 3.6.1, "Containment," as Type C testing. ⑥ ⑤

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment isolation valves are not required to be OPERABLE in MODE 5. The requirements for containment isolation valves during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow paths, ~~except for [42] inch purge valve penetration flow paths,~~ to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for containment isolation is indicated. ~~Due to the size of the containment purge line penetration and the fact that those penetrations exhaust directly from the containment atmosphere to the environment, the penetration flow path containing these valves may not be opened under administrative controls. A single purge valve in a penetration flow path may be opened to effect repairs to an inoperable valve, as allowed by SR 3.6.3.1.~~ ⑥ ⑥

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable containment isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable containment isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

BASES

ACTIONS (continued)

In the event the isolation valve leakage results in exceeding the overall containment leakage rate, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

INSERT 3 ⑧

~~-------------------------------REVIEWERS NOTE-----------------------------------~~
~~Conditions A and B may be combined into one Condition that addresses both the containment isolation valve pressure boundary intact and containment isolation valve pressure boundary not intact by specifying the limiting Completion Time for each configuration identified in Tables D-1, D-2, and D-3 of Reference 4.~~
~~--~~ ⑨

~~[~~ A.1 and A.2 ⑤

Condition A is applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves, and penetration flow paths with only one containment isolation valve and a closed system. The closed system must meet the requirements of Reference 3.

In the event one containment isolation valve in one or more penetration flow paths is inoperable, ~~[~~except for containment purge ~~valve~~ isolation valve, containment vacuum relief isolation valve, or shield building bypass leakage not within limit~~]~~, ~~and the containment isolation valve pressure boundary is intact,~~ the affected penetration flow path must be isolated. ~~The containment isolation valve pressure boundary is considered to be intact when the inoperable containment isolation valve is capable of maintaining the boundary between the contained fluid and the containment or outside atmosphere. An example of when a containment isolation valve would be inoperable and the pressure boundary is considered to be intact is when work is being performed on a valve actuator.~~ The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within the Completion Time specified for each Category of containment isolation valve identified in ~~[a licensee controlled document]~~ Table B 3.6.3-1, Containment Isolation Valve Completion Times. The Completion Time is justified in Reference 4. ⑤

⑧ INSERT 3

Note 5 limits the number of open containment purge lines to no more than one set of supply valves and one set of exhaust valves.

①

BASES

ACTIONS (continued)

~~--------------------------------REVIEWERS NOTE-----------------------------------~~
~~Conditions A and B may be combined into one Condition that addresses both the containment isolation valve pressure boundary intact and containment isolation valve pressure boundary not intact by specifying the limiting Completion Time for each configuration identified in Tables D-1, D-2, and D-3 of Reference 4.~~

~~The plant specific determination of the containment isolation valve Completion Time categories is performed by comparing the plant specific penetration types to the generic penetration types evaluated that are identified in Tables D-1, D-2, and D-3 of Reference 4.~~

~~The plant specific application of the generic analysis that justified the generic Completion Time categories is discussed in Section 9.0 of Reference 4.~~

~~Plant specific Completion Time categories may also be calculated in lieu of the generic Completion Time categories. This approach is discussed in Section 10.0 of Reference 4.~~

~~For plants not adopting the risk-informed extended Completion Time for containment isolation valves, a Completion Time of 4 hours is maintained. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. A Condition for one or more penetration flow paths with one containment isolation valve inoperable for penetrations with one containment isolation valve and a closed system would be required.~~
~~---~~

⑨

For affected penetration flow paths that cannot be restored to OPERABLE status within the specified Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not

②

BASES

ACTIONS (continued)

performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

Required Action A.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position, is small. ~~]~~ ⑤

~~[B.1 and B.2~~ ⑩

~~Condition B is applicable to penetration flow paths with two [or more] containment isolation valves, and penetration flow paths with only one containment isolation valve and a closed system. The closed system must meet the requirements of Reference 3.~~

~~In the event one containment isolation valve in one or more penetration flow paths is inoperable, [except for purge valve or shield building bypass leakage not within limit,] and the containment isolation valve pressure boundary is not intact, the affected penetration flow path must be isolated. The containment isolation valve pressure boundary is considered not to be intact when the inoperable containment isolation valve is not capable of maintaining the boundary between the contained fluid and the containment or outside atmosphere. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action B.1, the device used to isolate the penetration should be the closest available one to containment. Required Action B.1 must be completed within [the Completion Time specified for each Category of containment isolation valve identified in [a licensee controlled document]. The Completion Time is justified in Reference 4.~~

BASES

ACTIONS (continued)

~~-----------------------------------REVIEWERS NOTE---------------------------------------~~
~~Conditions A and B may be combined into one Condition that addresses both the containment isolation valve pressure boundary intact and containment isolation valve pressure boundary not intact by specifying the limiting Completion Time for each configuration identified in Tables D-1, D-2, and D-3 of Reference 4.~~

~~The plant specific determination of the containment isolation valve Completion Time categories is performed by comparing the plant specific penetration types to the generic penetration types evaluated that are identified in Tables D-1, D-2, and D-3 of Reference 4.~~

~~The plant specific application of the generic analysis that justified the generic Completion Time categories is discussed in Section 9.0 of Reference 4.~~ ⑨

~~Plant specific Completion Time categories may also be calculated in lieu of the generic Completion Time categories. This approach is discussed in Section 10.0 of Reference 4.~~

~~For plants not adopting the risk-informed extended Completion Time for containment isolation valves, a Completion Time of 4 hours is maintained. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. A Condition for one or more penetration flow paths with one containment isolation valve inoperable for penetrations with one containment isolation valve and a closed system would be required.~~
~~--~~

~~For affected penetration flow paths that cannot be restored to OPERABLE status within the specified Completion Time and that have been isolated in accordance with Required Action B.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated, will be in an isolated position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those isolation devices outside containment and capable of being mispositioned, are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not~~ ⑩

BASES

ACTIONS (continued)

~~performed within the previous 92 days" is based on engineering judgment, and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.~~

~~Required Action B.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that the devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position is small.]~~ ⑩

B ~~C~~.1 ⑩

With two ~~[or more]~~ containment isolation valves in one or more penetration flow paths inoperable, ~~[~~except for containment purge isolation valve, containment vacuum relief isolation valve, ~~valve~~ or shield building bypass leakage not within limit,~~]~~ the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. In the event the affected penetration is isolated in accordance with Required Action B ~~C~~.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2 ~~or B.2~~, which remains in effect. This periodic verification is necessary to assure leak tightness of containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative control and the probability of their misalignment is low. ⑤ ⑩

Condition B ~~C~~ is modified by a Note indicating this Condition is only applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves. ⑩ ⑤

BASES

ACTIONS (continued)

C ~~D~~.1 ⑩

~~-------------------------------REVIEWERS NOTE-------------------------------~~
~~The analysis in Reference 4 evaluated each CIV in each penetration individually and determines an acceptable Completion Time based on the ICLERP and ΔLERF for each CIV. It is assumed that only a single CIV is inoperable in one penetration flow path. If plant specific analyses are performed to evaluate multiple inoperable CIVs in separate penetration flow paths, Condition D should be revised to reflect the plant specific analyses.~~
~~---~~ ⑨

In the event one containment isolation valve in two or more penetration flow paths is inoperable ~~[~~except for containment purge isolation valve, containment vacuum relief isolation valve, ~~valve~~ or shield building bypass leakage not within limit~~]~~, all but one of the affected penetration flow path(s) must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action C ~~D~~.1, the device used to isolate the penetration should be the closest available one to containment. Required Action C ~~D~~.1 must be completed within 4 hours. For subsequent containment isolation valve inoperabilities, the Required Action and Completion Time continue to apply to each additional containment isolation valve inoperability, with the Completion Time based on each subsequent entry into the Condition consistent with Note 2 to the ACTIONS Table (e.g., for each entry into the Condition). Each containment isolation valve(s) that is (are) declared inoperable for subsequent Condition C ~~D~~ entries shall meet the Required Action and Completion Time. For the penetration flow paths isolated in accordance with Required Action C ~~D~~.1, the affected penetration(s) must be verified to be isolated on a periodic basis per Required Action A.2 ~~[or B.2]~~, which remains in effect. This periodic verification is necessary to assure that the penetrations requiring isolation following an accident are isolated. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting Containment OPERABILITY during MODES 1, 2, 3, and 4. ⑤ ⑩

INSERT 4 ⑥

⑥ INSERT 4

D.1 and D.2

In the event two or more pairs of containment purge lines are open, all but one penetration flow paths must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. The 1 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

E.1

With one or more containment vacuum relief isolation valve(s) inoperable, the inoperable valve(s) must be restored to OPERABLE status or the affected penetration flow path must be isolated.

In the containment vacuum relief lines, containment vacuum relief valves 30-571, 30-572, and 30-573 are qualified to perform a containment isolation function. These valves are self-actuated, swing disk (check) valves with an elastomer seat. The valves are normally closed and are equipped with limit switches that provide fully open and fully closed indication in the main control room (MCR). Therefore, a 72 hour Completion Time is appropriate while actions are taken to return the containment vacuum relief isolation valves to service.

BASES

ACTIONS (continued)

~~[E~~F.1 ⑥ ⑤

With the shield building bypass leakage rate (SR 3.6.3.~~11~~8) ~~[or purge valve leakage rate (SR 3.6.3.7)]~~ not within limit, the assumptions of the safety analyses are not met. Therefore, the leakage must be restored to within limit. Restoration can be accomplished by isolating the penetration(s) that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated the leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time ~~for shield building bypass leakage~~ ⑥ is reasonable considering the time required to restore the leakage by isolating the penetration(s) and the relative importance of secondary containment bypass leakage to the overall containment function. ~~[The 24 hour Completion time for purge valve leakage is acceptable considering the purge valves remain closed so that a gross breach of the containment does not exist.]~~ ⑦

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~[The bracketed options provided in ACTION E reflect options in plant design and options in adopting the associated leakage rate Surveillances.~~

~~The options (in both ACTION E and ACTION F) for purge valve leakage, are based primarily on the design - if leakage rates can be measured separately for each purge valve, ACTION F is intended to apply. This would be required to be able to implement Required Action F.3. Should the design allow only for leak testing both purge valves simultaneously, then the Completion Time for ACTION E should include the "24 hours for purge valve leakage" and ACTION F should be eliminated.]]~~
~~--~~

~~[F~~G.1, ~~F~~G.2, and ~~F~~G.3 ⑥

In the event one or more containment purge supply or exhaust valves in one or more penetration flow paths are not within the purge supply and exhaust valve leakage limits, purge supply and exhaust valve leakage must be restored to within limits, or the affected penetration flow path must be isolated. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a ~~[~~closed and de-activated automatic valve, closed manual valve, or blind flange~~]~~. A purge valve with resilient seals utilized to satisfy Required Action ~~F~~G.1 ⑥ ⑤ ⑥

BASES

ACTIONS (continued)

must have been demonstrated to meet the leakage requirements of SR 3.6.3.~~7~~5. The specified Completion Time is reasonable, considering that one containment purge valve remains closed so that a gross breach of containment does not exist. ⑥

In accordance with Required Action ~~F~~G.2, this penetration flow path must be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility. ⑥

For the containment purge valve with resilient seal that is isolated in accordance with Required Action ~~F~~G.1, SR 3.6.3.~~7~~5 must be performed at least once every ~~[~~92~~]~~ days. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. ~~The normal Frequency for SR 3.6.3.7, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 5).~~ Since more reliance is placed on a single valve while in this Condition, ~~it is prudent to perform the SR more often. Therefore,~~ a Frequency of once per ~~[~~92~~]~~ days was chosen and has been shown to be acceptable based on operating experience. ⑥ ⑤ ⑪ ⑤

Required Action ~~F~~G.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. ~~]~~ ⑥ ⑤

BASES

ACTIONS (continued)

H

~~G~~.1 and ~~G~~.2 ⑥

If the Required Actions and associated Completion Times are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

⑥

~~[SR 3.6.3.1~~

~~Each [42] inch containment purge valve is required to be verified sealed closed. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. [The Frequency of 31 days is a result of an NRC initiative, Generic Issue B-24 (Ref. 6), related to containment purge valve use during plant operations. In the event purge valve leakage requires entry into Condition E, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ SR 3.6.3.~~2~~ 1 ⑥

This SR ensures that the ~~minipurge~~ containment purge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the ~~minipurge~~ containment purge valves are open for the reasons stated. The valves may be opened for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. INSERT 5 The ~~minipurge~~ containment purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. ~~[The 31 day Frequency is consistent with other containment isolation valve requirements discussed in SR 3.6.3.3.~~ ⑤ ⑫

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~ ⑨ ⑫

SR 3.6.3.~~3~~ 2 ⑥

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification that those containment isolation valves outside containment and capable of being mispositioned are in the correct position. ~~[Since verification of valve position for containment isolation valves outside containment is relatively easy, the 31 day Frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions.~~ ⑫

⑤

INSERT 5

The number of valves open during MODES 1, 2, 3, and 4, is limited to no more than one pair of containment purge lines, that includes one set of supply valves and one set of exhaust valves.

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ⑫

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑨

The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time the valves are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

The Note applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in the proper position, is small.

SR 3.6.3.~~4~~3 ⑥

This SR requires verification that each containment isolation manual valve and blind flange located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. For containment isolation valves inside containment, the Frequency of "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is appropriate since these containment isolation valves are operated under administrative controls and the probability of their misalignment is low. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time they are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

BASES

SURVEILLANCE REQUIREMENTS (continued)

This Note allows valves and blind flanges located in high radiation areas to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4, for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in their proper position, is small.

SR 3.6.3.4~~5~~ ⑥

Verifying that the isolation time of each automatic power operated containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~If the testing is within the scope of the licensee's Inservice Testing Program, the Frequency "In accordance with the Inservice Testing Program" should be used. Otherwise, the periodic Frequency of 92 days or the reference to the Surveillance Frequency Control Program should be used.~~
~~---~~ ⑨

~~[~~The ~~[~~isolation time and~~]~~ Frequency of this SR is in accordance with ~~[~~the Inservice Testing Program~~] [92 days~~.

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.]]~~ ⑤

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑨

~~[SR 3.6.3.6~~

~~In subatmospheric containments, the check valves that serve a containment isolation function are weight or spring loaded to provide positive closure in the direction of flow. This ensures that these check valves will remain closed when the inside containment atmosphere~~ ⑥

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~returns to subatmospheric conditions following a DBA. SR 3.6.3.6 requires verification of the operation of the check valves that are testable during unit operation. [The Frequency of 92 days is consistent with the Inservice Testing Program requirement for valve testing on a 92 day Frequency.~~ ⑥

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~

~~[~~ SR 3.6.3.~~7~~ 5 ⑤⑥

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option ~~[A][~~B~~]~~, is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. ~~[Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between containment and the environment), a Frequency of 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 5).~~ ⑤ ⑫

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑨

~~Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the~~ ⑥

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~valve could introduce additional seal degradation (beyond that occurring to a valve that has not been opened). Thus, decreasing the interval is a prudent measure after a valve has been opened.]~~ ⑥

SR 3.6.3.6~~8~~ ⑥

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment isolation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ⑫

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑨

~~[SR 3.6.3.9~~

~~In subatmospheric containments, the check valves that serve a containment isolation function are weight or spring loaded to provide positive closure in the direction of flow. This ensures that these check valves will remain closed when the inside containment atmosphere returns to subatmospheric conditions following a DBA. SR 3.6.3.9 verifies the operation of the check valves that are not testable during unit operation. [The Frequency of 18 months is based on such factors as the inaccessibility of these valves, the fact that the unit must be shut down to perform the tests, and the successful results of the tests on an 18 month basis during past unit operation.~~ ⑥

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~ ⑥

7

~~[~~ SR 3.6.3.~~10~~ ⑤ ⑥

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~This SR is only required for those units with resilient seal purge valves allowed to be open during [MODE 1, 2, 3, or 4] and having blocking devices on the valves that are not permanently installed.~~
~~--~~ ⑨

degrees

<

Verifying that each ~~[42] inch~~ containment purge valve is blocked to restrict opening to ~~≤ [~~50~~]%~~ is required to ensure that the valves can close under DBA conditions within the times assumed in the analyses of References 1 and 2. If a LOCA occurs, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of ~~[recently]~~ irradiated fuel assemblies), pressurization concerns are not present, thus the purge valves can be fully open. ~~[The 18 month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.~~ ⑤ ⑤ ⑫

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~ ⑨

BASES

SURVEILLANCE REQUIREMENTS (continued)

8

~~[~~ SR 3.6.3.~~11~~ ⑤ ⑥

(those paths that would potentially allow leakage from the primary containment to circumvent the annulus secondary containment enclosure and escape to the auxiliary building secondary enclosure)

as-left bypass

prior to the first startup after performing a leakage test requires calculation using

. If the

, then

Following startup, the as-found leakage rate will be calculated using minimum pathway leakage.

This SR ensures that the combined leakage rate of all shield building bypass leakage paths is less than or equal to the specified leakage rate. ⑬ This provides assurance that the assumptions in the safety analysis are met. The leakage rate ~~of each bypass leakage path is assumed to be the~~ maximum pathway leakage (leakage through the worse of the two isolation valves) ~~unless the~~ penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange~~.~~ ~~In this case,~~ the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The Frequency is required by the Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria. ⑭

~~[~~Bypass leakage is considered part of L_a. ⑤

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Unless specifically exempted.]]~~ ⑨
~~--~~

REFERENCES

Chapter

U

.4 and Table 6.2.4-1

1. FSAR, ~~Section [~~15~~]~~. ⑤
2. FSAR, Section ~~[~~6.2~~]~~. ② ⑤
3. Standard Review Plan 6.2.4.
4. WCAP-15791-A, Rev. 2, "Risk-Informed Evaluation of Extensions to Containment Isolation Valve Completion Times," ~~[Date to be supplied later]~~. ⑤

June 2008

~~5. Generic Issue B-20, "Containment Leakage Due to Seal Deterioration."~~ ⑪

~~6. Generic Issue B-24.~~ ⑥

INSERT 6 ⑮

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 1 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
FCV-01-7	X-14D	2	8 hours	9	8 hours
FCV-01-14	X-14A	2	8 hours	9	8 hours
FCV-01-25	X-14C	2	8 hours	9	8 hours
FCV-01-32	X-14B	2	8 hours	9	8 hours
FCV-01-147	X-13A	2	8 hours	9	8 hours
FCV-01-148	X-13B	2	8 hours	9	8 hours
FCV-01-149	X-13C	2	8 hours	9	8 hours
FCV-01-150	X-13D	2	8 hours	9	8 hours
FCV-01-181	X-14D	2	8 hours	9	8 hours
FCV-01-182	X-14A	2	8 hours	9	8 hours
FCV-01-183	X-14C	2	8 hours	9	8 hours
FCV-01-184	X-14B	2	8 hours	9	8 hours
VLV-01-532	X-13C	2	8 hours	9	8 hours
VLV-01-534	X-13B	2	8 hours	9	8 hours
VLV-01-536	X-13A	2	8 hours	9	8 hours
VLV-01-538	X-13D	2	8 hours	9	8 hours
VLV-01-824	X-14D	2	8 hours	9	8 hours
VLV-01-825	X-14A	2	8 hours	9	8 hours
VLV-01-826	X-14C	2	8 hours	9	8 hours
VLV-01-827	X-14B	2	8 hours	9	8 hours
VLV-01-922	X-13A	2	8 hours	9	8 hours
VLV-01-923	X-13B	2	8 hours	9	8 hours
VLV-01-924	X-13C	2	8 hours	9	8 hours
VLV-01-925	X-13D	2	8 hours	9	8 hours
VLV-03-351C	X-104	2	8 hours	9	8 hours
VLV-03-352C	X-102	2	8 hours	9	8 hours
VLV-03-500	X-12C	2	8 hours	9	8 hours
VLV-03-502	X-12B	2	8 hours	9	8 hours
VLV-03-842	X-40B	1	4 hours	8	4 Hours
VLV-03-847	X-40B	1	4 hours	8	4 Hours
VLV-03-848	X-40A	1	4 hours	8	4 Hours
VLV-03-849	X-12A	2	8 hours	9	8 hours

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 2 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
VLV-03-850	X-12D	2	8 hours	9	8 hours
VLV-03-851	X-40B	1	4 hours	8	4 Hours
VLV-03-852	X-40A	1	4 hours	8	4 Hours
VLV-03-853	X-12A	2	8 hours	9	8 hours
VLV-03-854	X-12D	2	8 hours	9	8 hours
VLV-03-855	X-40B	1	4 hours	8	4 Hours
VLV-03-857	X-12A	2	8 hours	9	8 hours
VLV-03-858	X-12D	2	8 hours	9	8 hours
VLV-03-859	X-40B	1	4 hours	8	4 Hours
VLV-03-860	X-40A	1	4 hours	8	4 Hours
VLV-03-887	X-40B	1	4 hours	8	4 Hours
VLV-03-888	X-40A	1	4 hours	8	4 Hours
VLV-03-889	X-12A	2	8 hours	9	8 hours
VLV-03-890	X-12D	2	8 hours	9	8 hours
VLV-03-896	X-40B	1	4 hours	8	4 Hours
VLV-03-897	X-40B	1	4 hours	8	4 Hours
VLV-03-899	X-40A	1	4 hours	8	4 Hours
VLV-03-900	X-40A	1	4 hours	8	4 Hours
VLV-03-901	X-40A	1	4 hours	8	4 Hours
VLV-03-903	X-12A	2	8 hours	9	8 hours
VLV-03-904	X-12A	2	8 hours	9	8 hours
VLV-03-906	X-12D	2	8 hours	9	8 hours
VLV-03-907	X-12D	2	8 hours	9	8 hours
FCV-26-240	X-51	7	7 days	14	7 days
FCV-26-243	X-78	7	7 days	14	7 days
VLV-26-1258	X-51	7	7 days	14	7 days
VLV-26-1260	X-51	7	7 days	14	7 days
VLV-26-1293	X-78	7	7 days	14	7 days
VLV-26-1296	X-78	7	7 days	14	7 days
DRIV-30-30CX	X-27A	7	7 days	14	7 days
DRIV-30-30CY	X-27A	7	7 days	14	7 days
DRIV-30-42X	X-27B	7	7 days	14	7 days

⑮

INSERT 6

Table B 3.6.3-1 (Page 3 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
DRIV-30-42Y	X-27B	7	7 days	14	7 days
DRIV-30-43X	X-26A	7	7 days	14	7 days
DRIV-30-43Y	X-26A	7	7 days	14	7 days
DRIV-30-44X	X-25B	7	7 days	14	7 days
DRIV-30-44Y	X-25B	7	7 days	14	7 days
DRIV-30-45X	X-85B	7	7 days	14	7 days
DRIV-30-45Y	X-85B	7	7 days	14	7 days
DRIV-30-46AX	X-111	7	7 days	14	7 days
DRIV-30-46AY	X-111	7	7 days	14	7 days
DRIV-30-46BY	X-111	7	7 days	14	7 days
DRIV-30-47AX	X-112	7	7 days	14	7 days
DRIV-30-47AY	X-112	7	7 days	14	7 days
DRIV-30-47BY	X-112	7	7 days	14	7 days
DRIV-30-48AX	X-113	7	7 days	14	7 days
DRIV-30-48AY	X-113	7	7 days	14	7 days
DRIV-30-48BY	X-113	7	7 days	14	7 days
DRIV-30-310X	X-26A	7	7 days	14	7 days
DRIV-30-310Y	X-26A	7	7 days	14	7 days
DRIV-30-311X	X-25B	7	7 days	14	7 days
DRIV-30-311Y	X-25B	7	7 days	14	7 days
FCV-30-7	X-9A	7	7 days	14	7 days
FCV-30-8	X-9A	7	7 days	14	7 days
FCV-30-9	X-9B	7	7 days	14	7 days
FCV-30-10	X-9B	7	7 days	14	7 days
FCV-30-14	X-10A	7	7 days	14	7 days
FCV-30-15	X-10A	7	7 days	14	7 days
FCV-30-16	X-10B	7	7 days	14	7 days
FCV-30-17	X-10B	7	7 days	14	7 days
FCV-30-19	X-11	7	7 days	14	7 days
FCV-30-20	X-11	7	7 days	14	7 days
FCV-30-37	X-80	7	7 days	14	7 days
FCV-30-40	X-80	7	7 days	14	7 days

⑮

INSERT 6

Table B 3.6.3-1 (Page 4 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
FCV-30-46	X-111	7	7 days	14	7 days
FCV-30-47	X-112	7	7 days	14	7 days
FCV-30-48	X-113	7	7 days	14	7 days
FCV-30-50	X-6	7	7 days	14	7 days
FCV-30-51	X-6	7	7 days	14	7 days
FCV-30-52	X-7	7	7 days	14	7 days
FCV-30-53	X-7	7	7 days	14	7 days
FCV-30-56	X-4	7	7 days	14	7 days
FCV-30-57	X-4	7	7 days	14	7 days
FCV-30-58	X-5	7	7 days	14	7 days
FCV-30-59	X-5	7	7 days	14	7 days
FSV-30-134	X-97	7	7 days	14	7 days
FSV-30-135	X-97	7	7 days	14	7 days
PDT-30-30C	X-27A	7	7 days	14	7 days
PDT-30-42	X-27B	7	7 days	14	7 days
PDT-30-43	X-26A	7	7 days	14	7 days
PDT-30-44	X-25B	7	7 days	14	7 days
PDT-30-45	X-85B	7	7 days	14	7 days
PDT-30-310	X-26A	7	7 days	14	7 days
PDT-30-311	X-25B	7	7 days	14	7 days
VLV-30-554TP	X-5	7	7 days	14	7 days
VLV-30-555TP	X-4	7	7 days	14	7 days
VLV-30-556TP	X-80	7	7 days	14	7 days
VLV-30-557TP	X-7	7	7 days	14	7 days
VLV-30-558TP	X-6	7	7 days	14	7 days
VLV-30-559TP	X-11	7	7 days	14	7 days
VLV-30-560TP	X-10B	7	7 days	14	7 days
VLV-30-561TP	X-10A	7	7 days	14	7 days
VLV-30-562TP	X-9B	7	7 days	14	7 days
VLV-30-563TP	X-9A	7	7 days	14	7 days
VLV-30-571	X-111	7	7 days	14	7 days
VLV-30-572	X-112	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 5 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
VLV-30-573	X-113	7	7 days	14	7 days
FCV-31C-222	X-64	7	7 days	14	7 days
FCV-31C-223	X-64	7	7 days	14	7 days
FCV-31C-224	X-65	7	7 days	14	7 days
FCV-31C-225	X-65	7	7 days	14	7 days
FCV-31C-229	X-66	7	7 days	14	7 days
FCV-31C-230	X-66	7	7 days	14	7 days
FCV-31C-231	X-67	7	7 days	14	7 days
FCV-31C-232	X-67	7	7 days	14	7 days
VLV-31C-697	X-67	7	7 days	14	7 days
VLV-31C-715	X-66	7	7 days	14	7 days
VLV-31C-734	X-65	7	7 days	14	7 days
VLV-31C-752	X-64	7	7 days	14	7 days
FCV-32-80	X-90	7	7 days	14	7 days
FCV-32-102	X-26B	7	7 days	14	7 days
FCV-32-110	X-34	7	7 days	14	7 days
VLV-32-281	X-90	7	7 days	14	7 days
VLV-32-285	X-90	7	7 days	14	7 days
VLV-32-287	X-90	7	7 days	14	7 days
VLV-32-292	X-26B	7	7 days	14	7 days
VLV-32-295	X-26B	7	7 days	14	7 days
VLV-32-297	X-26B	7	7 days	14	7 days
VLV-32-373	X-34	7	7 days	14	7 days
VLV-32-375	X-34	7	7 days	14	7 days
VLV-32-377	X-34	7	7 days	14	7 days
BLF-Sys 33	X-40D	7	7 days	14	7 days
VLV-33-212	X-76	7	7 days	14	7 days
VLV-33-704	X-76	7	7 days	14	7 days
VLV-33-740	X-76	7	7 days	14	7 days
CKV-43-460	X-106	7	7 days	14	7 days
CKV-43-461	X-103	7	7 days	14	7 days
FSV-43-2	X-25A	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 6 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
FSV-43-3	X-25A	7	7 days	14	7 days
FSV-43-11	X-25D	7	7 days	14	7 days
FSV-43-12	X-25D	7	7 days	14	7 days
FSV-43-22	X-96C	7	7 days	14	7 days
FSV-43-23	X-96C	7	7 days	14	7 days
FSV-43-34	X-93	7	7 days	14	7 days
FSV-43-35	X-93	7	7 days	14	7 days
FSV-43-55	X-14D	2	8 hours	9	8 hours
FSV-43-58	X-14A	2	8 hours	9	8 hours
FSV-43-61	X-14C	2	8 hours	9	8 hours
FSV-43-64	X-14B	2	8 hours	9	8 hours
FSV-43-201	X-99, X-100	7	7 days	14	7 days
FSV-43-202	X-99, X-100	7	7 days	14	7 days
FSV-43-207	X-92A, X-92B	7	7 days	14	7 days
FSV-43-208	X-92A, X-92B	7	7 days	14	7 days
FSV-43-250	X-91	7	7 days	14	7 days
FSV-43-251	X-91	7	7 days	14	7 days
FSV-43-287	X-116A	7	7 days	14	7 days
FSV-43-288	X-116A	7	7 days	14	7 days
FSV-43-307	X-106	7	7 days	14	7 days
FSV-43-309	X-23	7	7 days	14	7 days
FSV-43-310	X-23	7	7 days	14	7 days
FSV-43-317	X-103	7	7 days	14	7 days
FSV-43-318	X-101	7	7 days	14	7 days
FSV-43-319	X-101	7	7 days	14	7 days
FSV-43-325	X-106	7	7 days	14	7 days
FSV-43-341	X-103	7	7 days	14	7 days
FSV-43-450	X-99, X-100	7	7 days	14	7 days
FSV-43-451	X-99, X-100	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 7 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
FSV-43-452	X-92A, X-92B	7	7 days	14	7 days
FSV-43-453	X-92A, X-92B	7	7 days	14	7 days
TV-43-464	X-103	7	7 days	14	7 days
TV-43-469	X-106	7	7 days	14	7 days
TV-43-474	X-101	7	7 days	14	7 days
TV-43-477	X-116A	7	7 days	14	7 days
VLV-43-423	X-92A, X-92B	7	7 days	14	7 days
VLV-43-424	X-92A, X-92B	7	7 days	14	7 days
VLV-43-425	X-99, X-100	7	7 days	14	7 days
VLV-43-426	X-99, X-100	7	7 days	14	7 days
VLV-43-492	X-23	7	7 days	14	7 days
VLV-43-497	X-91	7	7 days	14	7 days
TTIV-52-508	X-98	7	7 days	14	7 days
TTIV-52-510	X-27C	7	7 days	14	7 days
VLV-52-500	X-87D	7	7 days	14	7 days
VLV-52-501	X-87D	7	7 days	14	7 days
VLV-52-502	X-87B	7	7 days	14	7 days
VLV-52-503	X-87B	7	7 days	14	7 days
VLV-52-504	X-27C	7	7 days	14	7 days
VLV-52-505	X-27C	7	7 days	14	7 days
VLV-52-506	X-98	7	7 days	14	7 days
VLV-52-507	X-98	7	7 days	14	7 days
VLV-59-522	X-77	7	7 days	14	7 days
VLV-59-529	X-77	7	7 days	14	7 days
VLV-59-633	X-77	7	7 days	14	7 days
VLV-59-651	X-77	7	7 days	14	7 days
VLV-59-704	X-77	7	7 days	14	7 days
BLF-Sys 61	X-79A	7	7 days	13	72 hours
BLF-Sys 61	X-79B	7	7 days	13	72 hours

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 8 of 17)
Containment Isolation Valve Completion Times

		Pressure Boundary Maintained		Pressure Boundary Compromised	
UNID	Penetration	Category	Completion Time	Category	Completion Time
FCV-61-96	X-115	7	7 days	14	7 days
FCV-61-97	X-115	7	7 days	14	7 days
FCV-61-110	X-114	7	7 days	14	7 days
FCV-61-122	X-114	7	7 days	14	7 days
FCV-61-191	X-47A	7	7 days	14	7 days
FCV-61-192	X-47A	7	7 days	14	7 days
FCV-61-193	X-47B	7	7 days	14	7 days
FCV-61-194	X-47B	7	7 days	14	7 days
VLV-61-532	X-47A	7	7 days	14	7 days
VLV-61-533	X-47A	7	7 days	14	7 days
VLV-61-680	X-47B	7	7 days	14	7 days
VLV-61-681	X-47B	7	7 days	14	7 days
VLV-61-691	X-115	7	7 days	14	7 days
VLV-61-692	X-115	7	7 days	14	7 days
VLV-61-745	X-114	7	7 days	14	7 days
VLV-61-746	X-114	7	7 days	14	7 days
FCV-62-61	X-44	7	7 days	14	7 days
FCV-62-63	X-44	7	7 days	14	7 days
FCV-62-72	X-15	7	7 days	14	7 days
FCV-62-73	X-15	7	7 days	14	7 days
FCV-62-74	X-15	7	7 days	14	7 days
FCV-62-77	X-15	7	7 days	14	7 days
FCV-62-90	X-16	7	7 days	14	7 days
VLV-62-505	X-24	7	7 days	14	7 days
VLV-62-543	X-16	7	7 days	14	7 days
VLV-62-544	X-16	7	7 days	14	7 days
VLV-62-546	X-43A, X-43B, X-43C, X43D	7	7 days	14	7 days
VLV-62-549	X-43A, X-43B, X-43C, X43D	7	7 days	14	7 days
VLV-62-550	X-43A, X-43B, X-	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 9 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
	43C, X43D				
VLV-62-555	X-43A, X-43B, X-43C, X43D	7	7 days	14	7 days
VLV-62-560	X-43D	7	7 days	14	7 days
VLV-62-561	X-43B	7	7 days	14	7 days
VLV-62-562	X-43C	7	7 days	14	7 days
VLV-62-563	X-43A	7	7 days	14	7 days
VLV-62-568	X-43D	7	7 days	14	7 days
VLV-62-569	X-43B	7	7 days	14	7 days
VLV-62-570	X-43C	7	7 days	14	7 days
VLV-62-571	X-43A	7	7 days	14	7 days
VLV-62-572	X-43D	7	7 days	14	7 days
VLV-62-573	X-43B	7	7 days	14	7 days
VLV-62-574	X-43C	7	7 days	14	7 days
VLV-62-575	X-43A	7	7 days	14	7 days
VLV-62-576	X-43D	7	7 days	14	7 days
VLV-62-577	X-43B	7	7 days	14	7 days
VLV-62-578	X-43A	7	7 days	14	7 days
VLV-62-579	X-43C	7	7 days	14	7 days
VLV-62-639	X-44	7	7 days	14	7 days
VLV-62-662	X-15	7	7 days	14	7 days
VLV-62-707	X-15	7	7 days	14	7 days
VLV-62-709	X-16	7	7 days	14	7 days
FCV-63-21	X-32	7	7 days	14	7 days
FCV-63-22	X-33	1	4 hours	8	4 hours
FCV-63-23	X-30	7	7 days	14	7 days
FCV-63-25	X-22	1	4 hours	8	4 hours
FCV-63-26	X-22	1	4 hours	8	4 hours
FCV-63-64	X-39A	7	7 days	14	7 days
FCV-63-71	X-30	7	7 days	14	7 days
FCV-63-84	X-30	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 10 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
FCV-63-93	X-20B	7	7 days	14	7 days
FCV-63-94	X-20A	7	7 days	14	7 days
FCV-63-111	X-20B	7	7 days	14	7 days
FCV-63-112	X-20A	7	7 days	14	7 days
FCV-63-121	X-33	7	7 days	14	7 days
FCV-63-156	X-32	7	7 days	8	4 hours
FCV-63-157	X-21	7	7 days	8	4 hours
FCV-63-158	X-17	7	7 days	14	7 days
FCV-63-167	X-21	7	7 days	14	7 days
FCV-63-172	X-17	1	4 hours	8	4 hours
FCV-63-174	X-22	7	7 days	14	7 days
FSV-63-25	X-22	7	7 days	14	7 days
FSV-63-26	X-22	7	7 days	14	7 days
VLV-63-311A	X-32	7	7 days	14	7 days
VLV-63-313A	X-21	7	7 days	14	7 days
VLV-63-314A	X-21	7	7 days	14	7 days
VLV-63-315A	X-32	7	7 days	14	7 days
VLV-63-316A	X-32	7	7 days	14	7 days
VLV-63-317A	X-21	7	7 days	14	7 days
VLV-63-318A	X-21	7	7 days	14	7 days
VLV-63-319A	X-33	7	7 days	14	7 days
VLV-63-320A	X-33	7	7 days	14	7 days
VLV-63-321A	X-33	7	7 days	14	7 days
VLV-63-322A	X-33	7	7 days	14	7 days
VLV-63-323A	X-33	7	7 days	14	7 days
VLV-63-324A	X-33	7	7 days	14	7 days
VLV-63-325A	X-33	7	7 days	14	7 days
VLV-63-326A	X-33	7	7 days	14	7 days
VLV-63-344A	X-30	7	7 days	14	7 days
VLV-63-413	X-20B	7	7 days	14	7 days
VLV-63-511	X-24	7	7 days	14	7 days
VLV-63-534	X-24	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 11 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
VLV-63-535	X-24	7	7 days	14	7 days
VLV-63-536	X-24	7	7 days	14	7 days
VLV-63-537	X-30	7	7 days	14	7 days
VLV-63-541	X-32	7	7 days	14	7 days
VLV-63-543	X-32	7	7 days	8	4 hours
VLV-63-545	X-32	7	7 days	8	4 hours
VLV-63-547	X-21	7	7 days	8	4 hours
VLV-63-549	X-21	7	7 days	8	4 hours
VLV-63-551	X-33	1	4 hours	8	4 hours
VLV-63-553	X-33	1	4 hours	8	4 hours
VLV-63-555	X-33	1	4 hours	8	4 hours
VLV-63-557	X-33	1	4 hours	8	4 hours
VLV-63-581	X-22	1	4 hours	8	4 hours
VLV-63-590	X-17	7	7 days	14	7 days
VLV-63-591	X-17	7	7 days	14	7 days
VLV-63-592	X-17	7	7 days	14	7 days
VLV-63-593	X-17	7	7 days	14	7 days
VLV-63-612A	X-32	7	7 days	14	7 days
VLV-63-626	X-24	7	7 days	14	7 days
VLV-63-627	X-24	7	7 days	14	7 days
VLV-63-630	X-20B	7	7 days	14	7 days
VLV-63-631	X-20A	7	7 days	14	7 days
VLV-63-632	X-20B	7	7 days	14	7 days
VLV-63-633	X-20A	7	7 days	14	7 days
VLV-63-634	X-20B	7	7 days	14	7 days
VLV-63-635	X-20A	7	7 days	14	7 days
VLV-63-636	X-17	7	7 days	14	7 days
VLV-63-637	X-17	7	7 days	14	7 days
VLV-63-638	X-24	7	7 days	14	7 days
VLV-63-640	X-17	1	4 hours	8	4 hours
VLV-63-642	X-17	7	7 days	14	7 days
VLV-63-643	X-17	1	4 hours	8	4 hours

⑮

INSERT 6

Table B 3.6.3-1 (Page 12 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
VLV-63-648	X-21	7	7 days	14	7 days
VLV-63-649	X-21	7	7 days	14	7 days
VLV-63-650	X-21	7	7 days	14	7 days
VLV-63-653	X-33	7	7 days	14	7 days
VLV-63-654	X-33	7	7 days	14	7 days
VLV-63-655	X-33	7	7 days	14	7 days
VLV-63-656	X-33	7	7 days	14	7 days
VLV-63-657	X-32	7	7 days	14	7 days
VLV-63-658	X-32	7	7 days	14	7 days
VLV-63-659	X-20B	7	7 days	14	7 days
VLV-63-660	X-20B	7	7 days	14	7 days
VLV-63-661	X-20A	7	7 days	14	7 days
VLV-63-667	X-20A	7	7 days	14	7 days
VLV-63-823	X-32	7	7 days	14	7 days
VLV-63-831	X-33	7	7 days	14	7 days
VLV-63-833	X-20A	7	7 days	14	7 days
VLV-63-836	X-33	7	7 days	14	7 days
VLV-63-862	X-21	7	7 days	14	7 days
VLV-63-864	X-32	7	7 days	14	7 days
VLV-63-870	X-17	7	7 days	14	7 days
CKV-67-1523A	X-58	7	7 days	14	7 days
CKV-67-1523B	X-60	7	7 days	14	7 days
CKV-67-1523C	X-62	7	7 days	14	7 days
CKV-67-1523D	X-56	7	7 days	14	7 days
FCV-67-83	X-56	7	7 days	14	7 days
FCV-67-87	X-59	7	7 days	14	7 days
FCV-67-88	X-59	7	7 days	14	7 days
FCV-67-89	X-56	7	7 days	14	7 days
FCV-67-90	X-60	7	7 days	14	7 days
FCV-67-91	X-60	7	7 days	14	7 days
FCV-67-95	X-63	7	7 days	14	7 days
FCV-67-96	X-63	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 13 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
FCV-67-99	X-62	7	7 days	14	7 days
FCV-67-103	X-61	7	7 days	14	7 days
FCV-67-104	X-61	7	7 days	14	7 days
FCV-67-105	X-62	7	7 days	14	7 days
FCV-67-106	X-58	7	7 days	14	7 days
FCV-67-107	X-58	7	7 days	14	7 days
FCV-67-111	X-57	7	7 days	14	7 days
FCV-67-112	X-57	7	7 days	14	7 days
VLV-67-561A	X-58	7	7 days	14	7 days
VLV-67-561B	X-60	7	7 days	14	7 days
VLV-67-561C	X-62	7	7 days	14	7 days
VLV-67-561D	X-56	7	7 days	14	7 days
VLV-67-575A	X-59	7	7 days	14	7 days
VLV-67-575B	X-61	7	7 days	14	7 days
VLV-67-575C	X-63	7	7 days	14	7 days
VLV-67-575D	X-57	7	7 days	14	7 days
VLV-67-772	X-56	7	7 days	14	7 days
VLV-67-774	X-60	7	7 days	14	7 days
VLV-67-776	X-62	7	7 days	14	7 days
VLV-67-778	X-58	7	7 days	14	7 days
FCV-68-305	X-39B	7	7 days	14	7 days
FCV-68-307	X-84A	7	7 days	14	7 days
FCV-68-308	X-84A	7	7 days	14	7 days
RVLIS-Sys 68	X-85C	7	7 days	14	7 days
RVLIS-Sys 68	X-86A	7	7 days	14	7 days
RVLIS-Sys 68	X-86B	7	7 days	14	7 days
RVLIS-Sys 68	X-86C	7	7 days	14	7 days
RVLIS-Sys 68	X-25C	7	7 days	14	7 days
RVLIS-Sys 68	X-27D	7	7 days	14	7 days
RVLIS-Sys 68	X-26C	7	7 days	14	7 days
VLV-68-559	X-24	7	7 days	14	7 days
VLV-68-560	X-24	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 14 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
VLV-68-561	X-24	7	7 days	14	7 days
FCV-70-85	X-35	7	7 days	14	7 days
FCV-70-87	X-50A	7	7 days	14	7 days
FCV-70-89	X-29	7	7 days	14	7 days
FCV-70-90	X-50A	7	7 days	14	7 days
FCV-70-92	X-29	7	7 days	14	7 days
FCV-70-134	X-50B	7	7 days	14	7 days
FCV-70-140	X-52	7	7 days	14	7 days
FCV-70-141	X-52	7	7 days	14	7 days
FCV-70-143	X-53	7	7 days	14	7 days
VLV-70-678B	X-50B	7	7 days	14	7 days
VLV-70-679	X-50B	7	7 days	14	7 days
VLV-70-687	X-50A	7	7 days	14	7 days
VLV-70-691B	X-52	7	7 days	14	7 days
VLV-70-698	X-29	7	7 days	14	7 days
VLV-70-702B	X-53	7	7 days	14	7 days
VLV-70-702C	X-35	7	7 days	14	7 days
VLV-70-702E	X-53	7	7 days	14	7 days
VLV-70-702F	X-35	7	7 days	14	7 days
VLV-70-703	X-35, X-53	7	7 days	14	7 days
VLV-70-735	X-29	7	7 days	14	7 days
VLV-70-737	X-50A	7	7 days	14	7 days
VLV-70-760	X-53	7	7 days	14	7 days
VLV-70-762	X-35	7	7 days	14	7 days
VLV-70-764	X-35	7	7 days	14	7 days
VLV-70-765	X-53	7	7 days	14	7 days
VLV-70-791	X-52	7	7 days	14	7 days
DRIV-72-215F	X-49A	7	7 days	14	7 days
DRIV-72-216F	X-49A	7	7 days	14	7 days
DRIV-72-217F	X-49B	7	7 days	14	7 days
DRIV-72-218F	X-49B	7	7 days	14	7 days
FCV-72-2	X-48B	7	7 days	14	7 days

⑮

INSERT 6

Table B 3.6.3-1 (Page 15 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
FCV-72-39	X-48A	7	7 days	14	7 days
FCV-72-40	X-49A	7	7 days	14	7 days
FCV-72-41	X-49B	7	7 days	14	7 days
FCV-72-546	X-48B	7	7 days	14	7 days
RFV-72-40	X-49A	7	7 days	14	7 days
RFV-72-41	X-49B	7	7 days	14	7 days
TTIV-72-215E	X-49A	7	7 days	14	7 days
TTIV-72-216E	X-49A	7	7 days	14	7 days
TTIV-72-217E	X-49B	7	7 days	14	7 days
TTIV-72-218E	X-49B	7	7 days	14	7 days
VLV-72-512	X-24	7	7 days	14	7 days
VLV-72-513	X-24	7	7 days	14	7 days
VLV-72-517	X-24	7	7 days	14	7 days
VLV-72-518	X-24	7	7 days	14	7 days
VLV-72-543	X-48A	7	7 days	14	7 days
VLV-72-544	X-48B	7	7 days	14	7 days
VLV-72-545	X-48A	7	7 days	14	7 days
VLV-72-547	X-48A	7	7 days	14	7 days
VLV-72-548	X-48B	7	7 days	14	7 days
VLV-72-551	X-49B	7	7 days	14	7 days
VLV-72-552	X-49A	7	7 days	14	7 days
VLV-72-555	X-49B	7	7 days	14	7 days
VLV-72-556	X-49A	7	7 days	14	7 days
FCV-74-1	X-107	1	4 hours	8	4 hours
FCV-74-2	X-107	1	4 hours	8	4 hours
VLV-74-503	X-107	7	7 days	14	7 days
VLV-74-504	X-107	7	7 days	14	7 days
VLV-74-505	X-107	1	4 hours	8	4 hours
VLV-74-549	X-107	7	7 days	14	7 days
FCV-77-9	X-46	7	7 days	14	7 days
FCV-77-10	X-46	7	7 days	14	7 days
FCV-77-18	X-45	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 16 of 17)
Containment Isolation Valve Completion Times

		Pressure Boundary Maintained		Pressure Boundary Compromised	
UNID	Penetration	Category	Completion Time	Category	Completion Time
FCV-77-19	X-45	7	7 days	14	7 days
FCV-77-20	X-45	7	7 days	14	7 days
FCV-77-127	X-41	7	7 days	14	7 days
FCV-77-128	X-41	7	7 days	14	7 days
VLV-77-848	X-39B	7	7 days	14	7 days
VLV-77-849	X-39B	7	7 days	14	7 days
VLV-77-867	X-39A	7	7 days	14	7 days
VLV-77-868	X-39A	7	7 days	14	7 days
VLV-77-984	X-45	7	7 days	14	7 days
VLV-78-226A	X-83	7	7 days	14	7 days
VLV-78-228A	X-82	7	7 days	14	7 days
VLV-78-557	X-83	6	72 hours	13	72 hours
VLV-78-558	X-83	6	72 hours	13	72 hours
VLV-78-560	X-82	6	72 hours	13	72 hours
VLV-78-561	X-82	6	72 hours	13	72 hours
FCV-81-12	X-42	7	7 days	14	7 days
VLV-81-502	X-42	7	7 days	14	7 days
VLV-81-529	X-42	7	7 days	14	7 days
VLV-84-511	X-46	7	7 days	14	7 days
BLF-Sys 88	X-54	7	7 days	13	72 hours
BLF-Sys 88	X-88	7	7 days	14	7 days
BLF-Sys 88	X-108	1	4 hours	8	4 hours
BLF-Sys 88	X-109	1	4 hours	8	4 hours
BLF-Sys 88	X-117	6	72 hours	13	72 hours
BLF-Sys 88	X-118	6	72 hours	13	72 hours
FCV-90-107	X-94A	7	7 days	14	7 days
FCV-90-107	X-94B	7	7 days	14	7 days
FCV-90-108	X-94B	7	7 days	14	7 days
FCV-90-109	X-94A	7	7 days	14	7 days
FCV-90-110	X-94C	7	7 days	14	7 days
FCV-90-111	X-94C	7	7 days	14	7 days
FCV-90-113	X-95A	7	7 days	14	7 days

⑮

INSERT 6

Table B 3.6.3-1 (Page 17 of 17)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
FCV-90-113	X-95B	7	7 days	14	7 days
FCV-90-114	X-95B	7	7 days	14	7 days
FCV-90-115	X-95A	7	7 days	14	7 days
FCV-90-116	X-95C	7	7 days	14	7 days
FCV-90-117	X-95C	7	7 days	14	7 days

B 3.6 CONTAINMENT SYSTEMS

B 3.6.3 Containment Isolation Valves ~~(Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~ ①

BASES

BACKGROUND

The containment isolation valves form part of the containment pressure boundary and provide a means for fluid penetrations not serving accident consequence limiting systems to be provided with two isolation barriers that are closed on a containment isolation signal. These isolation devices are either passive or active (automatic). Manual valves, de-activated automatic valves secured in their closed position (including check valves with flow through the valve secured), blind flanges, and closed systems are considered passive devices. Check valves, or other automatic valves designed to close without operator action following an accident, are considered active devices. Two barriers in series are provided for each penetration, or an approved exemption is provided, so that no single credible failure or malfunction of an active component can result in a loss of isolation or leakage that exceeds limits assumed in the safety analyses. One of these barriers may be a closed system. These barriers (typically containment isolation valves) make up the Containment Isolation System. ②

Automatic isolation signals are produced during accident conditions. Containment Phase "A" isolation occurs upon receipt of a safety injection signal. The Phase "A" isolation signal isolates nonessential process lines in order to minimize leakage of fission product radioactivity. Containment Phase "B" isolation occurs upon receipt of a containment pressure High-High signal and isolates the remaining process lines, except systems required for accident mitigation. In addition to the isolation signals listed above, the purge and exhaust valves receive an isolation signal on a containment high radiation condition. As a result, the containment isolation valves (and blind flanges) help ensure that the containment atmosphere will be isolated from the environment in the event of a release of fission product radioactivity to the containment atmosphere as a result of a Design Basis Accident (DBA).

The OPERABILITY requirements for containment isolation valves help ensure that containment is isolated within the time limits assumed in the safety analyses. Therefore, the OPERABILITY requirements provide assurance that the containment function assumed in the safety analyses will be maintained.

BACKGROUND (continued)

~~Shutdown~~ Reactor Building Purge Ventilation (RBPV) System ~~([42] inch purge valves)~~ ③

The ~~Shutdown Purge~~ RBPV System operates to supply outside air into the containment for ventilation and cooling or heating and may also be used to reduce the concentration of noble gases within containment prior to and during personnel access. INSERT 1 ~~The supply and exhaust lines each contain two isolation valves. Because of their large size, the [42] inch purge valves in some units are not qualified for automatic closure from their open position under DBA conditions. Therefore, the [42] inch purge valves are normally maintained closed in MODES 1, 2, 3, and 4 to ensure the containment boundary is maintained.~~

~~Minipurge System ([8] inch purge valves)~~

~~The Minipurge System operates to:~~

~~a. Reduce the concentration of noble gases within containment prior to and during personnel access and~~

~~b. Equalize internal and external pressures.~~

Since the valves used in the ~~Minipurge~~ RBPV System are designed to meet the requirements for automatic containment isolation valves, these valves may be opened as needed in MODES 1, 2, 3, and 4.

APPLICABLE SAFETY ANALYSES

The containment isolation valve LCO was derived from the assumptions related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during major accidents. As part of the containment boundary, containment isolation valve OPERABILITY supports leak tightness of the containment. Therefore, the safety analyses of any event requiring isolation of containment is applicable to this LCO.

The DBAs that result in a release of radioactive material within containment are a loss of coolant accident (LOCA) and a rod ejection accident (Ref. 1). In the analyses for each of these accidents, it is assumed that containment isolation valves are either closed or function to close within the required isolation time following event initiation. This ensures that potential paths to the environment through containment isolation valves (including containment purge valves) are minimized. The bounding safety analyses assume that ~~the [42] inch~~ one pair of containment purge INSERT 2 ~~valves are closed at event initiation~~. ②

③ INSERT 1

The RBPV System provides for mechanical ventilation of the primary containment, the instrument room located within the containment, and the annulus secondary containment located between primary containment and the Shield Building.

The RBPV System includes one supply duct penetration through the Shield Building wall into the annulus area. There are four purge air supply penetrations through the containment vessel, two to the upper compartment and two to the lower containment. Two normally closed 24-inch purge supply isolation valves at each penetration through the containment vessel provide containment isolation.

The RBPV System includes one exhaust duct penetration through the Shield Building wall from the annulus area. There are three purge air exhaust penetrations through the containment vessel, two from the upper compartment and one from the lower containment. There is one pressure relief penetration through the containment vessel. Two normally closed 24-inch purge exhaust isolation valves at each penetration through the containment vessel provide containment isolation. Two normally closed 8-inch pressure relief isolation valves through the containment vessel provide containment isolation.

The RBPV System includes one supply and one exhaust duct penetration through the Shield Building wall and one supply and one exhaust duct penetration through the containment vessel wall for ventilation of the instrument room inside containment. Two normally closed 12-inch purge isolation valves at each supply and exhaust penetration through the containment vessel provide containment isolation.

③ INSERT 2

system lines are open at event initiation. The open purge system lines include one set of supply valves (i.e., inboard and outboard) and one set of exhaust valves (i.e., inboard and outboard).

BASES

APPLICABLE SAFETY ANALYSES (continued)

The DBA analysis assumes that, within ~~60~~ 85 seconds after the accident, isolation of the containment is complete and leakage terminated except for the design leakage rate, L_a. The containment isolation total response time of ~~60~~ 85 seconds includes signal delay, diesel generator startup (for loss of offsite power), and containment isolation valve stroke times. ④ ④

~~[~~ The single failure criterion required to be imposed in the conduct of plant safety analyses was considered in the original design of the containment purge valves. Two valves (i.e., one set) in series on each purge line provide assurance that both the supply and exhaust lines could be isolated even if a single failure occurred. The inboard and outboard isolation valves on each line are provided with diverse power sources, ~~motor operated and~~ pneumatically operated to open and spring closed~~, respectively~~. This arrangement was designed to preclude common mode failures from disabling both valves on a purge line. ~~]~~ ⑤

~~[The purge valves may be unable to close in the environment following a LOCA. Therefore, each of the purge valves is required to remain sealed closed during MODES 1, 2, 3, and 4. In this case, the single failure criterion remains applicable to the containment purge valves due to failure in the control circuit associated with each valve. Again, the purge system valve design precludes a single failure from compromising the containment boundary as long as the system is operated in accordance with the subject LCO.]~~

The containment isolation valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Containment isolation valves form a part of the containment boundary. The containment isolation valves' safety function is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during a DBA.

The automatic power operated isolation valves are required to have isolation times within limits and to actuate on an automatic isolation signal. The ~~[42] inch~~ containment isolation purge valves ~~must be maintained sealed closed [or have blocks installed to prevent full opening]~~. ~~[~~Blocked purge valves also actuate on an automatic signal.~~]~~ The valves covered by this LCO are listed along with their associated stroke times in the UFSAR (Ref. 2). ⑤ ②

The normally closed isolation valves are considered OPERABLE when manual valves are closed, automatic valves are de-activated and secured in their closed position, blind flanges are in place, and closed systems are intact. These passive isolation valves/devices are those listed in Reference 2.

BASES

LCO (continued)

Purge valves with resilient seals ~~[~~and ~~secondary containment~~ shield building bypass leakage paths ~~valves]~~ must meet additional leakage rate requirements. The other containment isolation valve leakage rates are addressed by LCO 3.6.1, "Containment," as Type C testing. ⑥ ⑤

This LCO provides assurance that the containment isolation valves and purge valves will perform their designed safety functions to minimize the loss of reactor coolant inventory and establish the containment boundary during accidents.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the containment isolation valves are not required to be OPERABLE in MODE 5. The requirements for containment isolation valves during MODE 6 are addressed in LCO 3.9.4, "Containment Penetrations."

ACTIONS

The ACTIONS are modified by a Note allowing penetration flow paths, ~~except for [42] inch purge valve penetration flow paths,~~ to be unisolated intermittently under administrative controls. These administrative controls consist of stationing a dedicated operator at the valve controls, who is in continuous communication with the control room. In this way, the penetration can be rapidly isolated when a need for containment isolation is indicated. ~~Due to the size of the containment purge line penetration and the fact that those penetrations exhaust directly from the containment atmosphere to the environment, the penetration flow path containing these valves may not be opened under administrative controls. A single purge valve in a penetration flow path may be opened to effect repairs to an inoperable valve, as allowed by SR 3.6.3.1.~~ ⑥ ⑥

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each penetration flow path. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable containment isolation valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable containment isolation valves are governed by subsequent Condition entry and application of associated Required Actions.

The ACTIONS are further modified by a third Note, which ensures appropriate remedial actions are taken, if necessary, if the affected systems are rendered inoperable by an inoperable containment isolation valve.

BASES

ACTIONS (continued)

In the event the isolation valve leakage results in exceeding the overall containment leakage rate, Note 4 directs entry into the applicable Conditions and Required Actions of LCO 3.6.1.

INSERT 3 ⑧

~~-----------------------------------REVIEWERS NOTE-----------------------------------~~
~~Conditions A and B may be combined into one Condition that addresses both the containment isolation valve pressure boundary intact and containment isolation valve pressure boundary not intact by specifying the limiting Completion Time for each configuration identified in Tables D-1, D-2, and D-3 of Reference 4.~~
~~--~~ ⑨

~~[~~ A.1 and A.2 ⑤

Condition A is applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves, and penetration flow paths with only one containment isolation valve and a closed system. The closed system must meet the requirements of Reference 3.

In the event one containment isolation valve in one or more penetration flow paths is inoperable, ~~[~~except for containment purge ~~valve~~ isolation valve, containment vacuum relief isolation valve, or shield building bypass leakage not within limit~~]~~, ~~and the containment isolation valve pressure boundary is intact,~~ the affected penetration flow path must be isolated. ~~The containment isolation valve pressure boundary is considered to be intact when the inoperable containment isolation valve is capable of maintaining the boundary between the contained fluid and the containment or outside atmosphere. An example of when a containment isolation valve would be inoperable and the pressure boundary is considered to be intact is when work is being performed on a valve actuator.~~ ⑤ The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action A.1, the device used to isolate the penetration should be the closest available one to containment. Required Action A.1 must be completed within the Completion Time specified for each Category of containment isolation valve identified in ~~[a licensee controlled document]~~ Table B 3.6.3-1, Containment Isolation Valve Completion Times. The Completion Time is justified in Reference 4. ⑤

⑧ INSERT 3

Note 5 limits the number of open containment purge lines to no more than one set of supply valves and one set of exhaust valves.

BASES

ACTIONS (continued)

~~--------------------------------REVIEWERS NOTE------------------------------------~~
~~Conditions A and B may be combined into one Condition that addresses both the containment isolation valve pressure boundary intact and containment isolation valve pressure boundary not intact by specifying the limiting Completion Time for each configuration identified in Tables D-1, D-2, and D-3 of Reference 4.~~

~~The plant specific determination of the containment isolation valve Completion Time categories is performed by comparing the plant specific penetration types to the generic penetration types evaluated that are identified in Tables D-1, D-2, and D-3 of Reference 4.~~

~~The plant specific application of the generic analysis that justified the generic Completion Time categories is discussed in Section 9.0 of Reference 4.~~ ⑨

~~Plant specific Completion Time categories may also be calculated in lieu of the generic Completion Time categories. This approach is discussed in Section 10.0 of Reference 4.~~

~~For plants not adopting the risk-informed extended Completion Time for containment isolation valves, a Completion Time of 4 hours is maintained. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. A Condition for one or more penetration flow paths with one containment isolation valve inoperable for penetrations with one containment isolation valve and a closed system would be required.~~
~~---~~

For affected penetration flow paths that cannot be restored to OPERABLE status within the specified Completion Time and that have been isolated in accordance with Required Action A.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated will be in the isolation position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those isolation devices outside containment and capable of being mispositioned are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not

BASES

ACTIONS (continued)

performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

Required Action A.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position, is small. ~~]~~ ⑤

~~[B.1 and B.2~~

~~Condition B is applicable to penetration flow paths with two [or more] containment isolation valves, and penetration flow paths with only one containment isolation valve and a closed system. The closed system must meet the requirements of Reference 3.~~

~~In the event one containment isolation valve in one or more penetration flow paths is inoperable, [except for purge valve or shield building bypass leakage not within limit,] and the containment isolation valve pressure boundary is not intact, the affected penetration flow path must be isolated. The containment isolation valve pressure boundary is considered not to be intact when the inoperable containment isolation valve is not capable of maintaining the boundary between the contained fluid and the containment or outside atmosphere. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action B.1, the device used to isolate the penetration should be the closest available one to containment. Required Action B.1 must be completed within [the Completion Time specified for each Category of containment isolation valve identified in [a licensee controlled document]. The Completion Time is justified in Reference 4.~~ ⑩

BASES

ACTIONS (continued)

~~------------------------------------REVIEWERS NOTE-----------------------------------~~
~~Conditions A and B may be combined into one Condition that addresses both the containment isolation valve pressure boundary intact and containment isolation valve pressure boundary not intact by specifying the limiting Completion Time for each configuration identified in Tables D-1, D-2, and D-3 of Reference 4.~~

~~The plant specific determination of the containment isolation valve Completion Time categories is performed by comparing the plant specific penetration types to the generic penetration types evaluated that are identified in Tables D-1, D-2, and D-3 of Reference 4.~~

~~The plant specific application of the generic analysis that justified the generic Completion Time categories is discussed in Section 9.0 of Reference 4.~~ ⑨

~~Plant specific Completion Time categories may also be calculated in lieu of the generic Completion Time categories. This approach is discussed in Section 10.0 of Reference 4.~~

~~For plants not adopting the risk-informed extended Completion Time for containment isolation valves, a Completion Time of 4 hours is maintained. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4. A Condition for one or more penetration flow paths with one containment isolation valve inoperable for penetrations with one containment isolation valve and a closed system would be required.~~
~~--~~

~~For affected penetration flow paths that cannot be restored to OPERABLE status within the specified Completion Time and that have been isolated in accordance with Required Action B.1, the affected penetration flow paths must be verified to be isolated on a periodic basis. This is necessary to ensure that containment penetrations required to be isolated following an accident and no longer capable of being automatically isolated, will be in an isolated position should an event occur. This Required Action does not require any testing or device manipulation. Rather, it involves verification that those isolation devices outside containment and capable of being mispositioned, are in the correct position. The Completion Time of "once per 31 days for isolation devices outside containment" is appropriate considering the fact that the devices are operated under administrative controls and the probability of their misalignment is low. For isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not~~ ⑩

BASES

ACTIONS (continued)

~~performed within the previous 92 days" is based on engineering judgment, and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.~~ ⑩

~~Required Action B.2 is modified by two Notes. Note 1 applies to isolation devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that the devices are not inadvertently repositioned. Therefore, the probability of misalignment of these devices once they have been verified to be in the proper position is small.]~~

<u>~~C~~B.1</u> ⑩ ⑤

With two ~~[or more]~~ containment isolation valves in one or more penetration flow paths inoperable, ~~[~~except for containment purge isolation valve, containment vacuum relief isolation valve, ~~valve~~ or shield building bypass leakage not within limit,~~]~~ the affected penetration flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. In the event the affected penetration is isolated in accordance with Required Action ~~C~~B.1, the affected penetration must be verified to be isolated on a periodic basis per Required Action A.2 ~~or B.2~~, which remains in effect. This periodic verification is necessary to assure leak tightness of containment and that penetrations requiring isolation following an accident are isolated. The Completion Time of once per 31 days for verifying each affected penetration flow path is isolated is appropriate considering the fact that the valves are operated under administrative control and the probability of their misalignment is low. ⑩

Condition ~~C~~B is modified by a Note indicating this Condition is only applicable to penetration flow paths with two ~~[or more]~~ containment isolation valves. ⑩ ⑤

BASES

ACTIONS (continued)

C ~~D~~.1 ⑩

~~-----------------------------------REVIEWERS NOTE-----------------------------------~~
~~The analysis in Reference 4 evaluated each CIV in each penetration individually and determines an acceptable Completion Time based on the ICLERP and ΔLERF for each CIV. It is assumed that only a single CIV is inoperable in one penetration flow path. If plant specific analyses are performed to evaluate multiple inoperable CIVs in separate penetration flow paths, Condition D should be revised to reflect the plant specific analyses.~~
~~--~~ ⑨

In the event one containment isolation valve in two or more penetration flow paths is inoperable ~~[~~except for containment purge ~~valve~~ isolation valve, containment vacuum relief isolation valve, or shield building bypass leakage not within limit~~]~~, all but one of the affected penetration flow path(s) must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, a blind flange, and a check valve with flow through the valve secured. For a penetration flow path isolated in accordance with Required Action C ~~D~~.1, the device used to isolate the penetration should be the closest available one to containment. Required Action C ~~D~~.1 must be completed within 4 hours. For subsequent containment isolation valve inoperabilities, the Required Action and Completion Time continue to apply to each additional containment isolation valve inoperability, with the Completion Time based on each subsequent entry into the Condition consistent with Note 2 to the ACTIONS Table (e.g., for each entry into the Condition). Each containment isolation valve(s) that is (are) declared inoperable for subsequent Condition C ~~D~~ entries shall meet the Required Action and Completion Time. For the penetration flow paths isolated in accordance with Required Action C ~~D~~.1, the affected penetration(s) must be verified to be isolated on a periodic basis per Required Action A.2 ~~[or B.2]~~, which remains in effect. This periodic verification is necessary to assure that the penetrations requiring isolation following an accident are isolated. The 4 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting Containment OPERABILITY during MODES 1, 2, 3, and 4. ⑤ ⑩

INSERT 4 ⑥

⑥ **INSERT 4**

D.1 and D.2

In the event two or more pairs of containment purge lines are open, all but one penetration flow paths must be isolated. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic containment isolation valve, a closed manual valve, and a blind flange. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1. The 1 hour Completion Time is reasonable, considering the time required to isolate the penetration and the relative importance of supporting containment OPERABILITY during MODES 1, 2, 3, and 4.

E.1

With one or more containment vacuum relief isolation valve(s) inoperable, the inoperable valve(s) must be restored to OPERABLE status or the affected penetration flow path must be isolated.

In the containment vacuum relief lines, containment vacuum relief valves 30-571, 30-572, and 30-573 are qualified to perform a containment isolation function. These valves are self-actuated, swing disk (check) valves with an elastomer seat. The valves are normally closed and are equipped with limit switches that provide fully open and fully closed indication in the main control room (MCR). Therefore, a 72 hour Completion Time is appropriate while actions are taken to return the containment vacuum relief isolation valves to service.

BASES

ACTIONS (continued)

F
~~[E~~.1 ⑥ ⑤

8
With the shield building bypass leakage rate (SR 3.6.3.~~11~~) ~~[or purge valve leakage rate (SR 3.6.3.7)]~~ not within limit, the assumptions of the safety analyses are not met. Therefore, the leakage must be restored to within limit. Restoration can be accomplished by isolating the penetration(s) that caused the limit to be exceeded by use of one closed and de-activated automatic valve, closed manual valve, or blind flange. When a penetration is isolated the leakage rate for the isolated penetration is assumed to be the actual pathway leakage through the isolation device. If two isolation devices are used to isolate the penetration, the leakage rate is assumed to be the lesser actual pathway leakage of the two devices. The 4 hour Completion Time ~~for shield building bypass leakage~~ ⑥ is reasonable considering the time required to restore the leakage by isolating the penetration(s) and the relative importance of secondary containment bypass leakage to the overall containment function. ~~[The 24 hour Completion time for purge valve leakage is acceptable considering the purge valves remain closed so that a gross breach of the containment does not exist.]~~

~~REVIEWER'S NOTE~~

~~[The bracketed options provided in ACTION E reflect options in plant design and options in adopting the associated leakage rate Surveillances.~~

~~The options (in both ACTION E and ACTION F) for purge valve leakage, are based primarily on the design - if leakage rates can be measured separately for each purge valve, ACTION F is intended to apply. This would be required to be able to implement Required Action F.3. Should the design allow only for leak testing both purge valves simultaneously, then the Completion Time for ACTION E should include the "24 hours for purge valve leakage" and ACTION F should be eliminated.]]~~ ⑦

G
~~[F~~.1, ~~F~~.2, and ~~F~~.3 ⑥

supply or exhaust
supply and exhaust
In the event one or more containment purge valves in one or more penetration flow paths are not within the purge valve leakage limits, purge valve leakage must be restored to within limits, or the affected penetration flow path must be isolated. The method of isolation must be by the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a ~~[~~closed and de-activated automatic valve, closed manual valve, or blind flange~~]~~. A purge valve with resilient seals utilized to satisfy Required Action ~~F~~.1 ⑥ ⑤ ⑥
G

BASES

ACTIONS (continued)

must have been demonstrated to meet the leakage requirements of SR 3.6.3.5~~7~~. The specified Completion Time is reasonable, considering ⑥ that one containment purge valve remains closed so that a gross breach of containment does not exist.

In accordance with Required Action G~~F~~.2, this penetration flow path must ⑥ be verified to be isolated on a periodic basis. The periodic verification is necessary to ensure that containment penetrations required to be isolated following an accident, which are no longer capable of being automatically isolated, will be in the isolation position should an event occur. This Required Action does not require any testing or valve manipulation. Rather, it involves verification that those isolation devices outside containment capable of being mispositioned are in the correct position. For the isolation devices inside containment, the time period specified as "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is based on engineering judgment and is considered reasonable in view of the inaccessibility of the isolation devices and other administrative controls that will ensure that isolation device misalignment is an unlikely possibility.

For the containment purge valve with resilient seal that is isolated in ⑥ accordance with Required Action G~~F~~.1, SR 3.6.3.5~~7~~ must be performed at ⑤ least once every ~~[~~92~~]~~ days. This assures that degradation of the resilient seal is detected and confirms that the leakage rate of the containment purge valve does not increase during the time the penetration is isolated. ~~The normal Frequency for SR 3.6.3.7, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 5).~~ Since more reliance is placed on a single valve while in this Condition, ⑪ ~~it is prudent to perform the SR more often. Therefore,~~ a Frequency of once per ~~[~~92~~]~~ days was chosen and has ⑤ been shown to be acceptable based on operating experience.

Required Action G~~F~~.2 is modified by two Notes. Note 1 applies to isolation ⑥ devices located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted. Note 2 applies to isolation devices that are locked, sealed, or otherwise secured in position and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since the function of locking, sealing, or securing components is to ensure that these devices are not inadvertently repositioned. ~~]~~ ⑤

BASES

ACTIONS (continued)

H

~~G~~.1 and ~~G~~.2 ⑥

If the Required Actions and associated Completion Times are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

⑥

~~[SR 3.6.3.1~~

~~Each [42] inch containment purge valve is required to be verified sealed closed. This Surveillance is designed to ensure that a gross breach of containment is not caused by an inadvertent or spurious opening of a containment purge valve. Detailed analysis of the purge valves failed to conclusively demonstrate their ability to close during a LOCA in time to limit offsite doses. Therefore, these valves are required to be in the sealed closed position during MODES 1, 2, 3, and 4. A containment purge valve that is sealed closed must have motive power to the valve operator removed. This can be accomplished by de-energizing the source of electric power or by removing the air supply to the valve operator. In this application, the term "sealed" has no connotation of leak tightness. [The Frequency of 31 days is a result of an NRC initiative, Generic Issue B-24 (Ref. 6), related to containment purge valve use during plant operations. In the event purge valve leakage requires entry into Condition E, the Surveillance permits opening one purge valve in a penetration flow path to perform repairs.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[~~ SR 3.6.3.~~2~~ 1 ⑥

This SR ensures that the ~~minipurge~~ containment purge valves are closed as required or, if open, open for an allowable reason. If a purge valve is open in violation of this SR, the valve is considered inoperable. If the inoperable valve is not otherwise known to have excessive leakage when closed, it is not considered to have leakage outside of limits. The SR is not required to be met when the ~~minipurge~~ containment purge valves are open for the reasons stated. The valves may be opened for pressure control, ALARA or air quality considerations for personnel entry, or for Surveillances that require the valves to be open. INSERT 5 The ~~minipurge~~ containment purge valves are capable of closing in the environment following a LOCA. Therefore, these valves are allowed to be open for limited periods of time. ~~[The 31 day Frequency is consistent with other containment isolation valve requirements discussed in SR 3.6.3.3.~~ ⑤ ⑫

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~ ⑨ ⑫

SR 3.6.3.~~3~~ 2 ⑥

This SR requires verification that each containment isolation manual valve and blind flange located outside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. This SR does not require any testing or valve manipulation. Rather, it involves verification that those containment isolation valves outside containment and capable of being mispositioned are in the correct position. ~~[Since verification of valve position for containment isolation valves outside containment is relatively easy, the 31 day Frequency is based on engineering judgment and was chosen to provide added assurance of the correct positions.~~ ⑫

⑤ INSERT 5

The number of valves open during MODES 1, 2, 3, and 4, is limited to no more than one pair of containment purge lines, that includes one set of supply valves and one set of exhaust valves.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ⑫

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~ ⑨
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time the valves are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

The Note applies to valves and blind flanges located in high radiation areas and allows these devices to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4 for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in the proper position, is small.

SR 3.6.3.3~~4~~ ⑥

This SR requires verification that each containment isolation manual valve and blind flange located inside containment and not locked, sealed, or otherwise secured and required to be closed during accident conditions is closed. The SR helps to ensure that post accident leakage of radioactive fluids or gases outside of the containment boundary is within design limits. For containment isolation valves inside containment, the Frequency of "prior to entering MODE 4 from MODE 5 if not performed within the previous 92 days" is appropriate since these containment isolation valves are operated under administrative controls and the probability of their misalignment is low. The SR specifies that containment isolation valves that are open under administrative controls are not required to meet the SR during the time they are open. This SR does not apply to valves that are locked, sealed, or otherwise secured in the closed position, since these were verified to be in the correct position upon locking, sealing, or securing.

SURVEILLANCE REQUIREMENTS (continued)

This Note allows valves and blind flanges located in high radiation areas to be verified closed by use of administrative means. Allowing verification by administrative means is considered acceptable, since access to these areas is typically restricted during MODES 1, 2, 3, and 4, for ALARA reasons. Therefore, the probability of misalignment of these containment isolation valves, once they have been verified to be in their proper position, is small.

SR 3.6.3.4~~5~~ ⑥

Verifying that the isolation time of each automatic power operated containment isolation valve is within limits is required to demonstrate OPERABILITY. The isolation time test ensures the valve will isolate in a time period less than or equal to that assumed in the safety analyses.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~If the testing is within the scope of the licensee's Inservice Testing Program, the Frequency "In accordance with the Inservice Testing Program" should be used. Otherwise, the periodic Frequency of 92 days or the reference to the Surveillance Frequency Control Program should be used.~~
~~---~~ ⑨

~~[~~ The ~~[~~isolation time and~~]~~ Frequency of this SR is in accordance with ~~[~~the Inservice Testing Program~~] [92 days~~. ⑤

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.]]~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑨

~~[SR 3.6.3.6~~ ⑥

~~In subatmospheric containments, the check valves that serve a containment isolation function are weight or spring loaded to provide positive closure in the direction of flow. This ensures that these check valves will remain closed when the inside containment atmosphere~~

~~returns to subatmospheric conditions following a DBA. SR 3.6.3.6 requires verification of the operation of the check valves that are testable during unit operation. [The Frequency of 92 days is consistent with the Inservice Testing Program requirement for valve testing on a 92 day Frequency.~~

~~OR~~ ⑥

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~

~~[~~ SR 3.6.3.5~~7~~ ⑤⑥

For containment purge valves with resilient seals, additional leakage rate testing beyond the test requirements of 10 CFR 50, Appendix J, Option ~~[A][~~B~~]~~, is required to ensure OPERABILITY. Operating experience has demonstrated that this type of seal has the potential to degrade in a shorter time period than do other seal types. ⑤ ~~[Based on this observation and the importance of maintaining this penetration leak tight (due to the direct path between containment and the environment), a Frequency of 184 days was established as part of the NRC resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration" (Ref. 5).~~ ⑫

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑨

~~Additionally, this SR must be performed within 92 days after opening the valve. The 92 day Frequency was chosen recognizing that cycling the~~ ⑥

SURVEILLANCE REQUIREMENTS (continued)

~~valve could introduce additional seal degradation (beyond that occurring to a valve that has not been opened). Thus, decreasing the interval is a prudent measure after a valve has been opened.]~~ ⑥

SR 3.6.3.6~~8~~ ⑥

Automatic containment isolation valves close on a containment isolation signal to prevent leakage of radioactive material from containment following a DBA. This SR ensures that each automatic containment isolation valve will actuate to its isolation position on a containment isolation signal. This surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass this Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ⑫

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑨

~~[SR 3.6.3.9~~

~~In subatmospheric containments, the check valves that serve a containment isolation function are weight or spring loaded to provide positive closure in the direction of flow. This ensures that these check valves will remain closed when the inside containment atmosphere returns to subatmospheric conditions following a DBA. SR 3.6.3.9 verifies the operation of the check valves that are not testable during unit operation. [The Frequency of 18 months is based on such factors as the inaccessibility of these valves, the fact that the unit must be shut down to perform the tests, and the successful results of the tests on an 18 month basis during past unit operation.~~ ⑥

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~ ⑥

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~]

~~[~~ SR 3.6.3.7 ~~10~~ ⑤ ⑥

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~This SR is only required for those units with resilient seal purge valves allowed to be open during [MODE 1, 2, 3, or 4] and having blocking devices on the valves that are not permanently installed.~~ ⑨
~~--~~

Verifying that each ~~[42] inch~~ containment purge valve is blocked to restrict opening to ~~≤~~ < ~~[~~50~~]%~~ degrees is required to ensure that the valves can close under DBA conditions within the times assumed in the analyses of References 1 and 2. ⑤ If a LOCA occurs, the purge valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times when purge valves are required to be capable of closing (e.g., during movement of ~~[recently]~~ irradiated fuel assemblies), ⑤ pressurization concerns are not present, thus the purge valves can be fully open. ~~[The 18 month Frequency is appropriate because the blocking devices are typically removed only during a refueling outage.~~ ⑫

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ⑨
~~--]~~]

BASES

SURVEILLANCE REQUIREMENTS (continued)

8

~~[~~ SR 3.6.3.~~11~~ ⑤ ⑥

(those paths that would potentially allow leakage from the primary containment to circumvent the annulus secondary containment enclosure and escape to the auxiliary building secondary enclosure)

as-left bypass

prior to the first startup after performing a leakage test requires calculation using

. If the

, then

Following startup, the as-found leakage rate will be calculated using minimum pathway leakage.

This SR ensures that the combined leakage rate of all shield building bypass leakage paths is less than or equal to the specified leakage rate. ⑬ This provides assurance that the assumptions in the safety analysis are met. The leakage rate ~~of each bypass leakage path is assumed to be the~~ maximum pathway leakage (leakage through the worse of the two isolation valves) ~~unless the~~ penetration is isolated by use of one closed and de-activated automatic valve, closed manual valve, or blind flange~~.~~ ~~In this case,~~ the leakage rate of the isolated bypass leakage path is assumed to be the actual pathway leakage through the isolation device. If both isolation valves in the penetration are closed, the actual leakage rate is the lesser leakage rate of the two valves. The Frequency is required by the Containment Leakage Rate Testing Program. This SR simply imposes additional acceptance criteria. ⑭

~~[~~Bypass leakage is considered part of L_a. ⑤

~~----------------------------------REVIEWER'S NOTE----------------------------------~~
~~Unless specifically exempted.]]~~ ⑨
~~--~~

REFERENCES

Chapter

U

.4 and Table 6.2.4-1

1. FSAR, ~~Section [~~15~~]~~. ⑤ ②
2. FSAR, Section ~~[~~6.2~~]~~. ⑤
3. Standard Review Plan 6.2.4.
4. WCAP-15791-A, Rev. 2, "Risk-Informed Evaluation of Extensions to Containment Isolation Valve Completion Times," ~~[Date to be supplied later]~~. ⑤

June 2008

~~5. Generic Issue B-20, "Containment Leakage Due to Seal Deterioration."~~ ⑪

~~6. Generic Issue B-24.~~ ⑥

INSERT 6 → ⑮

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 1 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
FCV-01-7	X-14D	2	8 hours	9	8 hours
FCV-01-14	X-14A	2	8 hours	9	8 hours
FCV-01-25	X-14C	2	8 hours	9	8 hours
FCV-01-32	X-14B	2	8 hours	9	8 hours
FCV-01-147	X-13A	2	8 hours	9	8 hours
FCV-01-148	X-13B	2	8 hours	9	8 hours
FCV-01-149	X-13C	2	8 hours	9	8 hours
FCV-01-150	X-13D	2	8 hours	9	8 hours
FCV-01-181	X-14D	2	8 hours	9	8 hours
FCV-01-182	X-14A	2	8 hours	9	8 hours
FCV-01-183	X-14C	2	8 hours	9	8 hours
FCV-01-184	X-14B	2	8 hours	9	8 hours
VLV-01-532	X-13C	2	8 hours	9	8 hours
VLV-01-534	X-13B	2	8 hours	9	8 hours
VLV-01-536	X-13A	2	8 hours	9	8 hours
VLV-01-538	X-13D	2	8 hours	9	8 hours
VLV-01-824	X-14D	2	8 hours	9	8 hours
VLV-01-825	X-14A	2	8 hours	9	8 hours
VLV-01-826	X-14C	2	8 hours	9	8 hours
VLV-01-827	X-14B	2	8 hours	9	8 hours
VLV-01-922	X-13A	2	8 hours	9	8 hours
VLV-01-923	X-13B	2	8 hours	9	8 hours
VLV-01-924	X-13C	2	8 hours	9	8 hours
VLV-01-925	X-13D	2	8 hours	9	8 hours
VLV-03-351C	X-104	2	8 hours	9	8 hours
VLV-03-352C	X-102	2	8 hours	9	8 hours
VLV-03-500	X-12C	2	8 hours	9	8 hours
VLV-03-502	X-12B	2	8 hours	9	8 hours
VLV-03-504	X-12A	2	8 hours	9	8 hours
VLV-03-506	X-12D	2	8 hours	9	8 hours
VLV-03-842	X-40B	1	4 hours	8	4 Hours
VLV-03-847	X-40B	1	4 hours	8	4 Hours

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 2 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
VLV-03-848	X-40A	1	4 hours	8	4 Hours
VLV-03-849	X-12A	2	8 hours	9	8 hours
VLV-03-850	X-12D	2	8 hours	9	8 hours
VLV-03-851	X-40B	1	4 hours	8	4 Hours
VLV-03-852	X-40A	1	4 hours	8	4 Hours
VLV-03-853	X-12A	2	8 hours	9	8 hours
VLV-03-854	X-12D	2	8 hours	9	8 hours
VLV-03-855	X-40B	1	4 hours	8	4 Hours
VLV-03-857	X-12A	2	8 hours	9	8 hours
VLV-03-858	X-12D	2	8 hours	9	8 hours
VLV-03-859	X-40B	1	4 hours	8	4 Hours
VLV-03-860	X-40A	1	4 hours	8	4 Hours
VLV-03-887	X-40B	1	4 hours	8	4 Hours
VLV-03-888	X-40A	1	4 hours	8	4 Hours
VLV-03-889	X-12A	2	8 hours	9	8 hours
VLV-03-890	X-12D	2	8 hours	9	8 hours
VLV-03-896	X-40B	1	4 hours	8	4 Hours
VLV-03-897	X-40B	1	4 hours	8	4 Hours
VLV-03-899	X-40A	1	4 hours	8	4 Hours
VLV-03-900	X-40A	1	4 hours	8	4 Hours
VLV-03-901	X-40A	1	4 hours	8	4 Hours
VLV-03-903	X-12A	2	8 hours	9	8 hours
VLV-03-904	X-12A	2	8 hours	9	8 hours
VLV-03-906	X-12D	2	8 hours	9	8 hours
VLV-03-907	X-12D	2	8 hours	9	8 hours
VLV-03-970	X-104	7	7 days	14	7 days
VLV-03-971	X-104	7	7 days	14	7 days
VLV-03-972	X-102	7	7 days	14	7 days
FCV-26-240	X-51	7	7 days	14	7 days
FCV-26-243	X-78	7	7 days	14	7 days
VLV-26-1258	X-51	7	7 days	14	7 days
VLV-26-1260	X-51	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 3 of 18)
Containment Isolation Valve Completion Times

		Pressure Boundary Maintained		Pressure Boundary Compromised	
UNID	Penetration	Category	Completion Time	Category	Completion Time
VLV-26-1293	X-78	7	7 days	14	7 days
VLV-26-1296	X-78	7	7 days	14	7 days
DRIV-30-30CX	X-27A	7	7 days	14	7 days
DRIV-30-30CY	X-27A	7	7 days	14	7 days
DRIV-30-42X	X-27B	7	7 days	14	7 days
DRIV-30-42Y	X-27B	7	7 days	14	7 days
DRIV-30-43X	X-26A	7	7 days	14	7 days
DRIV-30-43Y	X-26A	7	7 days	14	7 days
DRIV30-44X	X-25B	7	7 days	14	7 days
DRIV-30-44Y	X-25B	7	7 days	14	7 days
DRIV-30-45X	X-85B	7	7 days	14	7 days
DRIV-30-45Y	X-85B	7	7 days	14	7 days
DRIV-30-46AX	X-111	7	7 days	14	7 days
DRIV-30-46AY	X-111	7	7 days	14	7 days
DRIV-30-46BY	X-111	7	7 days	14	7 days
DRIV-30-47AX	X-112	7	7 days	14	7 days
DRIV-30-47AY	X-112	7	7 days	14	7 days
DRIV-30-47BY	X-112	7	7 days	14	7 days
DRIV-30-48AX	X-113	7	7 days	14	7 days
DRIV-30-48AY	X-113	7	7 days	14	7 days
DRIV-30-48BY	X-113	7	7 days	14	7 days
DRIV-30-310X	X-26A	7	7 days	14	7 days
DRIV-30-310Y	X-26A	7	7 days	14	7 days
DRIV-30-311X	X-25B	7	7 days	14	7 days
DRIV-30-311Y	X-25B	7	7 days	14	7 days
FCV-30-7	X-9A	7	7 days	14	7 days
FCV-30-8	X-9A	7	7 days	14	7 days
FCV-30-9	X-9B	7	7 days	14	7 days
FCV-30-10	X-9B	7	7 days	14	7 days
FCV-30-14	X-10A	7	7 days	14	7 days
FCV-30-15	X-10A	7	7 days	14	7 days
FCV-30-16	X-10B	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 4 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
FCV-30-17	X-10B	7	7 days	14	7 days
FCV-30-19	X-11	7	7 days	14	7 days
FCV-30-20	X-11	7	7 days	14	7 days
FCV-30-37	X-80	7	7 days	14	7 days
FCV-30-40	X-80	7	7 days	14	7 days
FCV-30-46	X-111	7	7 days	14	7 days
FCV-30-47	X-112	7	7 days	14	7 days
FCV-30-48	X-113	7	7 days	14	7 days
FCV-30-50	X-6	7	7 days	14	7 days
FCV-30-51	X-6	7	7 days	14	7 days
FCV-30-52	X-7	7	7 days	14	7 days
FCV-30-53	X-7	7	7 days	14	7 days
FCV-30-56	X-4	7	7 days	14	7 days
FCV-30-57	X-4	7	7 days	14	7 days
FCV-30-58	X-5	7	7 days	14	7 days
FCV-30-59	X-5	7	7 days	14	7 days
FSV-30-134	X-97	7	7 days	14	7 days
FSV-30-135	X-97	7	7 days	14	7 days
PDT-30-30C	X-27A	7	7 days	14	7 days
PDT-30-42	X-27B	7	7 days	14	7 days
PDT-30-43	X-26A	7	7 days	14	7 days
PDT-30-44	X-25B	7	7 days	14	7 days
PDT-30-45	X-85B	7	7 days	14	7 days
PDT-30-310	X-26A	7	7 days	14	7 days
PDT-30-311	X-25B	7	7 days	14	7 days
VLV-30-554TP	X-5	7	7 days	14	7 days
VLV-30-555TP	X-4	7	7 days	14	7 days
VLV-30-556TP	X-80	7	7 days	14	7 days
VLV-30-557TP	X-7	7	7 days	14	7 days
VLV-30-558TP	X-6	7	7 days	14	7 days
VLV-30-559TP	X-11	7	7 days	14	7 days
VLV-30-560TP	X-10B	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 5 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
VLV-30-561TP	X-10A	7	7 days	14	7 days
VLV-30-562TP	X-9B	7	7 days	14	7 days
VLV-30-563TP	X-9A	7	7 days	14	7 days
VLV-30-571	X-111	7	7 days	14	7 days
VLV-30-572	X-112	7	7 days	14	7 days
VLV-30-573	X-113	7	7 days	14	7 days
FCV-31C-222	X-64	7	7 days	14	7 days
FCV-31C-223	X-64	7	7 days	14	7 days
FCV-31C-224	X-65	7	7 days	14	7 days
FCV-31C-225	X-65	7	7 days	14	7 days
FCV-31C-229	X-66	7	7 days	14	7 days
FCV-31C-230	X-66	7	7 days	14	7 days
FCV-31C-231	X-67	7	7 days	14	7 days
FCV-31C-232	X-67	7	7 days	14	7 days
VLV-31C-697	X-67	7	7 days	14	7 days
VLV-31C-715	X-66	7	7 days	14	7 days
VLV-31C-734	X-65	7	7 days	14	7 days
VLV-31C-752	X-64	7	7 days	14	7 days
FCV-32-81	X-90	7	7 days	14	7 days
FCV-32-103	X-26B	7	7 days	14	7 days
FCV-32-110	X-34	7	7 days	14	7 days
FCV-32-111	X-34	7	7 days	14	7 days
VLV-32-341	X-26B	7	7 days	14	7 days
VLV-32-345	X-26B	7	7 days	14	7 days
VLV-32-348	X-26B	7	7 days	14	7 days
VLV-32-353	X-90	7	7 days	14	7 days
VLV-32-354	X-90	7	7 days	14	7 days
VLV-32-358	X-90	7	7 days	14	7 days
VLV-32-373	X-34	7	7 days	14	7 days
VLV-32-375	X-34	7	7 days	14	7 days
VLV-32-377	X-34	7	7 days	14	7 days
VLV-32-383	X-34	7	7 days	14	7 days

⑮

INSERT 6

Table B 3.6.3-1 (Page 6 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
VLV-32-385	X-34	7	7 days	14	7 days
VLV-32-387	X-34	7	7 days	14	7 days
BLF - Sys 33	X-40D	7	7 days	14	7 days
VLV-33-211	X-76	7	7 days	14	7 days
VLV-33-722	X-76	7	7 days	14	7 days
VLV-33-739	X-76	7	7 days	14	7 days
CKV-43-460	X-106	7	7 days	14	7 days
CKV-43-461	X-103	7	7 days	14	7 days
FCV-43-3	X-25A	7	7 days	14	7 days
FCV-43-12	X-25D	7	7 days	14	7 days
FCV-43-23	X-96C	7	7 days	14	7 days
FCV-43-35	X-93	7	7 days	14	7 days
FSV-43-2	X-25A	7	7 days	14	7 days
FSV-43-11	X-25D	7	7 days	14	7 days
FSV-43-22	X-96C	7	7 days	14	7 days
FSV-43-34	X-93	7	7 days	14	7 days
FSV-43-55	X-14D	2	8 hours	9	8 hours
FSV-43-58	X-14A	2	8 hours	9	8 hours
FSV-43-61	X-14C	2	8 hours	9	8 hours
FSV-43-64	X-14B	2	8 hours	9	8 hours
FSV-43-200A	X-99, X-100	7	7 days	14	7 days
FSV-43-200I	X-99, X-100	7	7 days	14	7 days
FSV-43-201	X-99, X-100	7	7 days	14	7 days
FSV-43-202	X-99, X-100	7	7 days	14	7 days
FSV-43-207	X-92A, X-92B	7	7 days	14	7 days
FSV-43-208	X-92A, X-92B	7	7 days	14	7 days
FSV-43-210A	X-92A, X-92B	7	7 days	14	7 days
FSV-43-210I	X-92A, X-92B	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 7 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
FSV-43-250	X-91	7	7 days	14	7 days
FSV-43-251	X-91	7	7 days	14	7 days
FSV-43-287	X-116A	7	7 days	14	7 days
FSV-43-288	X-116A	7	7 days	14	7 days
FSV-43-307	X-106	7	7 days	14	7 days
FSV-43-309	X-23	7	7 days	14	7 days
FSV-43-310	X-23	7	7 days	14	7 days
FSV-43-317	X-103	7	7 days	14	7 days
FSV-43-318	X-101	7	7 days	14	7 days
FSV-43-319	X-101	7	7 days	14	7 days
FSV-43-325	X-106	7	7 days	14	7 days
FSV-43-341	X-103	7	7 days	14	7 days
TV-43-464	X-103	7	7 days	14	7 days
TV-43-469	X-106	7	7 days	14	7 days
TV-43-474	X-101	7	7 days	14	7 days
TV-43-477	X-116A	7	7 days	14	7 days
VLV-43-417	X-92A, X-92B	7	7 days	14	7 days
VLV-43-419	X-99, X-100	7	7 days	14	7 days
VLV-43-421	X-92A, X-92B	7	7 days	14	7 days
VLV-43-423	X-99, X-100	7	7 days	14	7 days
VLV-43-424	X-92A, X-92B	7	7 days	14	7 days
VLV-43-426	X-99, X-100	7	7 days	14	7 days
VLV-43-427	X-99, X-100	7	7 days	14	7 days
VLV-43-492	X-23	7	7 days	14	7 days
VLV-43-497	X-91	7	7 days	14	7 days
VLV-43-525	X-92A, X-92B	7	7 days	14	7 days
TTIV-52-508	X-98	7	7 days	14	7 days
TTIV-52-510	X-27C	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 8 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
VLV-52-500	X-87D	7	7 days	14	7 days
VLV-52-501	X-87D	7	7 days	14	7 days
VLV-52-502	X-87B	7	7 days	14	7 days
VLV-52-503	X-87B	7	7 days	14	7 days
VLV-52-504	X-27C	7	7 days	14	7 days
VLV-52-505	X-27C	7	7 days	14	7 days
VLV-52-506	X-98	7	7 days	14	7 days
VLV-52-507	X-98	7	7 days	14	7 days
VLV-59-522	X-77	7	7 days	14	7 days
VLV-59-529	X-77	7	7 days	14	7 days
VLV-59-633	X-77	7	7 days	14	7 days
VLV-59-651	X-77	7	7 days	14	7 days
VLV-59-704	X-77	7	7 days	14	7 days
BLF - Sys 61	X-79A	7	7 days	13	72 hours
BLF - Sys 61	X-79B	7	7 days	13	72 hours
FCV-61-96	X-115	7	7 days	14	7 days
FCV-61-97	X-115	7	7 days	14	7 days
FCV-61-110	X-114	7	7 days	14	7 days
FCV-61-122	X-114	7	7 days	14	7 days
FCV-61-191	X-47A	7	7 days	14	7 days
FCV-61-192	X-47A	7	7 days	14	7 days
FCV-61-193	X-47B	7	7 days	14	7 days
FCV-61-194	X-47B	7	7 days	14	7 days
VLV-61-532	X-47A	7	7 days	14	7 days
VLV-61-533	X-47A	7	7 days	14	7 days
VLV-61-680	X-47B	7	7 days	14	7 days
VLV-61-681	X-47B	7	7 days	14	7 days
VLV-61-691	X-115	7	7 days	14	7 days
VLV-61-692	X-115	7	7 days	14	7 days
VLV-61-745	X-114	7	7 days	14	7 days
VLV-61-746	X-114	7	7 days	14	7 days
FCV-62-61	X-44	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 9 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
FCV-62-63	X-44	7	7 days	14	7 days
FCV-62-72	X-15	7	7 days	14	7 days
FCV-62-73	X-15	7	7 days	14	7 days
FCV-62-74	X-15	7	7 days	14	7 days
FCV-62-77	X-15	7	7 days	14	7 days
FCV-62-90	X-16	7	7 days	14	7 days
VLV-62-505	X-24	7	7 days	14	7 days
VLV-62-543	X-16	7	7 days	14	7 days
VLV-62-544	X-16	7	7 days	14	7 days
VLV-62-546	X-43A, X-43B, X-43C, X-43D	7	7 days	14	7 days
VLV-62-549	X-43A, X-43B, X-43C, X-43D	7	7 days	14	7 days
VLV-62-550	X-43A, X-43B, X-43C, X-43D	7	7 days	14	7 days
VLV-62-555	X-43A, X-43B, X-43C, X-43D	7	7 days	14	7 days
VLV-62-560	X-43D	7	7 days	14	7 days
VLV-62-561	X-43B	7	7 days	14	7 days
VLV-62-562	X-43C	7	7 days	14	7 days
VLV-62-563	X-43A	7	7 days	14	7 days
VLV-62-568	X-43D	7	7 days	14	7 days
VLV-62-569	X-43B	7	7 days	14	7 days
VLV-62-570	X-43C	7	7 days	14	7 days
VLV-62-571	X-43A	7	7 days	14	7 days
VLV-62-572	X-43D	7	7 days	14	7 days
VLV-62-573	X-43B	7	7 days	14	7 days
VLV-62-574	X-43C	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 10 of 18)
Containment Isolation Valve Completion Times

		Pressure Boundary Maintained		Pressure Boundary Compromised	
UNID	Penetration	Category	Completion Time	Category	Completion Time
VLV-62-575	X-43A	7	7 days	14	7 days
VLV-62-576	X-43D	7	7 days	14	7 days
VLV-62-577	X-43B	7	7 days	14	7 days
VLV-62-578	X-43A	7	7 days	14	7 days
VLV-62-579	X-43C	7	7 days	14	7 days
VLV-62-639	X-44	7	7 days	14	7 days
VLV-62-662	X-15	7	7 days	14	7 days
VLV-62-707	X-15	7	7 days	14	7 days
VLV-62-709	X-16	7	7 days	14	7 days
FCV-63-21	X-32	7	7 days	14	7 days
FCV-63-22	X-33	1	4 hours	8	4 hours
FCV-63-23	X-30	7	7 days	14	7 days
FCV-63-25	X-22	1	4 hours	8	4 hours
FCV-63-26	X-22	1	4 hours	8	4 hours
FCV-63-64	X-39A	7	7 days	14	7 days
FCV-63-71	X-30	7	7 days	14	7 days
FCV-63-72	X-19A	1	4 hours	8	4 hours
FCV-63-73	X-19B	1	4 hours	8	4 hours
FCV-63-84	X-30	7	7 days	14	7 days
FCV-63-93	X-20B	7	7 days	14	7 days
FCV-63-94	X-20A	7	7 days	14	7 days
FCV-63-111	X-20B	7	7 days	14	7 days
FCV-63-112	X-20A	7	7 days	14	7 days
FCV-63-121	X-33	7	7 days	14	7 days
FCV-63-156	X-32	7	7 days	14	4 hours
FCV-63-157	X-21	7	7 days	14	4 hours
FCV-63-158	X-17	7	7 days	14	7 days
FCV-63-167	X-21	7	7 days	14	7 days
FCV-63-172	X-17	1	4 hours	8	4 hours
FCV-63-174	X-22	7	7 days	14	7 days
FSV-63-25	X-22	7	7 days	14	7 days
FSV-63-26	X-22	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 11 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
VLV-63-311A	X-32	7	7 days	14	7 days
VLV-63-313A	X-21	7	7 days	14	7 days
VLV-63-314A	X-21	7	7 days	14	7 days
VLV-63-315A	X-32	7	7 days	14	7 days
VLV-63-316A	X-32	7	7 days	14	7 days
VLV-63-317A	X-21	7	7 days	14	7 days
VLV-63-318A	X-21	7	7 days	14	7 days
VLV-63-319A	X-33	7	7 days	14	7 days
VLV-63-320A	X-33	7	7 days	14	7 days
VLV-63-321A	X-33	7	7 days	14	7 days
VLV-63-322A	X-33	7	7 days	14	7 days
VLV-63-323A	X-33	7	7 days	14	7 days
VLV-63-324A	X-33	7	7 days	14	7 days
VLV-63-325A	X-33	7	7 days	14	7 days
VLV-63-326A	X-33	7	7 days	14	7 days
VLV-63-344A	X-30	7	7 days	14	7 days
VLV-63-413	X-20B	7	7 days	14	7 days
VLV-63-511	X-24	7	7 days	14	7 days
VLV-63-534	X-24	7	7 days	14	7 days
VLV-63-535	X-24	7	7 days	14	7 days
VLV-63-536	X-24	7	7 days	14	7 days
VLV-63-537	X-30	7	7 days	14	7 days
VLV-63-541	X-32	7	7 days	14	7 days
VLV-63-543	X-32	7	7 days	8	4 Hours
VLV-63-545	X-32	7	7 days	8	4 Hours
VLV-63-547	X-21	7	7 days	8	4 Hours
VLV-63-549	X-21	7	7 days	8	4 Hours
VLV-63-551	X-33	1	4 hours	8	4 Hours
VLV-63-553	X-33	1	4 hours	8	4 Hours
VLV-63-555	X-33	1	4 hours	8	4 Hours
VLV-63-557	X-33	1	4 hours	8	4 Hours
VLV-63-581	X-22	1	4 hours	8	4 Hours

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 12 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
VLV-63-590	X-17	7	7 days	14	7 days
VLV-63-591	X-17	7	7 days	14	7 days
VLV-63-592	X-17	7	7 days	14	7 days
VLV-63-593	X-17	7	7 days	14	7 days
VLV-63-612A	X-32	7	7 days	14	7 days
VLV-63-626	X-24	7	7 days	14	7 days
VLV-63-627	X-24	7	7 days	14	7 days
VLV-63-630	X-20B	7	7 days	14	7 days
VLV-63-631	X-20A	7	7 days	14	7 days
VLV-63-632	X-20B	7	7 days	14	7 days
VLV-63-633	X-20A	7	7 days	14	7 days
VLV-63-634	X-20B	7	7 days	14	7 days
VLV-63-635	X-20A	7	7 days	14	7 days
VLV-63-636	X-17	7	7 days	14	7 days
VLV-63-637	X-17	7	7 days	14	7 days
VLV-63-638	X-24	7	7 days	14	7 days
VLV-63-640	X-17	1	4 hours	8	4 hours
VLV-63-642	X-17	7	7 days	14	7 days
VLV-63-643	X-17	1	4 hours	8	4 hours
VLV-63-648	X-21	7	7 days	14	7 days
VLV-63-649	X-21	7	7 days	14	7 days
VLV-63-650	X-21	7	7 days	14	7 days
VLV-63-653	X-33	7	7 days	14	7 days
VLV-63-654	X-33	7	7 days	14	7 days
VLV-63-655	X-33	7	7 days	14	7 days
VLV-63-656	X-33	7	7 days	14	7 days
VLV-63-657	X-32	7	7 days	14	7 days
VLV-63-658	X-32	7	7 days	14	7 days
VLV-63-659	X-20B	7	7 days	14	7 days
VLV-63-660	X-20B	7	7 days	14	7 days
VLV-63-661	X-20A	7	7 days	14	7 days
VLV-63-667	X-20A	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 13 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
VLV-63-816	X-22	7	7 days	14	7 days
VLV-63-823	X-32	7	7 days	14	7 days
VLV-63-831	X-33	7	7 days	14	7 days
VLV-63-833	X-20A	7	7 days	14	7 days
VLV-63-836	X-33	7	7 days	14	7 days
VLV-63-862	X-21	7	7 days	14	7 days
VLV-63-864	X-32	7	7 days	14	7 days
VLV-63-870	X-17	7	7 days	14	7 days
CKV-67-1523A	X-58	7	7 days	14	7 days
CKV-67-1523B	X-60	7	7 days	14	7 days
CKV-67-1523C	X-62	7	7 days	14	7 days
CKV-67-1523D	X-56	7	7 days	14	7 days
FCV-67-83	X-56	7	7 days	14	7 days
FCV-67-87	X-59	7	7 days	14	7 days
FCV-67-88	X-59	7	7 days	14	7 days
FCV-67-89	X-56	7	7 days	14	7 days
FCV-67-90	X-60	7	7 days	14	7 days
FCV-67-91	X-60	7	7 days	14	7 days
FCV-67-95	X-63	7	7 days	14	7 days
FCV-67-96	X-63	7	7 days	14	7 days
FCV-67-99	X-62	7	7 days	14	7 days
FCV-67-103	X-61	7	7 days	14	7 days
FCV-67-104	X-61	7	7 days	14	7 days
FCV-67-105	X-62	7	7 days	14	7 days
FCV-67-106	X-58	7	7 days	14	7 days
FCV-67-107	X-58	7	7 days	14	7 days
FCV-67-111	X-57	7	7 days	14	7 days
FCV-67-112	X-57	7	7 days	14	7 days
FCV-67-130	X-69	7	7 days	14	7 days
FCV-67-131	X-73	7	7 days	14	7 days
FCV-67-133	X-75	7	7 days	14	7 days
FCV-67-134	X-71	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 14 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
FCV-67-138	X-74	7	7 days	14	7 days
FCV-67-139	X-70	7	7 days	14	7 days
FCV-67-141	X-68	7	7 days	14	7 days
FCV-67-142	X-72	7	7 days	14	7 days
FCV-67-295	X-73	7	7 days	14	7 days
FCV-67-296	X-71	7	7 days	14	7 days
FCV-67-297	X-70	7	7 days	14	7 days
FCV-67-298	X-72	7	7 days	14	7 days
VLV-67-561A	X-58	7	7 days	14	7 days
VLV-67-561B	X-60	7	7 days	14	7 days
VLV-67-561C	X-62	7	7 days	14	7 days
VLV-67-561D	X-56	7	7 days	14	7 days
VLV-67-575A	X-59	7	7 days	14	7 days
VLV-67-575B	X-61	7	7 days	14	7 days
VLV-67-575C	X-63	7	7 days	14	7 days
VLV-67-575D	X-57	7	7 days	14	7 days
VLV-67-579A	X-69	7	7 days	14	7 days
VLV-67-579B	X-74	7	7 days	14	7 days
VLV-67-579C	X-75	7	7 days	14	7 days
VLV-67-579D	X-68	7	7 days	14	7 days
VLV-67-580A	X-69	7	7 days	14	7 days
VLV-67-580B	X-74	7	7 days	14	7 days
VLV-67-580C	X-75	7	7 days	14	7 days
VLV-67-580D	X-68	7	7 days	14	7 days
VLV-67-585A	X-73	7	7 days	14	7 days
VLV-67-585B	X-70	7	7 days	14	7 days
VLV-67-585C	X-71	7	7 days	14	7 days
VLV-67-585D	X-72	7	7 days	14	7 days
VLV-67-772	X-56	7	7 days	14	7 days
VLV-67-774	X-60	7	7 days	14	7 days
VLV-67-776	X-62	7	7 days	14	7 days
VLV-67-778	X-58	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 15 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained Category	Pressure Boundary Maintained Completion Time	Pressure Boundary Compromised Category	Pressure Boundary Compromised Completion Time
FCV-68-305	X-39B	7	7 days	14	7 days
FCV-68-307	X-84A	7	7 days	14	7 days
FCV-68-308	X-84A	7	7 days	14	7 days
RVLIS - Sys 68	X-85C	7	7 days	14	7 days
RVLIS - Sys 68	X-86A	7	7 days	14	7 days
RVLIS - Sys 68	X-86B	7	7 days	14	7 days
RVLIS - Sys 68	X-86C	7	7 days	14	7 days
RVLIS - Sys 68	X-25C	7	7 days	14	7 days
RVLIS - Sys 68	X-27D	7	7 days	14	7 days
RVLIS - Sys 68	X-26C	7	7 days	14	7 days
VLV-68-559	X-24	7	7 days	14	7 days
VLV-68-560	X-24	7	7 days	14	7 days
VLV-68-561	X-24	7	7 days	14	7 days
FCV-70-85	X-35	7	7 days	14	7 days
FCV-70-87	X-50A	7	7 days	14	7 days
FCV-70-89	X-29	7	7 days	14	7 days
FCV-70-90	X-50A	7	7 days	14	7 days
FCV-70-92	X-29	7	7 days	14	7 days
FCV-70-134	X-50B	7	7 days	14	7 days
FCV-70-140	X-52	7	7 days	14	7 days
FCV-70-141	X-52	7	7 days	14	7 days
FCV-70-143	X-53	7	7 days	14	7 days
VLV-70-678B	X-50B	7	7 days	14	7 days
VLV-70-679	X-50B	7	7 days	14	7 days
VLV-70-687	X-50A	7	7 days	14	7 days
VLV-70-691B	X-52	7	7 days	14	7 days
VLV-70-698	X-29	7	7 days	14	7 days
VLV-70-702B	X-53	7	7 days	14	7 days
VLV-70-702C	X-35	7	7 days	14	7 days
VLV-70-702E	X-53	7	7 days	14	7 days
VLV-70-702F	X-35	7	7 days	14	7 days
VLV-70-703	X-35, X-53	7	7 days	14	7 days

⑮ **INSERT 6**

Table B 3.6.3-1 (Page 16 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
VLV-70-735	X-29	7	7 days	14	7 days
VLV-70-737	X-50A	7	7 days	14	7 days
VLV-70-759	X-35	7	7 days	14	7 days
VLV-70-760	X-53	7	7 days	14	7 days
VLV-70-762	X-35	7	7 days	14	7 days
VLV-70-764	X-35	7	7 days	14	7 days
VLV-70-765	X-53	7	7 days	14	7 days
VLV-70-791	X-52	7	7 days	14	7 days
DRIV-72-215F	X-49A	7	7 days	14	7 days
DRIV-72-216F	X-49A	7	7 days	14	7 days
DRIV-72-217F	X-49B	7	7 days	14	7 days
DRIV-72-218F	X-49B	7	7 days	14	7 days
FCV-72-2	X-48B	7	7 days	14	7 days
FCV-72-39	X-48A	7	7 days	14	7 days
FCV-72-40	X-49A	7	7 days	14	7 days
FCV-72-41	X-49B	7	7 days	14	7 days
RFV-72-40	X-49A	7	7 days	14	7 days
RFV-72-41	X-49B	7	7 days	14	7 days
TTIV-72-215E	X-49A	7	7 days	14	7 days
TTIV-72-216E	X-49A	7	7 days	14	7 days
TTIV-72-217E	X-49B	7	7 days	14	7 days
TTIV-72-218E	X-49B	7	7 days	14	7 days
VLV-72-512	X-24	7	7 days	14	7 days
VLV-72-513	X-24	7	7 days	14	7 days
VLV-72-517	X-24	7	7 days	14	7 days
VLV-72-518	X-24	7	7 days	14	7 days
VLV-72-543	X-48A	7	7 days	14	7 days
VLV-72-544	X-48B	7	7 days	14	7 days
VLV-72-545	X-48A	7	7 days	14	7 days
VLV-72-546	X-48B	7	7 days	14	7 days
VLV-72-547	X-48A	7	7 days	14	7 days
VLV-72-548	X-48B	7	7 days	14	7 days

⑮

INSERT 6

Table B 3.6.3-1 (Page 17 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
VLV-72-551	X-49B	7	7 days	14	7 days
VLV-72-552	X-49A	7	7 days	14	7 days
VLV-72-555	X-49B	7	7 days	14	7 days
VLV-72-556	X-49A	7	7 days	14	7 days
FCV-74-1	X-107	1	4 hours	8	4 hours
FCV-74-2	X-107	1	4 hours	8	4 hours
VLV-74-503	X-107	7	7 days	14	7 days
VLV-74-504	X-107	7	7 days	14	7 days
VLV-74-505	X-107	1	4 hours	8	4 hours
VLV-74-549	X-107	7	7 days	14	7 days
FCV-77-9	X-46	7	7 days	14	7 days
FCV-77-10	X-46	7	7 days	14	7 days
FCV-77-18	X-45	7	7 days	14	7 days
FCV-77-19	X-45	7	7 days	14	7 days
FCV-77-20	X-45	7	7 days	14	7 days
FCV-77-127	X-41	7	7 days	14	7 days
FCV-77-128	X-41	7	7 days	14	7 days
VLV-77-848	X-39B	7	7 days	14	7 days
VLV-77-849	X-39B	7	7 days	14	7 days
VLV-77-867	X-39A	7	7 days	14	7 days
VLV-77-868	X-39A	7	7 days	14	7 days
VLV-77-984	X-45	7	7 days	14	7 days
VLV-78-226A	X-83	7	7 days	14	7 days
VLV-78-228A	X-82	7	7 days	14	7 days
VLV-78-557	X-83	6	72 hours	13	72 hours
VLV-78-558	X-83	6	72 hours	13	72 hours
VLV-78-560	X-82	6	72 hours	13	72 hours
VLV-78-561	X-82	6	72 hours	13	72 hours
FCV-81-12	X-42	7	7 days	14	7 days
VLV-81-502	X-42	7	7 days	14	7 days
VLV-81-529	X-42	7	7 days	14	7 days
VLV-84-511	X-46	7	7 days	14	7 days

⑮

INSERT 6

Table B 3.6.3-1 (Page 18 of 18)
Containment Isolation Valve Completion Times

UNID	Penetration	Pressure Boundary Maintained		Pressure Boundary Compromised	
		Category	Completion Time	Category	Completion Time
BLF - Sys 88	X-54	7	7 days	13	72 hours
BLF - Sys 88	X-88	7	7 days	14	7 days
BLF - Sys 88	X-108	1	4 hours	8	4 hours
BLF - Sys 88	X-109	1	4 hours	8	4 hours
BLF - Sys 88	X-117	6	72 hours	13	72 hours
BLF - Sys 88	X-118	6	72 hours	13	72 hours
FCV-90-107	X-94A	7	7 days	14	7 days
FCV-90-107	X-94B	7	7 days	14	7 days
FCV-90-108	X-94B	7	7 days	14	7 days
FCV-90-109	X-94A	7	7 days	14	7 days
FCV-90-110	X-94C	7	7 days	14	7 days
FCV-90-111	X-94C	7	7 days	14	7 days
FCV-90-113	X-95A	7	7 days	14	7 days
FCV-90-113	X-95B	7	7 days	14	7 days
FCV-90-114	X-95B	7	7 days	14	7 days
FCV-90-115	X-95A	7	7 days	14	7 days
FCV-90-116	X-95C	7	7 days	14	7 days
FCV-90-117	X-95C	7	7 days	14	7 days

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3 BASES, CONTAINMENT ISOLATION VALVES

1. The type of Containment (Atmospheric, Subatmospheric, Ice Condenser, and Dual) is deleted since it is unnecessary. This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS 3.6.3 Background section describes the Shutdown Purge System and the Minipurge System. Sequoyah Nuclear Plant (SQN) does not have a Shutdown Purge System or a Minipurge System. Instead SQN uses the Reactor Building Purge Ventilation for purging. Therefore, all information pertaining to the Shutdown Purge System and the Minipurge System has been deleted and information pertaining to the Reactor Building Purge Ventilation has been added.

4. ISTS 3.6.3 Applicable Safety Analysis (ASA) section states "The DBA analysis assumes that, within 60 seconds after the accident, isolation of the containment is complete and leakage terminated except for the design leakage rate, L_a. The containment isolation total response time of 60 seconds includes signal delay, diesel generator startup (for loss of offsite power), and containment isolation valve stroke times." For SQN this time is 85 seconds. Therefore, the time duration has been changed to reflect the proper DBA time for SQN.

5. The ISTS Bases contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

6. Changes are made to be consistent with changes made to the Specification.

7. ISTS 3.6.3 ACTION E.1 (ITS ACTION F) Bases contains a bracketed value for the 24 hours completion Time of Action E for purge valve leakage which is generic to Westinghouse vintage plants. At SQN, the purge valves are designed to allow the leakage rates to be measured separately on each purge valve. Therefore, ISTS 3.6.3 ACTION F (ITS ACTION G) has been identified as the appropriate ACTION for these purge valves and the bracketed value in ISTS 3.6.3 ACTION E has been deleted. Additionally, ISTS 3.6.3 ACTION E.1 Bases contains a Reviewer's Note which advises the NRC reviewer on when to apply the ACTION E option and when to apply the ACTION F option. This Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal. Furthermore, this is current licensing bases for SQN.

8. ISTS 3.6.3 Bases has been modified to include a discussion of the new ACTIONS Note 5. ITS 3.6.3 ACTION Note 5 prohibits more than one pair of containment purge lines (one set of supply valves and one set of exhaust valves) to be opened.

9. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.3 BASES, CONTAINMENT ISOLATION VALVES

10. ACTIONS A and B have been combined into one ACTION, as provided in the ISTS 3.6.3 Bases Reviewer's Note. Subsequent ACTIONS (ISTS 3.6.3 ACTIONS C and D) have been renumbered.

11. ISTS 3.6.3 ACTION F (ITS ACTION G) states, in part, "The normal Frequency for SR 3.6.3.7, 184 days, is based on an NRC initiative, Generic Issue B-20 (Ref. 4). Since more reliance is placed on a single valve while in this Condition, it is prudent to perform the SR more often. Therefore, a Frequency of once per 92 days was chosen and has been shown to be acceptable based on operating experience." This statement is not true for SQN. The current Frequency for verifying the isolation time of each automatic power operated containment isolation valve is within limits is at least once per 3 months (for ITS this frequency is 92 days). Therefore, the ISTS 3.6.3 ACTION F statement has been modified to reflect the current licensing bases.

12. ISTS SR 3.6.3.2, SR 3.6.3.3, SR 3.6.3.7, SR 3.6.3.8, and SR 3.6.3.10 Bases (ITS SR 3.6.3.1, SR 3.6.3.2, SR 3.6.3.5, SR 3.6.3.6, and SR 3.6.3.7, respectively) provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency description which is being removed will be included in the Surveillance Frequency Control Program.

13. Changes are made to include details moved from the Current Technical Specifications to the Bases.

14. Changes are made to be consistent with statements in the LCO Section of the 3.6.1 Bases.

15. Table B 3.6.3-1, Containment Isolation Valve Completion Times, has been added to provide the specified Completion Time and Category for each containment isolation valve.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.3, CONTAINMENT ISOLATION VALVES

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 4

ITS 3.6.4, CONTAINMENT PRESSURE

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

CONTAINMENT SYSTEMS

~~INTERNAL~~ CONTAINMENT PRESSURE A02

LIMITING CONDITION FOR OPERATION

LCO 3.6.4 3.6.1.4 ~~Primary~~ containment ~~internal~~ pressure shall be maintained between -0.1 and 0.3 psig ~~relative to the annulus pressure~~. A02 LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A ACTION B With the containment internal pressure outside of the limits above, restore the internal pressure to within the limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1 4.6.1.4 The primary containment internal pressure shall be determined to within the limits ~~at least once per 12 hours~~ In accordance with the Surveillance Frequency Control Program. LA02

A01

ITS

ITS 3.6.4

CONTAINMENT SYSTEMS

CONTAINMENT

~~INTERNAL~~ PRESSURE

A02

LIMITING CONDITION FOR OPERATION

A02

LCO 3.6.4 3.6.1.4 ~~Primary~~ containment ~~internal~~ pressure shall be maintained between -0.1 and 0.3 psig ~~relative to the annulus pressure~~.

LA01

Applicability APPLICABILITY: MODES 1, 2. 3 and 4.

ACTION:

ACTION A

ACTION B

With the containment internal pressure outside of the above limits, restore the internal pressure to within the limits within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.4.1 4.6.1.4 The primary containment internal pressure shall be determined to within the specified limits ~~at least once per 12 hours~~.

In accordance with the Surveillance Frequency Control Program

LA02

DISCUSSION OF CHANGES
ITS 3.6.4, CONTAINMENT PRESSURE

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.1.4 states, in part, "Primary containment internal pressure shall be maintained between -0.1 and 0.3 psig…" ITS 3.6.4 states "Containment pressure shall be ≥ -0.1 and ≤ +0.3 psig." Additionally, the title for CTS 3.6.1.4 is "Internal Pressure." The title for ITS 3.6.4 is "Containment Pressure." This changes the CTS by changing the title and changing the LCO statement.

This change is a wording preference that does not change the requirements for Containment Pressure. This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.1.4 states that the Primary containment internal pressure shall be maintained between -0.1 and 0.3 psig relative to the annulus pressure. ITS LCO 3.6.4 includes a similar requirement, but does not specify that it is relative to the annulus pressure. This changes the CTS by moving the detail that the containment pressure limits are relative to the annulus pressure to the Bases.

The removal of this detail, which is related to system design, from the CTS is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS LCO 3.6.4 still provides a requirement to maintain containment pressure within limits. Also, this change is acceptable because these types of details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the CTS.

LA02 *(Type 5 – Removal of SR Requirement to the Surveillance Frequency Control Program)* CTS 4.6.1.4 requires the primary containment internal pressure to be determined to be within limits at least once per 12 hours. ITS SR 3.6.4.1 requires a similar Surveillance, but specifies the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.4~~A~~ Containment Pressure ~~(Atmospheric, Dual, and Ice Condenser)~~ ①

3.6.1.4 LCO 3.6.4~~A~~ Containment pressure shall be ≥ ~~[~~-0.1~~3]~~ psig and ≤ ~~[~~+0.3~~1.5]~~ psig. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.6.1.4	SR 3.6.4~~A~~.1 Verify containment pressure is within limits.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

① ④

④

3.6 CONTAINMENT SYSTEMS

3.6.4~~A~~ Containment Pressure ~~(Atmospheric, Dual, and Ice Condenser)~~ ①

3.6.1.4 LCO 3.6.4~~A~~ Containment pressure shall be ≥ ~~[~~-0.~~3]~~ 1 psig and ≤ ~~[~~+~~1.5]~~ 0.3 psig. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. Containment pressure not within limits.	A.1 Restore containment pressure to within limits.	1 hour
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
		AND	
		B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.1.4	SR 3.6.4~~A~~.1 Verify containment pressure is within limits.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.4, CONTAINMENT PRESSURE

1. The type of Containment (Atmospheric Dual, and Ice Condenser) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Pressure Specification is used in the Sequoyah Nuclear (SQN) Plant ITS.) This information is provided in NUREG-1431, Rev. 4.0, to assist in indentifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Subatmospheric Containment Pressure Bases (ISTS 3.6.4B) is not used and is not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.6.4A.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.4A Containment Pressure ~~(Atmospheric, Dual, and Ice Condenser)~~ ①

BASES

BACKGROUND

The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB). These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the ~~outside atmosphere~~ annulus pressure in the event of inadvertent actuation of the Containment Spray System. ②

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the input conditions used in the containment functional analyses ~~and the containment structure external pressure analysis~~. Should operation occur outside these limits coincident with a Design Basis Accident (DBA), post accident containment pressures could exceed calculated values. ②

APPLICABLE SAFETY ANALYSES

Containment internal pressure is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure. The limiting DBAs considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure transients. The worst case LOCA generates larger mass and energy release than the worst case SLB. Thus, the LOCA event bounds the SLB event from the containment peak pressure standpoint (Ref. 1).

The initial pressure condition used in the containment analysis was ~~[17.7] psia ([3.0]~~ 0.3 psig~~)~~. This resulted in a maximum peak pressure of 7.18 psig in the upper containment from a LOCA ~~of [53.9] psig~~. ③ The containment analysis (Ref. 1) shows that the maximum peak calculated containment pressure, P_a, results from the limiting LOCA. The maximum containment pressure resulting from the worst case LOCA, ~~[44.1]~~ 11.33 psig, does not exceed the containment design pressure, ~~[55]~~ 12 psig. ③

The containment was also designed for an external pressure load equivalent to ~~[-2.5]~~ 0.5 psig. ③ The inadvertent actuation of the Containment Spray System and Air Return System was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was ~~[-0.3] psig~~ 0.1 psi less than annulus pressure. This resulted in a minimum pressure inside containment of ~~[-2.0] psig~~ 0.49 psi less than annulus pressure, which is less than the design load. ③

BASES

APPLICABLE SAFETY ANALYSES (continued)

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. Therefore, for the reflood phase, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the containment pressure response in accordance with 10 CFR 50, Appendix K (Ref. 2).

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

Maintaining containment pressure, relative to the annulus pressure, at less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak containment accident pressure will remain below the containment design pressure. Maintaining containment pressure, relative to the annulus pressure, at greater than or equal to the LCO lower pressure limit ensures that the containment will not exceed the design negative differential pressure following the inadvertent actuation of the Containment Spray System. ② ②

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within limits is essential to ensure initial conditions assumed in the accident analyses are maintained, the LCO is applicable in MODES 1, 2, 3 and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment pressure within the limits of the LCO is not required in MODE 5 or 6.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, it must be restored to within these limits within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

BASES

ACTIONS (continued)

B.1 and B.2

If containment pressure cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.4~~A~~.1 ①

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis. ~~[The 12 hour Frequency of this SR was developed based on operating experience related to trending of containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment pressure condition.~~ ④

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ⑤
~~--]~~ ④

REFERENCES

1. U FSAR, Section ~~[~~6.2~~]~~. ② ③

2. 10 CFR 50, Appendix K.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.4~~A~~ Containment Pressure ~~(Atmospheric, Dual, and Ice Condenser)~~ ①

BASES

BACKGROUND

The containment pressure is limited during normal operation to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB). These limits also prevent the containment pressure from exceeding the containment design negative pressure differential with respect to the ~~outside~~ annulus pressure ~~atmosphere~~ in the event of inadvertent actuation of the Containment Spray System. ②

Containment pressure is a process variable that is monitored and controlled. The containment pressure limits are derived from the input conditions used in the containment functional analyses ~~and the containment structure external pressure analysis~~. Should operation occur outside these limits coincident with a Design Basis Accident (DBA), post accident containment pressures could exceed calculated values. ②

APPLICABLE SAFETY ANALYSES

Containment internal pressure is an initial condition used in the DBA analyses to establish the maximum peak containment internal pressure. The limiting DBAs considered, relative to containment pressure, are the LOCA and SLB, which are analyzed using computer pressure transients. The worst case LOCA generates larger mass and energy release than the worst case SLB. Thus, the LOCA event bounds the SLB event from the containment peak pressure standpoint (Ref. 1).

The initial pressure condition used in the containment analysis was ~~[17.7] psia ([3~~ 0.3 ~~.0]~~ psig~~)~~. This resulted in a maximum peak pressure of 7.18 psig in the upper containment from a LOCA ~~of [53.9] psig~~. The containment analysis (Ref. 1) shows that the maximum peak calculated containment pressure, P_a, results from the limiting LOCA. The maximum containment pressure resulting from the worst case LOCA, ~~[44.1]~~ 11.33 psig, does not exceed the containment design pressure, ~~[55]~~ 12 psig. ③ ③

The containment was also designed for an external pressure load equivalent to ~~[-2.5]~~ 0.5 psig. The inadvertent actuation of the Containment Spray System and Air Return System was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was ~~[-0.3] psig~~ 0.1 psi less than annulus pressure. This resulted in a minimum pressure inside containment of ~~[-2.0] psig~~ 0.49 psi less than annulus pressure, which is less than the design load. ③ ③

BASES

APPLICABLE SAFETY ANALYSES (continued)

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. Therefore, for the reflood phase, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the containment pressure response in accordance with 10 CFR 50, Appendix K (Ref. 2).

Containment pressure satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

, relative to the annulus pressure,

, relative to the annulus pressure,

Maintaining containment pressure at less than or equal to the LCO upper pressure limit ensures that, in the event of a DBA, the resultant peak containment accident pressure will remain below the containment design pressure. Maintaining containment pressure at greater than or equal to the LCO lower pressure limit ensures that the containment will not exceed the design negative differential pressure following the inadvertent actuation of the Containment Spray System. ② ②

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. Since maintaining containment pressure within limits is essential to ensure initial conditions assumed in the accident analyses are maintained, the LCO is applicable in MODES 1, 2, 3 and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment pressure within the limits of the LCO is not required in MODE 5 or 6.

ACTIONS

A.1

When containment pressure is not within the limits of the LCO, it must be restored to within these limits within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

BASES

ACTIONS (continued)

B.1 and B.2

If containment pressure cannot be restored to within limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.4~~A~~.1 ①

Verifying that containment pressure is within limits ensures that unit operation remains within the limits assumed in the containment analysis. ~~[The 12 hour Frequency of this SR was developed based on operating experience related to trending of containment pressure variations during the applicable MODES. Furthermore, the 12 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment pressure condition.~~ ④

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ⑤
~~--]~~ ④

REFERENCES

1. UFSAR, Section ~~[~~6.2~~]~~. ② ③

2. 10 CFR 50, Appendix K.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.4 BASES, CONTAINMENT PRESSURE

1. The type of Containment (Atmospheric Dual, and Ice Condenser) and the Specification designator "A" are deleted since they are unnecessary (only one Containment Pressure Specification is used in the Sequoyah Nuclear (SQN) Plant ITS.) This information is provided in NUREG-1431, Rev. 4.0, to assist in indentifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Subatmospheric Containment Pressure Bases (ISTS B 3.6.4B) is not used and is not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.6.4A.1 Bases provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency description which is being removed will be included in the Surveillance Frequency Control Program.

5. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.4, CONTAINMENT PRESSURE

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 5

ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

ITS

ITS 3.6.5

CONTAINMENT SYSTEMS

AIR TEMPERATURE

LIMITING CONDITION FOR OPERATION

LCO 3.6.5 3.6.1.5 Primary containment average air temperature shall be maintained:

LCO 3.6.5.a a. between 85°F* and 105°F in the containment upper compartment, and

LCO 3.6.5.b b. between 100°F* and 125°F in the containment lower compartment.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A

ACTION B

With the containment average air temperature not conforming to the above limits, restore the air temperature to within the limits within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1 4.6.1.5.1 The primary containment upper compartment average air temperature shall be ~~the weighted average** of all ambient air temperature monitoring stations located in the upper compartment. As a minimum, temperature readings will be obtained at least once per 24 hours from the following locations:~~

within limits

In accordance with the Surveillance Frequency Control Program

LA01

LA02

~~Location~~

~~a. Elev. 743 ft.~~

~~b. Elev. 786 ft.~~

~~c. Elev. 786 or 845 ft.~~

SR 3.6.5.2 4.6.1.5.2 The primary containment lower compartment average air temperature shall be ~~the weighted average** of all ambient air temperature monitoring stations located in the lower compartment. As a minimum, temperature readings will be obtained at least once per 24 hours from the following locations:~~

within limits

In accordance with the Surveillance Frequency Control Program

LA01

LA02

~~Location~~

~~a. Elev. 722 ft.~~

~~b. Elev. 700 ft.~~

~~c. Elev. 685 or 703 ft.~~

LCO Note * Lower limit may be reduced to 60°F in MODES 2, 3 and 4.

~~** The weighted average is the sum of each temperature multiplied by its respective containment volume fraction. In the event of inoperable temperature sensor(s), the weighted average shall be taken as the reduced total divided by one minus the volume fraction represented by the sensor(s) out of service.~~

LA02

A01

ITS

ITS 3.6.5

CONTAINMENT SYSTEMS

AIR TEMPERATURE

LIMITING CONDITION FOR OPERATION

LCO 3.6.5 3.6.1.5 Primary containment average air temperature shall be maintained:

LCO 3.6.5.a a. between 85°F* and 105°F in the containment upper compartment, and

LCO 3.6.5.b b. between 100°F* and 125°F in the containment lower compartment.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A With the containment average air temperature not conforming to the above limits, restore the air temperature to within the limits within 8 hours

ACTION B or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.5.1 4.6.1.5.1 The primary containment upper compartment average air temperature shall be within limits ~~the weighted average** of all ambient air temperature monitoring stations located in the upper compartment. As a minimum, temperature readings will be obtained at least once per 24 hours from the following locations:~~ In accordance with the Surveillance Frequency Control Program

LA01 LA02

~~Location~~

~~a. Elev. 743 ft.~~
~~b. Elev. 786 ft.~~
~~c. Elev. 786 or 845 ft~~.

SR 3.6.5.2 4.6.1.5.2 The primary containment lower compartment average air temperature shall be within limits ~~the weighted average** of all ambient air temperature monitoring stations located in the lower compartment. As a minimum, temperature readings will be obtained at least once per 24 hours from the following locations:~~ In accordance with the Surveillance Frequency Control Program

LA01 LA02

~~Location~~

~~a. Elev. 722 ft.~~
~~b. Elev. 700 ft.~~
~~c. Elev. 685 or 703 ft~~.

LCO Note * Lower limit may be reduced to 60°F in MODES 2, 3 and 4.

~~** The weighted average is the sum of each temperature multiplied by its respective containment volume fraction. In the event of inoperable temperature sensor(s), the weighted average shall be taken as the reduced total divided by one minus the volume fraction represented by the sensor(s) out of service.~~

LA02

DISCUSSION OF CHANGES
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.1.5.1 requires that the primary containment upper compartment average air temperature readings to be obtained at least once per 24 hours. CTS 4.6.1.5.2 requires that the primary containment lower compartment average air temperature readings to be obtained at least once per 24 hours. ITS SR 3.6.5.1 and SR 3.6.5.2 require similar Surveillances, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.6.1.5.1 requires the primary containment upper compartment average air temperature to be the weighted average of all ambient air temperature monitoring stations located in the upper compartment. Furthermore, CTS 4.6.1.5.1 requires, as a minimum, that temperature readings be obtained from Elevation 743 ft., Elevation 786 ft., and Elevation 786 or 845 ft. CTS 4.6.1.5.2 requires that the primary containment lower compartment average air temperature to be the weighted average of all ambient air temperature monitoring stations located in the lower compartment. Additionally, CTS 4.6.1.5.2 requires, as a minimum, temperature readings be obtained from Elevation 722 ft., Elevation 700 ft., and Elevation 685 or 703 ft. Furthermore, CTS 4.6.1.5.1 and CTS 4.6.1.5.2 state that the weighted average is the sum of each temperature multiplied by its respective containment volume fraction and in the event of inoperable temperature sensor(s), the weighted average shall be taken as the reduced total divided by one minus the volume fraction represented by the sensor(s) out of service. ITS SR 3.6.5.1 requires verification that the containment upper compartment average air temperature is within the limits. ITS SR 3.6.5.2 requires verification that the containment lower compartment average air temperature is within the limits. This changes the CTS by moving the description of how compliance with the Technical Specification LCO is determined to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify containment average air temperatures are within limits. Also, this change is acceptable because these types of procedural details will be adequately controlled in the Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.5~~B~~ Containment Air Temperature ~~(Ice Condenser)~~ ①

3.6.1.5 LCO 3.6.5~~B~~ Containment average air temperature shall be: ①

3.6.1.5.a a. ≥ ~~[~~85~~]~~°F and ≤ 105 ~~[110]~~°F for the containment upper compartment and ③

3.6.1.5.b b. ≥ ~~[~~100~~]~~°F and ≤ 125 ~~[120]~~°F for the containment lower compartment. ③

Footnote * --NOTE--
The minimum containment average air temperature in MODES 2, 3, and 4 may be reduced to ~~[~~60~~]~~°F. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. Containment average air temperature not within limits.	A.1 Restore containment average air temperature to within limits.	8 hours
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
		<u>AND</u>	
		B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
4.6.1.5.1	SR 3.6.5~~B~~.1	Verify containment upper compartment average air temperature is within limits.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④
4.6.1.5.2	SR 3.6.5~~B~~.2	Verify containment lower compartment average air temperature is within limits.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④

3.6 CONTAINMENT SYSTEMS

3.6.5~~B~~ Containment Air Temperature ~~(Ice Condenser)~~ ①

3.6.1.5 LCO 3.6.5~~B~~ Containment average air temperature shall be: ①

3.6.1.5.a a. ≥ [85]°F and ≤ ~~[110]~~ 105°F for the containment upper compartment and ③

3.6.1.5.b b. ≥ [100]°F and ≤ ~~[120]~~ 125°F for the containment lower compartment. ③

Footnote *

--NOTE--
The minimum containment average air temperature in MODES 2, 3, and 4 may be reduced to [60]°F. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. Containment average air temperature not within limits.	A.1 Restore containment average air temperature to within limits.	8 hours
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.6.1.5.1 SR 3.6.5~~B~~.1	Verify containment upper compartment average air temperature is within limits.	~~[24 hours~~ ① ④ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ④
4.6.1.5.2 SR 3.6.5~~B~~.2	Verify containment lower compartment average air temperature is within limits.	~~[24 hours~~ ① ④ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ④

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

1. The type of Containment (Ice Condenser) and the Specification designator "B" are deleted since they are unnecessary (only one Containment Specification is used in the Sequoyah Nuclear (SQN) Plant ITS). This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Atmospheric, Subatmospheric, and Dual Containment Specification (ISTS 3.6.5A and ISTS 3.6.5C) are not used and are not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.6.5B.1 and SR 3.6.5B.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.5~~B~~ Containment Air Temperature ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The containment structure serves to contain radioactive material that may be released from the reactor core following a Design Basis Accident (DBA). The containment average air temperature is limited, during normal operation, to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB).

The containment average air temperature limit is derived from the input conditions used in the containment functional analyses and the containment structure external pressure analyses. This LCO ensures that initial conditions assumed in the analysis of containment response to a DBA are not violated during unit operations. The total amount of energy to be removed from containment by the Containment Spray and Cooling systems during post accident conditions is dependent upon the energy released to the containment due to the event, as well as the initial containment temperature and pressure. The higher the initial temperature, the more energy that must be removed, resulting in a higher peak containment pressure and temperature. Exceeding containment design pressure may result in leakage greater than that assumed in the accident analysis. Operation with containment temperature in excess of the LCO limit violates an initial condition assumed in the accident analysis.

APPLICABLE SAFETY ANALYSES

Containment average air temperature is an initial condition used in the DBA analyses that establishes the containment environmental qualification operating envelope for both pressure and temperature. The limit for containment average air temperature ensures that operation is maintained within the assumptions used in the DBA analyses for containment (Ref. 1).

The limiting DBAs considered relative to containment OPERABILITY are the LOCA and SLB. The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed with regard to Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train each of Containment Spray System, Residual Heat Removal System, and Air Return System being rendered inoperable.

The limiting DBA for the maximum peak containment air temperature is an SLB. For the upper compartment, the initial containment average air temperature assumed in the design basis analyses (Ref. 1) is ~~[110]~~ 85°F. ③

BASES

APPLICABLE SAFETY ANALYSES (continued)

For the lower compartment, the initial average containment air temperature assumed in the design basis analyses is ~~[~~120~~]~~°F. INSERT 1 ② This resulted in a maximum containment air temperature of ~~[326]~~ 325.6°F. The design temperature is ~~[250]~~ 327°F. ③

The temperature upper limits are used to establish the environmental qualification operating envelope for both containment compartments. The maximum peak containment air temperature for both containment compartments was calculated to not exceed the containment design temperature ~~for only a few seconds during the transient~~. ② The basis of the containment design temperature, however, is to ensure the performance of safety related equipment inside containment (Ref. ~~2~~ 3). ② ~~Thermal analyses showed that the time interval during which the containment air temperature exceeded the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature.~~ ② Therefore, it is concluded that the calculated transient containment air temperatures are acceptable for the DBA SLB.

The temperature upper limits are also used in the depressurization analyses to ensure that the minimum pressure limit is maintained following an inadvertent actuation of the Containment Spray System for both containment compartments.

The containment pressure transient is sensitive to the initial air mass in containment and, therefore, to the initial containment air temperature. The limiting DBA for establishing the maximum peak containment internal pressure is a LOCA. The temperature lower limits, ~~[~~85~~]~~°F for the upper compartment and ~~[~~100~~]~~°F for the lower compartment, are used in this analysis to ensure that, in the event of an accident, the maximum containment internal pressure will not be exceeded in either containment compartment. ③

Containment average air temperature satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

During a DBA, with an initial containment average air temperature within the LCO temperature limits, the resultant accident temperature profile assures that the containment structural temperature is maintained below its design temperature and that required safety related equipment will continue to perform its function. In MODES ~~3~~ 2, 3, and 4, containment air temperature may be as low as 60°F because the resultant calculated peak containment accident pressure would not exceed the design pressure due to a lesser amount of energy released from the pipe break in these MODES.

② **INSERT 1**

However, a sensitivity analysis performed on the steam line break containment response analysis (Ref. 2) indicates that an increase of 5 °F in the initial lower containment temperature to 125 °F would net a 0.1 °F increase in the calculated peak temperature in the lower containment.

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment average air temperature within the limit is not required in MODE 5 or 6.

ACTIONS

A.1

When containment average air temperature in the upper or lower compartment is not within the limit of the LCO, the average air temperature in the affected compartment must be restored to within limits within 8 hours. This Required Action is necessary to return operation to within the bounds of the containment analysis. The 8 hour Completion Time is acceptable considering the sensitivity of the analysis to variations in this parameter and provides sufficient time to correct minor problems.

B.1 and B.2

If the containment average air temperature cannot be restored to within its limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.5~~B~~.1 and SR 3.6.5~~B~~.2 ①

Verifying that containment average air temperature is within the LCO limits ensures that containment operation remains within the limits assumed for the containment analyses. In order to determine the containment average air temperature, ~~a weighted average is calculated using measurements taken at locations within the containment selected to provide a representative sample of the overall containment atmosphere.~~ ② ~~[The 24 hour Frequency of these SRs is considered acceptable based on observed slow rates of temperature increase within containment as a result of environmental heat sources (due to the large volume of containment). Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment temperature condition.~~

INSERT 2

~~OR~~ ④

② INSERT 2

the primary containment upper and lower compartment average air temperatures are the weighted average of the ambient air temperature monitoring stations located in the upper and lower compartment, respectively. The weighted average is the sum of each temperature multiplied by its respective containment volume fraction. In the event of inoperable temperature sensor(s), the weighted average shall be taken as the reduced total divided by one minus the volume fraction represented by the sensor(s) out of service. As a minimum, the temperature readings for the upper compartment average air temperature shall be obtained from Elevation 743 feet (ft), Elevation 786 ft, and either Elevation 786 or 845 ft. Additionally, as a minimum, the temperature readings for the lower compartment average air temperature shall be obtained from Elevation 722 ft, Elevation 700 ft, and either Elevation 685 or 703 ft.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑤

REFERENCES

U 1. FSAR, Section ~~[~~6.2~~]~~.

INSERT 3

3 ~~2~~. 10 CFR 50.49. ② ③

②

INSERT 3

2. LTR-CRA-11-201, Westinghouse Memo – Sequoyah Units 1 and 2 Steamline Break Containment Response Sensitivity Analysis Addressing an Increase in the Initial Temperature in the Lower Containment, August 5, 2011.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.5~~B~~ Containment Air Temperature ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The containment structure serves to contain radioactive material that may be released from the reactor core following a Design Basis Accident (DBA). The containment average air temperature is limited, during normal operation, to preserve the initial conditions assumed in the accident analyses for a loss of coolant accident (LOCA) or steam line break (SLB).

The containment average air temperature limit is derived from the input conditions used in the containment functional analyses and the containment structure external pressure analyses. This LCO ensures that initial conditions assumed in the analysis of containment response to a DBA are not violated during unit operations. The total amount of energy to be removed from containment by the Containment Spray and Cooling systems during post accident conditions is dependent upon the energy released to the containment due to the event, as well as the initial containment temperature and pressure. The higher the initial temperature, the more energy that must be removed, resulting in a higher peak containment pressure and temperature. Exceeding containment design pressure may result in leakage greater than that assumed in the accident analysis. Operation with containment temperature in excess of the LCO limit violates an initial condition assumed in the accident analysis.

APPLICABLE SAFETY ANALYSES

Containment average air temperature is an initial condition used in the DBA analyses that establishes the containment environmental qualification operating envelope for both pressure and temperature. The limit for containment average air temperature ensures that operation is maintained within the assumptions used in the DBA analyses for containment (Ref. 1).

The limiting DBAs considered relative to containment OPERABILITY are the LOCA and SLB. The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed with regard to Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train each of Containment Spray System, Residual Heat Removal System, and Air Return System being rendered inoperable.

The limiting DBA for the maximum peak containment air temperature is an SLB. For the upper compartment, the initial containment average air temperature assumed in the design basis analyses (Ref. 1) is ~~[110]~~ 85°F. ③

BASES

APPLICABLE SAFETY ANALYSES (continued)

For the lower compartment, the initial average containment air temperature assumed in the design basis analyses is ~~[~~120~~]~~°F. INSERT 1 This resulted in a maximum containment air temperature of ~~[326]~~ 325.6°F. The design temperature is ~~[250]~~ 327°F. ② ③

The temperature upper limits are used to establish the environmental qualification operating envelope for both containment compartments. The maximum peak containment air temperature for both containment compartments was calculated to not exceed the containment design temperature ~~for only a few seconds during the transient~~. The basis of the containment design temperature, however, is to ensure the performance of safety related equipment inside containment (Ref. ~~2~~ 3). ~~Thermal analyses showed that the time interval during which the containment air temperature exceeded the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature.~~ Therefore, it is concluded that the calculated transient containment air temperatures are acceptable for the DBA SLB. ② ② ②

The temperature upper limits are also used in the depressurization analyses to ensure that the minimum pressure limit is maintained following an inadvertent actuation of the Containment Spray System for both containment compartments.

The containment pressure transient is sensitive to the initial air mass in containment and, therefore, to the initial containment air temperature. The limiting DBA for establishing the maximum peak containment internal pressure is a LOCA. The temperature lower limits, ~~[~~85~~]~~°F for the upper compartment and ~~[~~100~~]~~°F for the lower compartment, are used in this analysis to ensure that, in the event of an accident, the maximum containment internal pressure will not be exceeded in either containment compartment. ③

Containment average air temperature satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

During a DBA, with an initial containment average air temperature within the LCO temperature limits, the resultant accident temperature profile assures that the containment structural temperature is maintained below its design temperature and that required safety related equipment will continue to perform its function. In MODES ~~3~~ 2, 3, and 4, containment air temperature may be as low as 60°F because the resultant calculated peak containment accident pressure would not exceed the design pressure due to a lesser amount of energy released from the pipe break in these MODES.

② **INSERT 1**

However, a sensitivity analysis performed on the steam line break containment response analysis (Ref. 2) indicates that an increase of 5 °F in the initial lower containment temperature to 125 °F would net a 0.1 °F increase in the calculated peak temperature in the lower containment.

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment. In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, maintaining containment average air temperature within the limit is not required in MODE 5 or 6.

ACTIONS

A.1

When containment average air temperature in the upper or lower compartment is not within the limit of the LCO, the average air temperature in the affected compartment must be restored to within limits within 8 hours. This Required Action is necessary to return operation to within the bounds of the containment analysis. The 8 hour Completion Time is acceptable considering the sensitivity of the analysis to variations in this parameter and provides sufficient time to correct minor problems.

B.1 and B.2

If the containment average air temperature cannot be restored to within its limits within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.5~~B~~.1 and SR 3.6.5~~B~~.2 ①

Verifying that containment average air temperature is within the LCO limits ensures that containment operation remains within the limits assumed for the containment analyses. In order to determine the containment average air temperature, ~~a weighted average is calculated using measurements taken at locations within the containment selected to provide a representative sample of the overall containment atmosphere.~~ INSERT 2 ② ~~[The 24 hour Frequency of these SRs is considered acceptable based on observed slow rates of temperature increase within containment as a result of environmental heat sources (due to the large volume of containment). Furthermore, the 24 hour Frequency is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to an abnormal containment temperature condition.~~

~~OR~~ ④

② **INSERT 2**

the primary containment upper and lower compartment average air temperatures are the weighted average of the ambient air temperature monitoring stations located in the upper and lower compartment, respectively. The weighted average is the sum of each temperature multiplied by its respective containment volume fraction. In the event of inoperable temperature sensor(s), the weighted average shall be taken as the reduced total divided by one minus the volume fraction represented by the sensor(s) out of service. As a minimum, the temperature readings for the upper compartment average air temperature shall be obtained from Elevation 743 feet (ft), Elevation 786 ft, and either Elevation 786 or 845 ft. Additionally, as a minimum, the temperature readings for the lower compartment average air temperature shall be obtained from Elevation 722 ft, Elevation 700 ft, and either Elevation 685 or 703 ft.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑤

REFERENCES

U 1. FSAR, Section ~~[~~6.2~~]~~.

INSERT 3

3 ~~2~~. 10 CFR 50.49.

② ③

② **INSERT 3**

2. LTR-CRA-11-201, Westinghouse Memo – Sequoyah Units 1 and 2 Steamline Break Containment Response Sensitivity Analysis Addressing an Increase in the Initial Temperature in the Lower Containment, August 5, 2011.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.5 BASES, CONTAINMENT AIR TEMPERATURE

1. The type of Containment (Ice Condenser) and the Specification designator "B" are deleted since they are unnecessary (only one Containment Specification is used in the Sequoyah Nuclear (SQN) Plant ITS). This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Atmospheric, Subatmospheric, and Dual Containment Specification (ISTS 3.6.5A and ISTS 3.6.5C) are not used and are not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.6.5B.1 and SR 3.6.5B.2 Bases provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency description which is being removed will be included in the Surveillance Frequency Control Program.

5. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.5, CONTAINMENT AIR TEMPERATURE

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 6

ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SUBSYSTEMS

LIMITING CONDITION FOR OPERATION

LCO 3.6.6

3.6.2.1 Two ~~independent~~ containment spray subsystems shall be OPERABLE ~~with each subsystem comprised of:~~

~~a. A Containment Spray train with:~~

~~1. One OPERABLE Containment Spray pump.~~

~~2. One OPERABLE Containment Spray heat exchanger.~~

~~3. An OPERABLE Containment Spray pump flow path capable of taking suction from the refueling water storage tank and transferring suction to the containment sump, and~~

~~b. A RHR Spray train with:~~

~~1. One OPERABLE residual heat removal pump,~~

~~2. One OPERABLE residual heat removal heat exchanger, and~~

~~3. An OPERABLE residual heat removal pump flow path capable of taking suction from the containment sump and supplying flow to the spray header.~~

LA01

Applicability

APPLICABILITY: MODES 1, 2, 3 and 4.*

ACTION:

ACTION A

ACTION B

With one containment spray subsystem inoperable, restore the inoperable sub-system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; ~~restore the inoperable subsystem to OPERABLE status~~ within the next 48 hours or be in COLD SHUTDOWN within the next 30 hours.

A02

SURVEILLANCE REQUIREMENTS

4.6.2.1.1 Each Containment Spray train shall be demonstrated OPERABLE:

SR 3.6.6.1

a. In accordance with the Surveillance Frequency Control Program ~~At least once per 31 days by~~ verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

LA02

Applicability Note

* OPERABILITY of RHR Spray trains is not required in MODE 4.

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.6.2 b. By verifying that each pump's developed head at the flow test point is greater than or equal to the required developed head when tested ~~pursuant to Specification 4.0.5~~ in accordance with the Inservice Testing Program. A04

SR 3.6.6.3, SR 3.6.6.4 c. ~~At least once per 18 months~~ In accordance with the Surveillance Frequency Control Program by: LA02

SR 3.6.6.3 1. Verifying that each automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to its correct position on an actual or simulated actuation signal.

SR 3.6.6.4 2. Verifying that each spray pump starts automatically on an actual or simulated actuation signal.

SR 3.6.6.5 d. ~~At least once per 10 years~~ In accordance with the Surveillance Frequency Control Program verify each spray nozzle is unobstructed. LA02

4.6.2.1.2 Each RHR spray train shall be demonstrated OPERABLE:

SR 3.6.6.6, SR 3.6.6.7 a. Per surveillance requirements 4.5.2.b.2 and 4.5.2.f~~.3~~; A03

SR 3.6.6.8 b. ~~At least once per 10 years~~ In accordance with the Surveillance Frequency Control Program verify each spray nozzle is unobstructed. LA02

EMERGENCY CORE COOLING SYSTEMS (ECCS)

SURVEILLANCE REQUIREMENTS (Continued)

Valve Number	Valve Function	Valve Position
a. FCV-63-1	RHR Suction from RWST	open
b. FCV-63-22	SIS Discharge to Common Piping	open

See ITS 3.5.2

SR 3.6.6.6 b. ~~At least once per 31 days~~ In accordance with the Surveillance Frequency Control Program by:

LA02

1. Verify ECCS piping is full of water by venting the ECCS pump casings and accessible piping high points, and

See ITS 3.5.2

SR 3.6.6.6 2. Verify each ECCS manual, power operated and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.

c. Deleted

d. At least once per 18 months perform a visual inspection of the containment sump and verify that the suction inlets are not restricted by debris and that the sump components (strainers, screens, etc.) show no evidence of structural distress or corrosion.

e. At least once per 18 months, by:

1. Verifying that each automatic valve in the flow path that is not locked, sealed or otherwise secured in position, actuates to its correct position on an actual or simulated actuation signal.

2. Verifying that each ECCS pump starts automatically on an actual or simulated actuation signal.

See ITS 3.5.2

SR 3.6.6.7 f. By verifying that each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head when tested in accordance with the Inservice Testing Program of Specification 4.0.5.

g. At least once per 18 months, verify the correct position of each mechanical stop for the following ECCS throttle valves:

Charging Pump Injection Throttle Valves	Safety Injection Cold Leg Throttle Valves	Safety Injection Hot Leg Throttle Valves
Valve Number	Valve Number	Valve Number
1. 63 - 582	1. 63 - 550	1. 63-542
2. 63 - 583	2. 63 - 552	2. 63-544
3. 63 - 584	3. 63 - 554	3. 63-546
4. 63 - 585	4. 63 - 556	4. 63-548

See ITS 3.5.2

ITS A01 ITS 3.6.6

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SUBSYSTEMS

LIMITING CONDITION FOR OPERATION

LCO 3.6.6 3.6.2.1 Two ~~independent~~ containment spray subsystems shall be OPERABLE ~~with each subsystem comprised of:~~

~~a. A Containment Spray train with:~~

~~1. One OPERABLE Containment Spray pump.~~

~~2. One OPERABLE Containment Spray heat exchanger.~~

~~3. An OPERABLE Containment Spray Pump flow path capable of taking suction from the refueling water storage tank and transferring suction to the containment sump, and~~

~~b. A RHR Spray train with:~~

~~1. One OPERABLE residual heat removal pump.~~

~~2. One OPERABLE residual heat removal heat exchanger, and~~

~~3. An OPERABLE residual heat removal pump flow path capable of taking suction from the containment sump and supplying flow to the spray header.~~

LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.*

ACTION:

ACTION A

ACTION B

With one containment spray subsystem inoperable, restore the inoperable sub-system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours, ~~restore the inoperable subsystem to OPERABLE status~~ within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

A02

SURVEILLANCE REQUIREMENTS

4.6.2.1.1 Each Containment Spray train shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program

SR 3.6.6.1 a. ~~At least once per 31 days~~ by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked sealed, or otherwise secured in position, is in its correct position.

LA02

Applicability Note

* OPERABILITY of RHR Spray trains is not required in MODE 4.

A01

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.6.6.2 b. By verifying that each pump's developed head at the flow test point is greater than or equal to the required developed head when tested ~~pursuant to Specification 4.0.5~~ in accordance with the Inservice Testing Program. A04

SR 3.6.6.3, SR 3.6.6.4 c. ~~At least once per 18 months~~ In accordance with the Surveillance Frequency Control Program by: LA02

SR 3.6.6.3 1. Verifying that each automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to its correct position on an actual or simulated actuation signal.

SR 3.6.6.4 2. Verifying that each spray pump starts automatically on an actual or simulated actuation signal.

SR 3.6.6.5 d. ~~At least once per 10 years~~ In accordance with the Surveillance Frequency Control Program verify each spray nozzle is unobstructed. LA02

4.6.2.1.2 Each RHR spray train shall be demonstrated OPERABLE:

SR 3.6.6.6, SR 3.6.6.7 a. Per surveillance requirements 4.5.2.b.2 and 4.5.2.f~~.3~~; A03

SR 3.6.6.8 b. ~~At least once per 10 years~~ In accordance with the Surveillance Frequency Control Program verify each spray nozzle is unobstructed. LA02

A01

EMERGENCY CORE COOLING SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

LA02

SR 3.6.6.6 b. ~~At least once per 31 days~~ In accordance with the Surveillance Frequency Control Program by:

1. Verify ECCS piping is full of water by venting the ECCS pump casings and accessible piping high points, and

See ITS 3.5.2

SR 3.6.6.6 2. Verify each ECCS manual, power operated and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.

c. Deleted

d. At least once per 18 months perform a visual inspection of the containment sump and verify that the suction inlets are not restricted by debris and that the sump components (strainers, screens, etc.) show no evidence of structural distress or corrosion.

e. At least once per 18 months, by:

1. Verifying that each automatic valve in the flow path that is not locked, sealed or otherwise secured in position, actuates to its correct position on an actual or simulated actuation signal.

2. Verifying that each ECCS pump starts automatically on an actual or simulated actuation signal.

See ITS 3.5.2

SR 3.6.6.7 f. By verifying that each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head when tested in accordance with the Inservice Testing Program of Specification 4.0.5.

g. At least once per 18 months, verify the correct position of each mechanical stop for the following ECCS throttle valves:

Charging Pump Injection Throttle Valves	Safety Injection Cold Leg Throttle Valves	Safety Injection Hot Leg Throttle Valves
Valve Number	Valve Number	Valve Number
1. 63 - 582	1. 63 - 550	1. 63-542
2. 63 - 583	2. 63 - 552	2. 63-544
3. 63 - 584	3. 63 - 554	3. 63-546
4. 63 - 585	4. 63 - 556	4. 63-548

See ITS 3.5.2

DISCUSSION OF CHANGES
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.2.1 ACTION states with one containment spray subsystem inoperable, restore the inoperable subsystem to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable subsystem to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the next 30 hours. ITS 3.6.6 ACTION B requires the unit to be in MODE 3 within 6 hours and MODE 5 within 84 hours. ITS 3.6.6 does not contain the second phrase stating that the inoperable subsystem must be restored to OPERABLE status after the unit is in MODE 3. This changes the CTS by combining the time allowed for the restoration and the time to be in MODE 5 together into one Required Action to be in MODE 5 in 84 hours.

This change is acceptable because the technical requirements have not changed. Restoration to compliance with the LCO is always an available Required Action and it is the convention in the ITS to not state such "restore" options explicitly unless it is the only action or is required for clarity. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 4.6.2.1.2.a requires, in part, that each RHR spray train to be demonstrated OPERABLE per CTS surveillance requirement 4.5.2.f.3. ITS SR 3.6.6.6 and SR 3.6.6.7 were based on CTS 4.5.2.f. This changes the CTS by using CTS 4.5.2.f instead of CTS 4.5.2.f.3.

CTS 4.5.2.f.3 was revised in Technical Specification Amendment 326 for Unit 1 and 319 for Unit 2. This change was approved by the NRC on January 28, 2010 (ADAMS Accession No. ML093310403). Therefore, this change is being made to address the fact that CTS 4.6.2.1.2 was not changed. This change is administrative since this change does not result in a technical change.

A04 CTS 4.6.2.1.1.b requires verification that the developed head of each containment spray train is greater than or equal to the required developed head when tested pursuant to Specification 4.0.5. ITS SR 3.6.6.2 requires verification that the developed head of each containment spray train pump is greater than or equal to the required developed head with a Frequency of in accordance with the Inservice Testing Program. This changes the CTS by stating containment spray train pump testing is performed at a Frequency that is in accordance with the Inservice Testing Program.

The purpose of CTS 4.6.2.1.1.b is to verify the developed head of the containment spray train pumps is within limit pursuant to Specification 4.0.5, which provides the requirements for the Inservice Testing Program. This change is acceptable, because the Frequency regarding the containment spray train pump testing remains the same. The inservice testing requirements of CTS 4.0.5 have been moved to the Inservice Testing Program contained in Section 5.5 of the ITS. This change is designated as administrative, because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.2.1 states that two independent containment spray subsystems shall be OPERABLE with each subsystem compromised of a Containment Spray train with one OPERABLE Containment Spray pump, one OPERABLE Containment Spray heat exchanger, and an OPERABLE Containment Spray Pump flow path capable of taking suction from the refueling water storage tank and transferring suction to the containment sump. Furthermore, it requires a RHR Spray train with one OPERABLE residual heat removal pump, one OPERABLE residual heat removal heat exchanger, and an OPERABLE residual heat removal pump flow path capable of taking suction from the containment sump and supplying flow to the spray header. ITS LCO 3.6.6 requires two containment spray subsystems to be OPERABLE. This changes the CTS by moving the detail that the train must be "independent," the details of what composes an OPERABLE containment spray subsystem to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements that two containment spray subsystem shall be OPERABLE. Also this changes is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.2.1.1.a requires verification at least once per 31 days that each Containment Spray train manual, power operated, or automatic valve in the flow path that is not locked sealed or otherwise secured in position, is in its correct position. CTS 4.6.2.1.1.c.1 requires verification at least once per 18 months that each Containment Spray train automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to its correct position on an actual or simulated actuation signal. CTS 4.6.2.1.1.c.2 requires verification at least once per 18 months that each Containment Spray train pump starts automatically on an actual or simulated actuation signal. CTS 4.6.2.1.1.d requires verification at least once per 10 years that each Containment Spray train spray nozzle is unobstructed. CTS 4.6.2.1.2.b requires verification at least once per 10 years that each RHR spray train spray nozzle is unobstructed. CTS 4.5.2.b.2 requires verification at least once per 31 days that each ECCS (RHR spray is included) manual, power operated and automatic valve in the flow path that is not locked sealed, or otherwise secured in position, is in the correct position. ITS SR 3.6.6.1, SR 3.6.6.3, SR 3.6.6.4, SR 3.6.6.5, SR 3.6.6.6, and SR 3.6.6.8 require similar Surveillances but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.6~~C~~ Containment Spray System ~~(Ice Condenser)~~ ①

3.6.2.1 LCO 3.6.6~~C~~ Two containment spray ~~trains~~ subsystems shall be OPERABLE. ① ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4. INSERT 1 ④

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION	A. One containment spray ~~train~~ subsystem inoperable.	A.1 Restore containment spray ~~train~~ subsystem to OPERABLE status.	72 hours	③
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 84 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.2.1.1.a	SR 3.6.6~~C~~.1 Verify each containment spray train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ⑤ ⑤

④ **INSERT 1**

Applicability Footnote *

--NOTE---
RHR spray trains are not required to be OPERABLE in MODE 4.

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.6.2.1.1.b	SR 3.6.6~~C~~.2	Verify each containment spray train pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program	① ②
4.6.2.1.1.c, 4.6.2.1.1.c.1	SR 3.6.6~~C~~.3	Verify each automatic containment spray train valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ⑤ ⑤
4.6.2.1.1.c, 4.6.2.1.1.c.2	SR 3.6.6~~C~~.4	Verify each containment spray train pump starts automatically on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ⑤ ⑤
4.6.2.1.1.d	SR 3.6.6~~C~~.5	Verify each containment spray train spray nozzle is unobstructed.	~~[At first refueling]~~ ~~AND~~ ~~[10 years~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ⑤ ⑤

INSERT 2 ⑥

⑥ INSERT 2

4.6.2.1.2.a, 4.5.2.b.2	SR 3.6.6.6	Verify each RHR spray train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
4.6.2.1.2.a 4.5.2.f	SR 3.6.6.7	Verify each RHR spray train pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
4.6.2.1.2.b	SR 3.6.6.8	Verify each RHR spray train spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program

3.6 CONTAINMENT SYSTEMS

3.6.6~~C~~ Containment Spray System ~~(Ice Condenser)~~ ①

3.6.2.1 LCO 3.6.6~~C~~ Two containment spray ~~trains~~ subsystems shall be OPERABLE. ① ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

INSERT 1 ④

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
ACTION	A. One containment spray ~~train~~ subsystem inoperable.	A.1	Restore containment spray ~~train~~ subsystem to OPERABLE status.	72 hours ③
ACTION	B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
		<u>AND</u>		
		B.2	Be in MODE 5.	84 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.6.2.1.1.a	SR 3.6.6~~C~~.1	Verify each containment spray train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.	~~[31 days~~ ① ② ⑤ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ⑤

④ **INSERT 1**

Applicability Footnote *

---NOTE--
RHR spray trains are not required to be OPERABLE in MODE 4.

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.6.2.1.1.b	SR 3.6.6~~C~~.2	Verify each containment spray train pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program	① ②
4.6.2.1.1.c, 4.6.2.1.1.c.1	SR 3.6.6~~C~~.3	Verify each automatic containment spray train valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ⑤ ⑤
4.6.2.1.1.c, 4.6.2.1.1.c.2	SR 3.6.6~~C~~.4	Verify each containment spray train pump starts automatically on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ⑤ ⑤
4.6.2.1.1.d	SR 3.6.6~~C~~.5	Verify each containment spray train spray nozzle is unobstructed.	~~[At first refueling]~~ ~~AND~~ ~~[10 years~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ⑤ ⑤

INSERT 2 ⑥

⑥ INSERT 2

4.6.2.1.2.a, 4.5.2.b.2	SR 3.6.6.6	Verify each RHR spray train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, is in the correct position.	In accordance with the Surveillance Frequency Control Program
4.6.2.1.2.a 4.5.2.f	SR 3.6.6.7	Verify each RHR spray train pump's developed head at the flow test point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
4.6.2.1.2.b	SR 3.6.6.8	Verify each RHR spray train spray nozzle is unobstructed.	In accordance with the Surveillance Frequency Control Program

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

1. The type of Containment (Ice Condenser) and the Specification designator "C" are deleted since they are unnecessary (only one Containment Specification is used in the Sequoyah Nuclear Plant (SQN) ITS). This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Atmospheric, Subatmospheric, and Dual Containment Specifications (ISTS 3.6.6A, ISTS 3.6.6B, ISTS 3.6.6D, and ISTS 3.6.5E) are not used and are not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS LCO 3.6.6C states that two containment spray trains shall be OPERABLE. ISTS 3.6.6C ACTION A requires with one containment spray train inoperable, to restore the containment spray train to OPERABLE status within 72 hours. ITS LCO 3.6.6 and 3.6.6 ACTION A are similar except that they require the subsystem to be OPERABLE and restored to OPERABLE status, respectively. This change is acceptable because it maintains current licensing basis that was previously approved in Amendment 69 for Unit 1 and Amendment 61 for Unit 2 (ADAMS Accession No. ML013270162). At SQN, there are two trains for each Containment Spray subsystem. One train is the Containment Spray and the other train is the RHR Spray.

4. ISTS LCO 3.6.6C states that two containment spray trains shall be OPERABLE. ITS LCO 3.6.6 contains a similar statement, but adds a Note to the Applicability stating that the RHR spray trains are not required to be OPERABLE in MODE 4. This change is acceptable because it maintains current licensing basis that was previously approved in Amendment 69 for Unit 1 and Amendment 61 for Unit 2 (ADAMS Accession No. ML013270162). These amendments approved not requiring the RHR Spray trains in MODE 4.

5. ISTS SR 3.6.6C.1, SR 3.6.6C.3, SR 3.6.6C.4 and SR 3.6.6C.5 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequencies for ITS SR 3.6.6.1, SR 3.6.6.3, SR 3.6.6.4, and SR 3.6.6.5 are "In accordance with the Surveillance Frequency Control Program."

6. New Surveillances (ITS SR 3.6.6.6, ITS 3.6.6.7, and ITS 3.6.6.8) have been added to provide testing for the RHR spray trains. ITS SR 3.6.6.6 requires verifying each RHR spray train manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position or can be aligned to the correct position. ITS SR 3.6.6.7 requires verifying each RHR spray train pump's developed head at the flow test point is greater than or equal to the required developed head. ITS SR 3.6.6.8 requires verifying each RHR spray train spray nozzle is unobstructed. This change is acceptable because it maintains current licensing basis which was previously approved in Amendment 69 for Unit 1 and Amendment 61 for Unit 2 (Adams Accession No. ML013270162). These amendments approved the testing of the RHR spray trains in the Containment Spray Specification.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.6~~C~~ Containment Spray System ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The Containment Spray System provides containment atmosphere cooling to limit post accident pressure and temperature in containment to less than the design values. Reduction of containment pressure ~~and the iodine removal capability of the spray~~ reduces the release of fission product radioactivity from containment to the environment, in the event of a Design Basis Accident (DBA). ② The Containment Spray System is designed to meet the requirements of 10 CFR 50, Appendix A, GDC 38, "Containment Heat Removal," GDC 39, "Inspection of Containment Heat Removal Systems," and GDC 40, "Testing of Containment Heat Removal Systems~~,~~" ~~GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems"~~ (Ref. 1)~~, or other documents that were appropriate at the time of licensing (identified on a unit specific basis)~~. ②

The Containment Spray System consists of two separate ~~trains~~ subsystems of equal capacity, each capable of meeting the system design basis spray coverage. INSERT 1 Each containment spray train includes a containment spray pump, one containment spray heat exchanger, spray headers, nozzles, valves, and piping. Each containment spray train is powered from a separate Engineered Safety Feature (ESF) bus. ⑤ The refueling water storage tank (RWST) supplies borated water to the Containment Spray System during the injection phase of operation. In the recirculation mode of operation, containment spray pump suction is transferred from the RWST to the containment recirculation sump(s).

The diversion of a portion of the recirculation flow from each train of the Residual Heat Removal (RHR) System to additional redundant spray headers completes the Containment Spray System heat removal capability. Each RHR spray train is capable of supplying spray coverage, if required, to supplement the Containment Spray System. ⑤

The Containment Spray ~~System~~ train and RHR ~~System~~ spray train provide a spray of cold or subcooled borated water into the upper ~~and lower~~ region~~s~~ of containment ~~and in dead ended volumes~~ to limit the containment pressure and temperature during a DBA. ⑤ ② The RWST solution temperature is an important factor in determining the heat removal capability of the Containment Spray System during the injection phase. In the recirculation mode of operation, heat is removed from the

⑤ INSERT 1

A containment spray subsystem contains one containment spray train and one RHR spray train.

BASES

BACKGROUND (continued)

containment sump water by the Containment Spray System ~~and RHR~~ heat exchangers. Each ~~train of the~~ Containment Spray subsystem ~~System,~~ ~~supplemented by a train of RHR spray,~~ provides adequate spray coverage to meet the system design requirements for containment heat removal. ②

~~The Spray Additive System injects a sodium hydroxide (NaOH) solution into the spray. The resulting alkaline pH of the spray enhances the ability of the spray to scavenge iodine fission products from the containment atmosphere. The NaOH added in the spray also ensures an alkaline pH for the solution recirculated in the containment sump. The alkaline pH of the containment sump water minimizes the evolution of iodine and the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to the fluid.~~ ③

The Containment Spray trains are ~~System is~~ actuated either automatically by a High – High containment ~~High~~-~~3~~ pressure signal or manually. An automatic actuation opens the containment spray pump discharge valves, starts the two containment spray pumps, and begins the injection phase. A manual actuation of the Containment Spray ~~System~~ trains requires the operator to actuate two separate switches on the main control board to begin the same sequence. ② ~~The injection phase continues until an RWST level Low-Low alarm is received.~~ The Low-Low alarm for the RWST ~~actuates valves to align the containment spray pump suction to the containment sump and/or~~ or a high level in the containment sump signals the operator to manually align the system to the recirculation mode. ~~The Containment Spray System in the recirculation mode maintains an equilibrium temperature between the containment atmosphere and the recirculated sump water.~~ ② Operation of the Containment Spray System in the recirculation mode is controlled by the operator in accordance with the emergency operation procedures.

The RHR spray trains are ~~operation is~~ initiated manually, when required by the emergency operating procedures, after the Emergency Core Cooling System (ECCS) is operating in the recirculation mode. The RHR spray~~s~~ trains are available to supplement the Containment Spray trains ~~System~~, if required, in limiting containment pressure. ② This additional spray capacity would typically be used after the ice bed has been depleted and in the event that containment pressure rises above a predetermined limit. The Containment Spray System is an ESF system. It is designed to ensure that the heat removal capability required during the post accident period can be attained.

BASES

BACKGROUND (continued)

The operation of the Containment Spray System, together with the ice condenser, is adequate to assure pressure suppression during the initial blowdown of steam and water from a DBA. During the post blowdown period, the Air Return System (ARS) is automatically started. The ARS returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam through the ice condenser, where heat is removed by the remaining ice. ②

The Containment Spray System limits the temperature and pressure that could be expected following a DBA. Protection of containment integrity limits leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment OPERABILITY are the loss of coolant accident (LOCA) and the steam line break (SLB). The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train of ~~the~~ Containment Spray ~~System~~, ~~the~~ RHR ~~System~~, and ~~the ARS~~ an ARS fan being rendered inoperable (Ref. 2). ②

The DBA analyses show that the maximum peak containment pressure of ~~[44.1]~~ 11.33 psig results from the LOCA analysis, and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature of ~~[385]~~ 325.6°F results from the SLB analysis. ④ ~~and was calculated to exceed the containment design temperature [for a few seconds] during the DBA SLB. The basis of the containment design temperature, however, is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3). Thermal analyses showed that the time interval during which the containment atmosphere temperature exceed the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment atmosphere temperatures are acceptable for the DBA SLB.~~ ②

The modeled Containment Spray trains ~~System~~ actuation from the containment analysis is based on a response time associated with exceeding the containment High - High ~~High-3~~ pressure signal setpoint to achieving full flow through the containment spray train nozzles. A delayed response time initiation ②

BASES

APPLICABLE SAFETY ANALYSES (continued)

provides conservative analyses of peak calculated containment temperature and pressure responses. The Containment Spray trains ~~System~~ total response time of 250 ~~[45]~~ seconds is composed of signal delay, diesel generator startup, and system startup time to full flow through the containment spray train nozzles. ② ④ ⑧

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the ECCS cooling effectiveness during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures in accordance with 10 CFR 50, Appendix K (Ref. 4).

Inadvertent actuation of the Containment Spray System is evaluated in the analysis, and the resultant reduction in containment pressure is calculated. The maximum calculated reduction in containment pressure resulted in a containment external pressure load of ~~[1.2]~~ 0.49 psid, which is below the containment design external pressure load. ④

The Containment Spray System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

During a DBA, one subsystem ~~train~~ of Containment Spray System is required to provide the heat removal capability assumed in the safety analyses. ⑤ ~~Additionally, a minimum of one train of the Containment Spray System, with spray pH adjusted by the Spray Additive System, is required to scavenge iodine fission products from the containment atmosphere and ensure their retention in the containment sump water.~~ ③ To ensure that these requirements are met, two containment spray subsystems ~~trains~~ must be OPERABLE with power from two safety related, independent power supplies. ⑤ ~~Therefore, in the event of an accident, at least one train in each system operates.~~ ⑤

INSERT 2

Each Containment Spray train ~~System typically~~ includes a containment spray pump, header~~s~~, valves, heat exchanger ~~enhancers~~, nozzles, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an ESF actuation signal and manually ~~automatically~~ transferring suction to the containment sump. ⑤ ② ⑤

INSERT 3

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the Containment Spray System. INSERT 4 ⑤

⑤ INSERT 2

A containment spray subsystem shall be compromised of one containment spray train and one RHR spray train.

⑤ INSERT 3

Each RHR spray train includes an RHR pump, header, valves, heat exchanger, nozzles, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the containment sump.

⑤ INSERT 4

Furthermore, as stated in the Applicability Note, the RHR spray trains are not required to be OPERABLE in MODE 4.

BASES

APPLICABILITY (continued)

In MODES 5 and 6, the probability and consequences of these events are reduced because of the pressure and temperature limitations of these MODES. Thus, the Containment Spray System is not required to be OPERABLE in MODE 5 or 6.

ACTIONS

A.1

With one containment spray ~~train~~ subsystem inoperable, the affected ~~train~~ subsystem must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing 100% of the heat removal ~~and iodine removal~~ needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal ~~and iodine removal capabilities~~ afforded by the OPERABLE train and the low probability of a DBA occurring during this period. ⑤ ③

B.1 and B.2

If the affected containment spray ~~train~~ subsystem cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows additional time and is reasonable when considering that the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3. ⑤

SURVEILLANCE REQUIREMENTS

SR 3.6.6~~C~~.1 ①

Verifying the correct alignment of manual, power operated, and automatic valves, excluding check valves, in the Containment Spray ~~System~~ train provides assurance that the proper flow path exists for Containment Spray ~~System~~ train operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since they were verified in the correct position prior to being secured. This SR does not require any testing or valve manipulation. Rather, it involves verification that those valves outside containment and capable of potentially being mispositioned, are in the correct position. ⑤

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions~~. ⑥

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ⑦
~~--]~~ ⑥

SR 3.6.6.2

Verifying that each containment spray train pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by the ASME Code (Ref. 5). Since the containment spray train pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice inspections confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program. ⑤ ⑤

SR 3.6.6.3 and SR 3.6.6.4

These SRs require verification that each automatic containment spray train valve actuates to its correct position and each containment spray train pump starts upon receipt of an actual or simulated containment spray actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillances when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ⑤ ⑥

~~OR~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑦ ⑥

The surveillance of containment sump isolation valves is also required by SR 3.6.6.3. A single surveillance may be used to satisfy both requirements.

SR 3.6.6.5

With the containment spray train inlet valves closed and the containment spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and that spray coverage of the containment during an accident is not degraded. ~~[Because of the passive design of the nozzle, a test at [the first refueling and at] 10 year intervals is considered adequate to detect obstruction of the spray nozzles.~~ ⑤ ⑥

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑦ ⑥

INSERT 5 ⑤

REFERENCES

1. 10 CFR 50, Appendix A, GDC 38, GDC 39, and GDC 40~~, GDC 41, GDC 42, and GDC 43~~. ②
2. UFSAR, Section ~~[~~6.2~~]~~. ② ④

⑤ INSERT 5

SR 3.6.6.6

Verifying the correct alignment of manual, power operated, and automatic valves, excluding check valves, in the RHR spray train provides assurance that the proper flow path exists for system operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since they were verified in the correct position prior to locking, sealing, or securing. A valve is also allowed to be in the nonaccident position provided it can be aligned to the accident position within the time assumed in the accident analysis. This is acceptable since the RHR spray mode is manually initiated. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned, are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.6.7

Verifying that each RHR spray train pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by the ASME Code (Ref. 5). Since the RHR spray train pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice inspections confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program.

SR 3.6.6.8

With the RHR spray train inlet valves closed and the RHR spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each RHR spray nozzle is unobstructed and that spray coverage of the containment during an accident is not degraded.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

REFERENCES (continued)

3. 10 CFR 50.49.

4. 10 CFR 50, Appendix K.

5. ASME Code for Operation and Maintenance of Nuclear Power Plants.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.6~~C~~ Containment Spray System ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The Containment Spray System provides containment atmosphere cooling to limit post accident pressure and temperature in containment to less than the design values. Reduction of containment pressure ~~and the iodine removal capability of the spray~~ reduce s the release of fission product radioactivity from containment to the environment, in the event of a Design Basis Accident (DBA). The Containment Spray System is designed to meet the requirements of 10 CFR 50, Appendix A, GDC 38, "Containment Heat Removal," GDC 39, "Inspection of Containment Heat Removal Systems," and GDC 40, "Testing of Containment Heat Removal Systems~~,~~" ~~GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems"~~ (Ref. 1)~~, or other documents that were appropriate at the time of licensing (identified on a unit specific basis)~~. ② ②

The Containment Spray System consists of two separate ~~trains~~ subsystems of equal capacity, each capable of meeting the system design basis spray coverage. INSERT 1 Each containment spray train includes a containment spray pump, one containment spray heat exchanger, spray headers, nozzles, valves, and piping. Each containment spray train is powered from a separate Engineered Safety Feature (ESF) bus. The refueling water storage tank (RWST) supplies borated water to the Containment Spray System during the injection phase of operation. In the recirculation mode of operation, containment spray pump suction is transferred from the RWST to the containment recirculation sump(s). ⑤

The diversion of a portion of the recirculation flow from each train of the Residual Heat Removal (RHR) System to additional redundant spray headers completes the Containment Spray System heat removal capability. Each RHR spray train is capable of supplying spray coverage, if required, to supplement the Containment Spray System. ⑤

The Containment Spray ~~System~~ train and RHR ~~System~~ spray train provide a spray of cold or subcooled borated water into the upper ~~and lower~~ region~~s~~ of containment ~~and in dead ended volumes~~ to limit the containment pressure and temperature during a DBA. The RWST solution temperature is an important factor in determining the heat removal capability of the Containment Spray System during the injection phase. In the recirculation mode of operation, heat is removed from the ⑤ ②

⑤ INSERT 1

A containment spray subsystem contains one containment spray train and one RHR spray train.

BACKGROUND (continued)

containment sump water by the Containment Spray System ~~and RHR~~ heat exchangers. Each ~~train of the~~ Containment Spray subsystem ~~System, supplemented by a train of RHR spray,~~ provides adequate spray coverage to meet the system design requirements for containment heat removal. ②

~~The Spray Additive System injects a sodium hydroxide (NaOH) solution into the spray. The resulting alkaline pH of the spray enhances the ability of the spray to scavenge iodine fission products from the containment atmosphere. The NaOH added in the spray also ensures an alkaline pH for the solution recirculated in the containment sump. The alkaline pH of the containment sump water minimizes the evolution of iodine and the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to the fluid.~~ ③

The Containment Spray trains are ~~System is~~ actuated either automatically by a High – High containment ~~High~~-~~3~~ pressure signal or manually. An automatic actuation opens the containment spray pump discharge valves, starts the two containment spray pumps, and begins the injection phase. A manual actuation of the Containment Spray trains ~~System~~ requires the operator to actuate two separate switches on the main control board to begin the same sequence. ② ~~The injection phase continues until an RWST level Low-Low alarm is received.~~ The Low-Low alarm for the RWST ~~actuates valves to align the containment spray pump suction to the containment sump and/or~~ or a high level in the containment sump signals the operator to manually align the system to the recirculation mode. ~~The Containment Spray System in the recirculation mode maintains an equilibrium temperature between the containment atmosphere and the recirculated sump water.~~ ② Operation of the Containment Spray System in the recirculation mode is controlled by the operator in accordance with the emergency operation procedures.

The RHR spray trains are ~~operation is~~ initiated manually, when required by the emergency operating procedures, after the Emergency Core Cooling System (ECCS) is operating in the recirculation mode. The RHR spray trains ~~s~~ are available to supplement the Containment Spray trains ~~System~~, if required, in limiting containment pressure. ② This additional spray capacity would typically be used after the ice bed has been depleted and in the event that containment pressure rises above a predetermined limit. The Containment Spray System is an ESF system. It is designed to ensure that the heat removal capability required during the post accident period can be attained.

BASES

BACKGROUND (continued)

The operation of the Containment Spray System, together with the ice condenser, is adequate to assure pressure suppression during the initial blowdown of steam and water from a DBA. During the post blowdown period, the Air Return System (ARS) is automatically started. The ARS returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam through the ice condenser, where heat is removed by the remaining ice. ②

The Containment Spray System limits the temperature and pressure that could be expected following a DBA. Protection of containment integrity limits leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment OPERABILITY are the loss of coolant accident (LOCA) and the steam line break (SLB). The DBA LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No two DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to containment ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure, resulting in one train of ~~the~~ Containment Spray ~~System~~, ~~the~~ RHR ~~System~~, and ~~the ARS~~ being rendered inoperable (Ref. 2). ②

an ARS fan

11.33

325.6

The DBA analyses show that the maximum peak containment pressure of ~~[44.1]~~ psig results from the LOCA analysis, and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature of ~~[385]~~°F results from the SLB analysis ~~and was calculated to exceed the containment design temperature [for a few seconds] during the DBA SLB. The basis of the containment design temperature, however, is to ensure the OPERABILITY of safety related equipment inside containment (Ref. 3). Thermal analyses showed that the time interval during which the containment atmosphere temperature exceed the containment design temperature was short enough that the equipment surface temperatures remained below the design temperature. Therefore, it is concluded that the calculated transient containment atmosphere temperatures are acceptable for the DBA SLB~~. ④ ②

.

trains

High - High

The modeled Containment Spray ~~System~~ actuation from the containment analysis is based on a response time associated with exceeding the containment ~~High-3~~ pressure signal setpoint to achieving full flow through the containment spray nozzles. A delayed response time initiation ②

train

SEQUOYAH UNIT 2

Revision XXX

BASES

APPLICABLE SAFETY ANALYSES (continued)

provides conservative analyses of peak calculated containment temperature and pressure responses. The Containment Spray trains ~~System~~ total response time of 250 ~~[45]~~ seconds is composed of signal delay, diesel generator startup, and system startup time to full flow through the containment spray train nozzles. ② ④ ⑧

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the ECCS cooling effectiveness during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures in accordance with 10 CFR 50, Appendix K (Ref. 4).

Inadvertent actuation of the Containment Spray System is evaluated in the analysis, and the resultant reduction in containment pressure is calculated. The maximum calculated reduction in containment pressure resulted in a containment external pressure load of ~~[1.2]~~ 0.49 psid, which is below the containment design external pressure load. ④

The Containment Spray System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

During a DBA, one ~~train~~ subsystem of Containment Spray System is required to provide the heat removal capability assumed in the safety analyses. ⑤ ~~Additionally, a minimum of one train of the Containment Spray System, with spray pH adjusted by the Spray Additive System, is required to scavenge iodine fission products from the containment atmosphere and ensure their retention in the containment sump water.~~ ③ To ensure that these requirements are met, two containment spray ~~trains~~ subsystems must be OPERABLE with power from two safety related, independent power supplies. ⑤ ~~Therefore, in the event of an accident, at least one train in each system operates.~~ ⑤

INSERT 2

Each Containment Spray train ~~System typically~~ includes a containment spray pump, header~~s~~, valves, heat exchanger ~~enhancers~~, nozzles, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an ESF actuation signal and manually ~~automatically~~ transferring suction to the containment sump. ⑤ ② ⑤

INSERT 3

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the Containment Spray System. INSERT 4 ⑤

⑤ **INSERT 2**

A containment spray subsystem shall be compromised of one containment spray train and one RHR spray train.

⑤ **INSERT 3**

Each RHR spray train includes an RHR pump, header, valves, heat exchanger, nozzles, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the containment sump.

⑤ **INSERT 4**

Furthermore, as stated in the Applicability Note, the RHR spray trains are not required to be OPERABLE in MODE 4.

BASES

APPLICABILITY (continued)

In MODES 5 and 6, the probability and consequences of these events are reduced because of the pressure and temperature limitations of these MODES. Thus, the Containment Spray System is not required to be OPERABLE in MODE 5 or 6.

ACTIONS

A.1

With one containment spray ~~train~~ subsystem inoperable, the affected ~~train~~ subsystem must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing 100% of the heat removal ~~and iodine removal~~ needs after an accident. The 72 hour Completion Time was developed taking into account the redundant heat removal ~~and iodine removal capabilities~~ afforded by the OPERABLE train and the low probability of a DBA occurring during this period. ⑤ ③

B.1 and B.2

If the affected containment spray ~~train~~ subsystem cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows additional time and is reasonable when considering that the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3. ⑤

SURVEILLANCE REQUIREMENTS

SR 3.6.6~~C~~.1 ①

Verifying the correct alignment of manual, power operated, and automatic valves, excluding check valves, in the Containment Spray ~~System~~ train provides assurance that the proper flow path exists for Containment Spray train ~~System~~ operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since they were verified in the correct position prior to being secured. This SR does not require any testing or valve manipulation. Rather, it involves verification that those valves outside containment and capable of potentially being mispositioned, are in the correct position. ⑤

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions~~. ⑥

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ⑦
~~--]~~ ⑥

SR 3.6.6.2

Verifying that each containment spray train pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by the ASME Code (Ref. 5). Since the containment spray train pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice inspections confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program. ⑤ ⑤

SR 3.6.6.3 and SR 3.6.6.4

These SRs require verification that each automatic containment spray train valve actuates to its correct position and each containment spray train pump starts upon receipt of an actual or simulated containment spray actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillances when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ⑤ ⑥

~~OR~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑦ ⑥

The surveillance of containment sump isolation valves is also required by SR 3.6.6.3. A single surveillance may be used to satisfy both requirements.

SR 3.6.6.5

With the containment spray train inlet valves closed and the containment spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and that spray coverage of the containment during an accident is not degraded. ~~[Because of the passive design of the nozzle, a test at [the first refueling and at] 10 year intervals is considered adequate to detect obstruction of the spray nozzles.~~ ⑤ ⑥

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑦ ⑥

INSERT 5 ⑤

REFERENCES

1. 10 CFR 50, Appendix A, GDC 38, GDC 39, and GDC 40~~, GDC 41, GDC 42, and GDC 43~~. ②
2. UFSAR, Section ~~[~~6.2~~]~~. ② ④

⑤ INSERT 5

SR 3.6.6.6

Verifying the correct alignment of manual, power operated, and automatic valves, excluding check valves, in the RHR spray train provides assurance that the proper flow path exists for system operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position since they were verified in the correct position prior to locking, sealing, or securing. A valve is also allowed to be in the nonaccident position provided it can be aligned to the accident position within the time assumed in the accident analysis. This is acceptable since the RHR spray mode is manually initiated. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned, are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SR 3.6.6.7

Verifying that each RHR spray train pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by the ASME Code (Ref. 5). Since the RHR spray train pumps cannot be tested with flow through the spray headers, they are tested on bypass flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice inspections confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. The Frequency of this SR is in accordance with the Inservice Testing Program.

SR 3.6.6.8

With the RHR spray train inlet valves closed and the RHR spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each RHR spray nozzle is unobstructed and that spray coverage of the containment during an accident is not degraded.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

REFERENCES (continued)

3. 10 CFR 50.49.

4. 10 CFR 50, Appendix K.

5. ASME Code for Operation and Maintenance of Nuclear Power Plants.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.6 BASES, CONTAINMENT SPRAY SYSTEM

1. The type of Containment (Ice Condenser) and the Specification designator "C" are deleted since they are unnecessary (only one Containment Specification is used in the Sequoyah Nuclear Plant (SQN) ITS). This information is provided in NUREG-1431, Rev. 4, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, the Atmospheric, Subatmospheric, and Dual Containment Specifications (ISTS B 3.6.6A, ISTS B 3.6.6B, ISTS B 3.6.6D, and ISTS B 3.6.1E) are not used and are not shown.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS 3.6.6 Bases Background discusses the Spray Additive System. SQN does not have a Spray Additive System which injects a Sodium Hydroxide (NaOH) solution into the spray. Therefore, the information related to the Spray Additive System has been deleted.

4. The ISTS Bases contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. Changes are made to be consistent with changes made to the Specification.

6. ISTS SR 3.6.6C.1, SR 3.6.6.3, SR 3.6.6.4, and SR 3.6.6.5 Bases provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency descriptions which are being removed will be included in the Surveillance Frequency Control Program.

7. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

8. Editorial change made for enhanced clarity.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.6, CONTAINMENT SPRAY SYSTEM

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 7

ITS 3.6.7, SHIELD BUILDING

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

CONTAINMENT SYSTEMS

SHIELD BUILDING ~~STRUCTURAL INTEGRITY~~

LIMITING CONDITION FOR OPERATION

OPERABLE

LCO 3.6.7

3.6.1.7 The ~~structural integrity of the~~ shield building shall be ~~maintained at a level consistent with the acceptance criteria in Specification 4.6.1.7~~.

LA01

Applicability

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A

Add proposed ACTION A

L01

~~With the structural integrity of the shield building not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.~~

A02

ACTION B

Add proposed ACTION B

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1

SR 3.6.7.3

4.6.1.7 The structural integrity of the shield building shall be determined during the shutdown for each Type A containment leakage rate test (~~Specification 4.6.1.1.c~~) by a visual inspection of the exposed accessible interior and exterior surfaces of the shield building ~~and verifying no apparent changes in appearance of the concrete surfaces or other abnormal degradation~~.

LA02

Add proposed SR 3.6.7.1 ~~at a Frequency of 12 hours~~

Add proposed SR 3.6.7.2 ~~at a Frequency of 31 days~~

M01

In accordance with the Surveillance Frequency Control Program

LA03

A01

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

See ITS 5.5.9

SR 3.6.7.4 d. ~~At least once per 18 months~~ by:

INSERT 1

L02

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5 inches Water Gauge while operating the filter train at a flow rate of 4000 cfm ± 10%.

2. Verifying that the filter train starts on a Phase A containment isolation Test Signal.

3. Verify the operation of the filter cooling bypass valves.

See ITS 3.6.10

SR 3.6.7.4 4. Verifying that each system produces a negative pressure of greater than or equal to 0.5 inches W. G. in the annulus within 1 minute after a start signal.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

See ITS 5.5.9

INSERT 1

L02

~~on a STAGGERED TEST BASIS for each Emergency Gas Treatment System train~~

In accordance with the Surveillance Frequency Control Program

LA03

A01

SHIELD BUILDING INTEGRITY

1.30 SHIELD BUILDING INTEGRITY shall exist when:

See ITS Chapter 1.0

LCO 3.6.7 Note

a. The door in each access opening is closed except when the access opening is being used for normal transit entry and exit.

b. The emergency gas treatment system is OPERABLE.

See ITS 3.6.10

NA

~~c. The sealing mechanism associated with each penetration (e.g., welds, bellows or 0-rings) is OPERABLE.~~

LA04

SHUTDOWN MARGIN

1.31 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn.

SITE BOUNDARY

1.32 The SITE BOUNDARY shall be that line beyond which the land is not owned, leased, or otherwise controlled by the licensee.

SOLIDIFICATION

1.33 Deleted

SOURCE CHECK

1.34 Deleted

STAGGERED TEST BASIS

1.35 A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals,

b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.

THERMAL POWER

1.36 THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

See ITS Chapter 1.0

A01

CONTAINMENT SYSTEMS

SHIELD BUILDING ~~STRUCTURAL INTEGRITY~~

LIMITING CONDITION FOR OPERATION

OPERABLE

LCO 3.6.7 3.6.1.7 The ~~structural integrity of the~~ shield building shall be ~~maintained at a level consistent with the acceptance criteria in Specification 4.6.1.7~~.

LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION.

Add proposed ACTION A

L01

ACTION A

~~With the structural integrity of the shield building not conforming to the above requirements, restore the structural integrity to within the limits prior to increasing the Reactor Coolant System temperature above 200°F.~~

A02

ACTION B Add proposed ACTION B

SURVEILLANCE REQUIREMENTS

SR 3.6.1.1

SR 3.6.7.3 4.6.1.7 The structural integrity of the shield building shall be determined during the shutdown for each Type A containment leakage rate test (~~Specification 4.6.1.1.c~~) by a visual inspection of the exposed accessible interior and exterior surfaces of the shield building ~~and verifying no apparent changes in appearance of the concrete surfaces or other abnormal degradation~~.

LA02

Add proposed SR 3.6.7.1 ~~at a Frequency of 12 hours~~

Add proposed SR 3.6.7.2 ~~at a Frequency of 31 days~~

M01

In accordance with the Surveillance Frequency Control Program

LA03

A01

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86° F) and a relative humidity of 70%.

See ITS 5.5.9

LA03

SR 3.6.7.4 d. ~~At least once per 18 months~~ by: INSERT 1

L02

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5 inches Water Gauge while operating the filter train at a flow rate of 4000 cfm + 10%.

2. Verifying that the filter train starts on a Phase A containment isolation Test Signal.

3. Verify the operation of the filter cooling bypass valves.

See ITS 3.6.10

SR 3.6.7.4 4. Verifying that each system produces a negative pressure of greater than or equal to 0.5 inches W.G. in the annulus within 1 minute after a start signal.

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm + 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm + 10%.

See ITS 5.5.9

INSERT 1 L02

~~on a STAGGERED TEST BASIS for each Emergency Gas Treatment System train~~

In accordance with the Surveillance Frequency Control Program LA03

A01

RATED THERMAL POWER (RTP)

1.27 RATED THERMAL POWER (RTP) shall be a total reactor core heat transfer rate to the reactor coolant of 3455 MWt.

REACTOR TRIP SYSTEM (RTS) RESPONSE TIME

1.28 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its (RTS) trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by NRC.

REPORTABLE EVENT

1.29 DELETED

See ITS Chapter 1.0

SHIELD BUILDING INTEGRITY

1.30 SHIELD BUILDING INTEGRITY shall exist when:

See ITS Chapter 1.0

LCO 3.6.7 Note a. The door in each access opening is closed except when the access opening is being used for normal transit entry and exit.

b. The emergency gas treatment system is OPERABLE.

See ITS 3.6.10

NA ~~c. The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.~~

LA04

SHUTDOWN MARGIN

1.31 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn.

SITE BOUNDARY

1.32 The SITE BOUNDARY shall be that line beyond which the land is not owned, leased, or otherwise controlled by the licensee.

See ITS Chapter 1.0

DISCUSSION OF CHANGES
ITS 3.6.7, SHIELD BUILDING

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.1.7 does not provide an ACTION to take if the shield building is inoperable while in MODE 1, 2, 3, or 4; it only includes a requirement that the shield building be restored to OPERABLE status prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). Therefore, entry into CTS 3.0.3 is required if CTS 3.6.1.7 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 requires action to be initiated within 1 hour to prepare for a shutdown and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. When the shield building is inoperable and not restored to an OPERABLE status within the specified Completion Time (see DOC L01), ITS 3.6.7 ACTION B requires the unit be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by stating the ACTIONS within the Specification rather than deferring to CTS 3.0.3. In addition, it deletes the Action to restore the LCO prior to entering MODE 4.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.1.7 is silent on these actions, deferring to CTS 3.0.3 for the actions. This change is acceptable because the ACTIONS specified in ITS 3.6.7 adopt ISTS structure for placing the unit outside the MODE of Applicability without changing the time specified to enter MODE 3 and MODE 5. In addition, deletion of the current Action of CTS 3.6.1.7 is acceptable because CTS 3.0.4 (ITS LCO 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met. Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.7. This change is designated as administrative, because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 ITS SR 3.6.7.1 requires verification that annulus negative pressure is greater than 5 inches water gauge every 12 hours. ITS SR 3.6.7.2 requires verification that the shield building access door in each access opening is closed every 31 days. CTS 3.6.1.7 does not contain these Surveillance Requirements. This changes the CTS by adding new Surveillance Requirements to verify annulus negative pressure is within limits and to verify the shield building access door in each access opening is closed. (See DOC LA03 for moving the "12 hour" and "31 day" Frequencies for these Surveillance Requirements to the Surveillance Frequency Control Program.)

The shield building surrounds the containment vessel and forms an annulus between the containment vessel and the inner wall of the shield building. This annular space collects containment leakage that may occur following a loss of coolant accident. A negative pressure is maintained in the annulus between the shield building and the steel containment vessel by the Emergency Gas Treatment System (EGTS). The release of radioactive contaminants to the environment is controlled via filters in the EGTS trains. The purpose of CTS 3.6.1.7 is to ensure the shield building is OPERABLE in MODES 1, 2, 3, and 4 to ensure the release of radioactive material from the containment atmosphere is restricted to the leakage paths assumed in the accident analysis. Since shield building access door position and annulus pressure are integral to shield building OPERABILITY, ITS 3.6.7 adds a specific Surveillance Requirement (ITS SR 3.6.7.1) to verify every 12 hours that annulus negative pressure is within the limit assumed in the containment analysis. Additionally, a specific Surveillance Requirement (ITS SR 3.6.7.2) is added to verify every 31 days that the door in each access opening is closed, so that the shield building boundary is not breached at any time when the shield building boundary is required. This change is designated as more restrictive because new Surveillance Requirements have been added to ensure the shield building OPERABILITY is maintained.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.1.7 requires that the structural integrity of the shield building be maintained at a level consistent with the acceptance criteria in CTS 4.6.1.7. CTS 4.6.1.7 requires the structural integrity of the shield building to be determined by a visual inspection of the exposed shield building interior and exterior surfaces and verifying no apparent changes in concrete surface appearance or other abnormal degradation. ITS LCO 3.6.7 requires the shield building to be OPERABLE. This changes the CTS by moving the detail of what constitutes shield building OPERABILITY to the Bases.

The removal of these details, related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirements that the shield building be OPERABLE. Also, this changes is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.6.7, SHIELD BUILDING

LA02 *(Type 4 – Removal of LCO, SR, or other TS Requirements to the TRM, UFSAR, ODCM, NQAP, CLRT Program, IST Program, or ISI Program)* CTS 4.6.1.7 requires the structural integrity of the shield building to be determined by a visual inspection of the exposed shield building interior and exterior surfaces and verifying no apparent changes in concrete surface appearance or other abnormal degradation. ITS SR 3.6.7.3 includes the shield building structural integrity visual inspection verification of exposed interior and exterior surfaces, but does not include the details of what the inspection entails. This changes the CTS by moving the details of the shield building inspection to the TS Bases.

The removal of these details, which are related to methods of surveillance test performance, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirements for verifying integrity of the shield building. Also, this changes is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to methods of surveillance test performance is being removed from the Technical Specifications.

LA03 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.1.8.d.4 requires verification that each Emergency Gas Treatment System produces a negative pressure within limits in the annulus within 1 minute after a start signal. ITS SR 3.6.7.4 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequency for this SR and associated Bases to the Surveillance Frequency Control Program. (The change of the requirement to perform the Surveillances ON A STAGGERED TEST BASIS is discussed in DOC L02). Additionally, ITS SR 3.6.7.1 has been added to verify the annulus negative pressure is within limits every 12 hours, and ITS SR 3.6.7.2 has been added to verify the shield building access door in each access opening is closed every 31 days. (See DOC M01 for the discussion on adding these SRs.) The "12 hour" and "31 day" Frequencies for these Surveillances have been relocated to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA04 *(Type 2 – Removing Descriptions of System Operation)* CTS 1.30 states, in part, "SHIELD BUILDING INTEGRITY shall exist when: c. The sealing mechanism associated with each penetration (e.g., welds, bellows, or 0-rings) is OPERABLE. ITS 3.6.7 states "The shield building shall be OPERABLE." This changes the CTS by moving the reference to penetration sealing mechanism requirements to the Bases.

The removal of these details, which are related to system operation, from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement for the shield building to be OPERABLE and the relocated material describes aspects of OPERABILITY. In addition, the ITS retains the requirement to perform a shield building annulus drawdown test, which would provide verification that the penetration sealing mechanisms are OPERABLE. Also, this change is acceptable, because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system operation is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.6.1.7 does not state what action to take if the shield building is inoperable while in MODE 1, 2, 3, or 4; it only includes a requirement that the shield building be restored to OPERABLE status prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). Therefore, entry into CTS 3.0.3 is required, if CTS 3.6.1.7 is not met in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for a shutdown and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. ITS 3.6.7 ACTION A provides 24 hours to restore the shield building to OPERABLE status prior to requiring a unit shutdown. This changes the CTS by providing an explicit ACTION to allow time to restore an inoperable shield building to OPERABLE status prior to requiring a unit shutdown and changes the time from 1 hour (as provided in CTS 3.0.3) to 24 hours. See DOC A02 for including the ACTIONS within the Specification to shut down the unit upon failure to restore shield building OPERABILITY, rather than deferring to CTS 3.0.3.

The purpose of CTS 3.6.1.7 is to maintain the shield building OPERABLE. Therefore, when the shield building is not OPERABLE, CTS 3.0.3 results in placing the unit in a condition in which the shield building is not required. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. This change provides an ACTION that allows 24 hours to restore the shield building to OPERABLE status. The Required Actions and associated 24 hour Completion Time are reasonable considering the limited leakage design of containment and the low probability of DBA occurring during this period. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.6.1.8.d.4 requires a drawdown of the shield building annulus by each Emergency Gas Treatment System (EGTS) train to within limits at least once per 18 months. ITS SR 3.6.7.4 requires a drawdown of the shield building annulus to within limits "In accordance with the Surveillance Frequency Control Program." The specified Surveillance Frequency that is being moved to the Surveillance Frequency Control Program is "18 months on a STAGGERED TEST BASIS for each Emergency Gas Treatment System train." This changes the CTS by allowing the drawdown test for each EGTS train to be performed less frequently. Moving the specified Surveillance Frequency to the Surveillance Frequency Control Program is discussed in DOC LA03.

The purpose of CTS 4.6.1.8.d.4 is to verify the integrity of the shield building boundary by ensuring the shield building annulus can be rapidly drawn to a negative pressure of at least 0.5 inches water gauge. Therefore, this is a test of shield building integrity and does not need to be performed every 18 months using each EGTS train. Staggering use of the EGTS trains every 18 months will ensure both trains are capable of performing the test. This change is acceptable because performing the drawdown test using one train of EGTS every 18 months will adequately verify shield building integrity. OPERABILITY of EGTS will be maintained through the application of the requirements of ITS 3.6.10. This change is designated as less restrictive, because the shield building annulus drawdown Surveillance will be performed less frequently with each EGTS train under the ITS than under the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.~~8~~ 7 Shield Building ~~(Dual and Ice Condenser)~~ ① ③

3.6.1.7 LCO 3.6.~~8~~ 7 The shield building shall be OPERABLE.

INSERT 1

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A. Shield building inoperable.	A.1 Restore shield building to OPERABLE status.	24 hours
DOC A02	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
DOC M01	SR 3.6.~~8~~ 7.1 ~~[~~ Verify annulus negative pressure is ~~≥~~ ≥ ~~[~~5~~]~~ inches water gauge.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

① ④ ⑤

⑤

③ **INSERT 1**

---NOTE---
1.30.a The access doors may be opened for normal transit entry and exit.

CTS

Shield Building ~~(Dual and Ice Condenser)~~
3.6.~~8~~7 ①

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
DOC M01	SR 3.6.~~8~~7.2	Verify ~~one~~ the shield building access door in each access opening is closed.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑥ ⑤ ⑤
4.6.1.7	SR 3.6.~~8~~7.3	~~[~~ Verify shield building structural integrity by performing a visual inspection of the accessible exposed interior and exterior surfaces of the shield building.	During shutdown for SR 3.6.1.1 Type A tests ~~]~~	① ④
4.6.1.8.d.4	SR 3.6.~~8~~7.4	Verify the shield building can be maintained at a pressure equal to or more negative than ~~[~~-0.5~~]~~ inch water gauge in the annulus by one ~~Shield Building Air Cleanup System~~ Emergency Gas Treatment System train ~~with final flow ≤ [ ] cfm~~ within ~~[22]~~ 60 seconds after a start signal.	~~[[18] months on a STAGGERED TEST BASIS for each Shield Building Air Cleanup System train~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ② ⑦ ④ ⑤ ⑤

3.6 CONTAINMENT SYSTEMS

3.6.~~8~~ 7 Shield Building ~~(Dual and Ice Condenser)~~ ① ③

3.6.1.7 LCO 3.6.~~8~~ 7 The shield building shall be OPERABLE.

INSERT 1

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A. Shield building inoperable.	A.1 Restore shield building to OPERABLE status.	24 hours
DOC A02	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
DOC M01	SR 3.6.~~8~~ 7.1 ~~[~~ Verify annulus negative pressure is ~~>~~ ≥ [5~~]~~ inches water gauge.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

① ④ ⑤

⑤

③ **INSERT 1**

---NOTE---

1.30.a The access doors may be opened for normal transit entry and exit.

CTS

Shield Building ~~(Dual and Ice Condenser)~~
3.6.~~8~~ 7 ①

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
DOC M01	SR 3.6.~~8~~ 7 .2	Verify ~~one~~ the shield building access door in each access opening is closed.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑥ ⑤ ⑤
4.6.1.7	SR 3.6.~~8~~ 7 .3	~~[~~ Verify shield building structural integrity by performing a visual inspection of the accessible exposed interior and exterior surfaces of the shield building.	During shutdown for SR 3.6.1.1 Type A tests ~~]~~	① ④
4.6.1.8.d.4	SR 3.6.~~8~~ 7 .4	Verify the shield building can be maintained at a pressure equal to or more negative than ~~[~~-0.5~~]~~ inch water gauge in the annulus by one ~~Shield Building Air Cleanup System~~ Emergency Gas Treatment System train ~~with final flow ≤ [ ] cfm~~ within ~~[22]~~ 60 seconds after a start signal.	~~[[18] months on a STAGGERED TEST BASIS for each Shield Building Air Cleanup System train~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ② ⑦ ④ ⑤ ⑤

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.7, SHIELD BUILDING

1. The heading and title for ISTS 3.6.8 include the parenthetical expression (Dual and Ice Condenser). This identifying information is not included in the Sequoyah Nuclear (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7). Therefore, ISTS 3.6.7 is not included in the SQN ITS and ISTS 3.6.8 is renumbered as ITS 3.6.7.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. There is no allowance in ISTS 3.6.8 for when a shield building access door is open for normal transit entry and exit, thereby requiring entry into Condition A. Therefore, an exception to the requirement that the access opening doors be closed is made to allow for normal transit entry and exit. The basis of this exception is the assumption that the transit time during which a door is open will be short (i.e., shorter than the Completion Time for Condition A). This change is consistent with the current licensing basis as defined in CTS 1.30, definition of SHIELD BUILDING INTEGRITY, which provides this exception to the requirement for the door in each access opening to be closed.

4. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ISTS SR 3.6.8.1, SR 3.6.8.2, and SR 3.6.8.4 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.7.1, SR 3.6.7.2, and SR 3.6.7.4 under the Surveillance Frequency Control Program.

6. ISTS SR 3.6.8.2 requires verification that "one" access door in each shield building access opening is closed. However, SQN design consists of one door for each shield building access opening. Therefore, the Surveillance is changed to verify "the" shield building access door in each access opening closed, thereby reflecting the plant-specific design.

7. ISTS SR 3.6.8.4 requires verification that the Shield Building can be maintained at a negative pressure relative to the annulus by one train within a specified time and flow rate after a start signal. ITS SR 3.6.7.4 will require a similar test, but will not specify a flow rate for the EGTS train. The current licensing basis for this acceptance criteria is derived from the license amendment requested by TVA and approved by the NRC on December 23, 1982.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~8~~ 7 Shield Building ~~(Dual and Ice Condenser)~~ ①

BASES

BACKGROUND

The shield building is a concrete structure that surrounds the steel containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects containment leakage that may occur following a loss of coolant accident (LOCA). This space also allows for periodic inspection of the outer surface of the steel containment vessel.

Emergency Gas Treatment System (EGTS)

The ~~Shield Building Air Cleanup System (SBACS)~~ establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment. The shield building is required to be OPERABLE to ensure retention of containment leakage and proper operation of the ~~SBACS~~ EGTS. ②

INSERT 1

APPLICABLE SAFETY ANALYSES

The design basis for shield building OPERABILITY is a LOCA. Maintaining shield building OPERABILITY ensures that the release of radioactive material from the containment atmosphere is restricted to those leakage paths and associated leakage rates assumed in the accident analyses.

The shield building satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Shield building OPERABILITY must be maintained to ensure proper operation of the EGTS ~~SBACS~~ and to limit radioactive leakage from the containment to those paths and leakage rates assumed in the accident analyses. INSERT 2 ② ②

APPLICABILITY

Maintaining shield building OPERABILITY prevents leakage of radioactive material from the shield building. Radioactive material may enter the shield building from the containment following a LOCA. Therefore, shield building OPERABILITY is required in MODES 1, 2, 3, and 4 when a steam line break, LOCA, or rod ejection accident could release radioactive material to the containment atmosphere.

In MODES 5 and 6, the probability and consequences of these events are low due to the Reactor Coolant System temperature and pressure limitations in these MODES. Therefore, shield building OPERABILITY is not required in MODE 5 or 6.

② **INSERT 1**

The isolation devices for the penetrations in the shield building boundary are a part of the shield building leak tight barrier. To maintain the shield building boundary leak tight, the sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) are required to be OPERABLE.

③ **INSERT 2**

The LCO is modified by a Note to allow the shield building access doors to be opened to allow normal transit entry and exit. The basis of this exception is the assumption that, for normal transit, the time during which a door is open will be short (i.e., shorter than the Completion Time for Condition A).

ACTIONS

A.1

In the event shield building OPERABILITY is not maintained, shield building OPERABILITY must be restored within 24 hours. Twenty-four hours is a reasonable Completion Time considering the limited leakage design of containment and the low probability of a Design Basis Accident occurring during this time period.

B.1 and B.2

If the shield building cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

~~[~~ SR 3.6.~~8~~.1 7 ④ ①

Verifying that shield building annulus negative pressure is within limit ensures that operation remains within the limit assumed in the containment analysis. ~~[The 12 hour Frequency of this SR was developed considering operating experience related to shield building annulus pressure variations and pressure instrument drift during the applicable MODES.~~ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~ ⑥

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.~~8~~.2 7 ① ③

Maintaining shield building OPERABILITY requires verifying ~~one~~ the door in the access opening closed. ~~[~~An access opening ~~may~~ contains one ~~inner and one outer~~ door~~, or in some cases, shield building access openings are shared such that a shield building barrier may have multiple inner or multiple outer doors~~. ~~The intent is to not breach the shield building boundary at any time when the shield building boundary is required. This is achieved by maintaining the inner or outer portion of the barrier closed at all times.]~~ However, all shield building access doors are normally kept closed, except when the access opening is being used for entry and exit ~~or when maintenance is being performed on an access opening~~. ~~[The 31 day Frequency of this SR is based on engineering judgment and is considered adequate in view of the other indications of door status that are available to the operator.~~ ④ ⑦ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

~~[~~ SR 3.6.~~8~~.3 7 ④ ①

~~This SR would~~ A visual inspection of the accessible shield building interior and exterior surfaces and verification that no apparent changes in the concrete surface appearance or other abnormal degradation will give advance indication of gross deterioration of the concrete structural integrity of the shield building. The Frequency of this SR is the same as that of SR 3.6.1.1. The verification is done during shutdown. ~~]~~ ⑧ ④

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.~~8~~7.4 ①

The ~~Shield Building Air Cleanup System~~ EGTS produces a negative pressure to ②
prevent leakage from the building. SR 3.6.~~8~~7.4 verifies that the shield ①
building can be rapidly drawn down to ~~[~~-0.5~~]~~ inch water gauge in the ④
annulus. This test is used to ensure shield building boundary integrity.
Establishment of this pressure is confirmed by SR 3.6.~~8~~7.4, which ①
demonstrates that the shield building can be drawn down to ≤ ~~[~~-0.5~~]~~ ④
inches of vacuum water gauge in the annulus ≤ ~~[22]~~ 60 seconds using one
~~Shield Building Air Cleanup System~~ EGTS train. The time limit ensures that no ②
significant quantity of radioactive material leaks from the shield building
prior to developing the negative pressure. Since this SR is a shield
building boundary integrity test, it does not need to be performed with
each ~~Shield Building Air Cleanup System~~ EGTS train. ~~[The Shield Building Air~~ ②
~~Cleanup System train used for this Surveillance is staggered to ensure~~ ⑤
~~that in addition to the requirements of LCO 3.6.8.4, either train will~~
~~perform this test.]~~ The primary purpose of this SR is to ensure shield
building integrity. The secondary purpose of this SR is to ensure that the
~~Shield Building Air Cleanup System~~ EGTS train being tested functions as designed. ②
The inoperability of the ~~Shield Building Air Cleanup System~~ EGTS train does not
necessarily constitute a failure of this Surveillance relative to the shield
building OPERABILITY. ~~[The 18 month Frequency is based on the need~~
~~to perform this Surveillance under conditions that apply during a plant~~ ⑤
~~outage.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance~~
~~Frequency Control Program should utilize the appropriate Frequency~~ ⑥
~~description, given above, and the appropriate choice of Frequency in the~~
~~Surveillance Requirement.~~
~~--]~~

REFERENCES None.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~8~~ 7 Shield Building ~~(Dual and Ice Condenser)~~ ①

BASES

BACKGROUND

The shield building is a concrete structure that surrounds the steel containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects containment leakage that may occur following a loss of coolant accident (LOCA). This space also allows for periodic inspection of the outer surface of the steel containment vessel.

The ~~Shield Building Air Cleanup System (SBACS)~~ Emergency Gas Treatment System (EGTS) establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment. The shield building is required to be OPERABLE to ensure retention of containment leakage and proper operation of the ~~SBACS~~ EGTS. ②

INSERT 1

APPLICABLE SAFETY ANALYSES

The design basis for shield building OPERABILITY is a LOCA. Maintaining shield building OPERABILITY ensures that the release of radioactive material from the containment atmosphere is restricted to those leakage paths and associated leakage rates assumed in the accident analyses.

The shield building satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Shield building OPERABILITY must be maintained to ensure proper operation of the ~~SBACS~~ EGTS and to limit radioactive leakage from the containment to those paths and leakage rates assumed in the accident analyses. INSERT 2 ② ②

APPLICABILITY

Maintaining shield building OPERABILITY prevents leakage of radioactive material from the shield building. Radioactive material may enter the shield building from the containment following a LOCA. Therefore, shield building OPERABILITY is required in MODES 1, 2, 3, and 4 when a steam line break, LOCA, or rod ejection accident could release radioactive material to the containment atmosphere.

In MODES 5 and 6, the probability and consequences of these events are low due to the Reactor Coolant System temperature and pressure limitations in these MODES. Therefore, shield building OPERABILITY is not required in MODE 5 or 6.

② INSERT 1

The isolation devices for the penetrations in the shield building boundary are a part of the shield building leak tight barrier. To maintain the shield building boundary leak tight, the sealing mechanism associated with each penetration (e.g., welds, bellows, or O-rings) are required to be OPERABLE.

③ INSERT 2

The LCO is modified by a Note to allow the shield building access doors to be opened to allow normal transit entry and exit. The basis of this exception is the assumption that, for normal transit, the time during which a door is open will be short (i.e., shorter than the Completion Time for Condition A).

BASES

ACTIONS

A.1

In the event shield building OPERABILITY is not maintained, shield building OPERABILITY must be restored within 24 hours. Twenty-four hours is a reasonable Completion Time considering the limited leakage design of containment and the low probability of a Design Basis Accident occurring during this time period.

B.1 and B.2

If the shield building cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

~~[~~ SR 3.6.~~8~~.1 7 ④ ①

Verifying that shield building annulus negative pressure is within limit ensures that operation remains within the limit assumed in the containment analysis. ~~[The 12 hour Frequency of this SR was developed considering operating experience related to shield building annulus pressure variations and pressure instrument drift during the applicable MODES.~~ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~ ⑥

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.~~8~~ 7 .2 ① ③

Maintaining shield building OPERABILITY requires verifying ~~one~~ the door in the access opening closed. [An access opening ~~may~~ contain s one ~~inner and one outer~~ door~~, or in some cases, shield building access openings are shared such that a shield building barrier may have multiple inner or multiple outer doors~~. ~~The intent is to not breach the shield building boundary at any time when the shield building boundary is required. This is achieved by maintaining the inner or outer portion of the barrier closed at all times.]~~ However, all shield building access doors are normally kept closed, except when the access opening is being used for entry and exit ~~or when maintenance is being performed on an access opening~~. ~~[The 31 day Frequency of this SR is based on engineering judgment and is considered adequate in view of the other indications of door status that are available to the operator.~~ ④ ⑦ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑥

~~[~~ SR 3.6.~~8~~ 7 .3 ④ ①

~~This SR would~~ A visual inspection of the accessible shield building interior and exterior surfaces and verification that no apparent changes in the concrete surface appearance or other abnormal degradation will give advance indication of gross deterioration of the concrete structural integrity of the shield building. The Frequency of this SR is the same as that of SR 3.6.1.1. The verification is done during shutdown. ~~]~~ ⑧ ④

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.~~8~~7.4 ①

The ~~Shield Building Air Cleanup System~~ EGTS produces a negative pressure to prevent leakage from the building. SR 3.6.~~8~~7.4 verifies that the shield building can be rapidly drawn down to ~~[~~-0.5~~]~~ inch water gauge in the annulus. This test is used to ensure shield building boundary integrity. Establishment of this pressure is confirmed by SR 3.6.~~8~~7.4, which demonstrates that the shield building can be drawn down to ≤ ~~[~~-0.5~~]~~ inches of vacuum water gauge in the annulus ≤ ~~[22]~~ 60 seconds using one ~~Shield Building Air Cleanup System~~ EGTS train. The time limit ensures that no significant quantity of radioactive material leaks from the shield building prior to developing the negative pressure. Since this SR is a shield building boundary integrity test, it does not need to be performed with each ~~Shield Building Air Cleanup System~~ EGTS train. ~~[The Shield Building Air Cleanup System train used for this Surveillance is staggered to ensure that in addition to the requirements of LCO 3.6.8.4, either train will perform this test.]~~ The primary purpose of this SR is to ensure shield building integrity. The secondary purpose of this SR is to ensure that the ~~Shield Building Air Cleanup System~~ EGTS train being tested functions as designed. The inoperability of the ~~Shield Building Air Cleanup System~~ EGTS train does not necessarily constitute a failure of this Surveillance relative to the shield building OPERABILITY. ~~[The 18 month Frequency is based on the need to perform this Surveillance under conditions that apply during a plant outage.~~ ② ① ④ ① ④ ② ② ⑤ ② ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

REFERENCES None.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.7 BASES, SHIELD BUILDING

1. The heading and title for ISTS 3.6.8 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7). Therefore, ISTS 3.6.7 is not included in the SQN ITS and ISTS 3.6.8 is renumbered as ITS 3.6.7.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Changes have been made to be consistent with changes made to the Specification.

4. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

5. ISTS SR 3.6.8.1, SR 3.6.8.2, and SR 3.6.8.4 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.7.1, SR 3.6.7.2, and SR 3.6.7.4 under the Surveillance Frequency Control Program.

6. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

7. There are no allowances in the LCO for a shield building access opening door to be open when maintenance is being performed on an access opening.

8. Changes are made to include details moved from the Current Technical Specifications to the Bases.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.7, SHIELD BUILDING

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 8

ITS 3.6.8, HYDROGEN MITIGATION SYSTEM

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

CONTAINMENT SYSTEMS

HYDROGEN MITIGATION SYSTEM

LIMITING CONDITION FOR OPERATION

two trains A02

LCO 3.6.8 3.6.4.3 The ~~primary containment~~ hydrogen mitigation system shall be operable. A01

Applicability APPLICABILITY: MODES 1 and 2.

ACTION:

ACTION A With one train of hydrogen mitigation system inoperable, restore the inoperable train to OPERABLE status within 7 days or increase the surveillance interval of S.R. 4.6.4.3 from 92 days to 7 days on the operable train ~~until the inoperable train is returned to OPERABLE status~~. A03

Add proposed ACTIONS B and C L01

SURVEILLANCE REQUIREMENTS

In accordance with the Surveillance Frequency Control Program LA01

4.6.4.3 The hydrogen mitigation system shall be demonstrated OPERABLE:

M01

SR 3.6.8.1, SR 3.6.8.2 a. ~~At least once per 92 days~~ by energizing the supply breakers and verifying that at least ~~66 of 68~~ igniters are energized.*

33 in each train LA02

SR 3.6.8.3 b. ~~At least once per 18 months~~ by verifying the temperature of each igniter is a minimum of 1700°F.

In accordance with the Surveillance Frequency Control Program LA01

LCO 3.6.8, SR 3.6.8.2 * Inoperable igniters must not be on corresponding redundant circuits which provide coverage for the same region.

A01

CONTAINMENT SYSTEMS

HYDROGEN MITIGATION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.6.8 3.6.4.3 The ~~primary containment~~ hydrogen mitigation system shall be operable.

two

trains

A02

A01

Applicability APPLICABILITY: MODES 1 and 2.

ACTION

ACTION A With one train of hydrogen mitigation system inoperable, restore the inoperable train to OPERABLE status within 7 days or increase the surveillance interval of S.R. 4.6.4.3 from 92 days to 7 days on the operable train ~~until the inoperable train is returned to OPERABLE status~~.

A03

Add proposed ACTIONS B and C

L01

SURVEILLANCE REQUIREMENTS

4.6.4.3 The hydrogen mitigation system shall be demonstrated OPERABLE:

In accordance with the Surveillance Frequency Control Program

LA01

SR 3.6.8.1, SR 3.6.8.2 a. ~~At least once per 92 days~~ by energizing the supply breakers and verifying that at least ~~66 of 68~~ igniters are energized.*

M01

33

in each train

LA02

SR 3.6.8.3 b. ~~At least once per 18 months~~ by verifying the temperature of each igniter is a minimum of 1700°F.

In accordance with the Surveillance Frequency Control Program

LA01

LCO 3.6.8, SR 3.6.8.2 * Inoperable igniters must not be on corresponding redundant circuits which provide coverage for the same region.

DISCUSSION OF CHANGES
ITS 3.6.8, HYDROGEN MITIGATION SYSTEM (HMS)

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.4.3 states "The primary containment hydrogen mitigation system shall be operable." ITS LCO 3.6.8 states "Two hydrogen mitigation system trains shall be OPERABLE." This changes the CTS by stating the number of trains required for operation.

The purpose of CTS 3.6.4.3 is to ensure that combustible gas generated from a metal-water reaction is controlled so that there is no loss of the containment structure integrity. Changing from a system basis to a train basis does not change the requirements for OPERABILITY but adds clarification. This change is designated as an administrative change since it does not result in a technical change to the CTS.

A03 CTS 3.6.4.3 ACTION requires, in part, when one train of hydrogen mitigation system is inoperable to increase the surveillance Frequency of SR 4.6.4.3 from 92 days to 7 days on the operable train until the inoperable train is returned to OPERABLE status. ITS 3.6.8 requires, in part, when one train of hydrogen mitigation system is inoperable to perform SR 3.6.8.1 on the OPERABLE train once per 7 days. This changes the CTS by not including the detail that the Surveillance Requirement must be performed until the inoperable train is restored to OPERABLE status.

The purpose of the CTS 3.6.4.3 ACTION is to ensure the Surveillance Requirement is performed once per 7 days as long as the unit is operating in the ACTION. ITS LCO 3.0.2 states if the LCO is met prior to expiration of the specified Completion Time(s), completion of the Required Action is not required unless otherwise stated. Since the requirement of the CTS 3.6.4.3 ACTION is stated in ITS LCO 3.0.2 and it is applicable to ITS 3.6.8, the explicit statement "until the inoperable train is returned to OPERABLE status" is not necessary in the ITS Required Action. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.6.4.3.a requires, in part, verification that 66 hydrogen mitigation system ignitors are energized. ITS SR 3.6.8.1 requires, in part, verification that 33 hydrogen mitigation system ignitors are energized in each train. This changes the CTS by specifying that of the required 66 hydrogen mitigation system ignitors, 33 hydrogen mitigation system ignitors are required to be energized in each train.

The purpose of CTS 3.6.4.3 is to ensure that combustible gas generated from a metal-water reaction is controlled so that there is no loss of the containment structure integrity. This change is acceptable, because it will ensure that sufficient ignitors are available in each train, so that redundancy between the trains is maintained. Specifying that each hydrogen mitigation system train consists of at least 33 ignitors is consistent with the current licensing basis as described in the UFSAR. This change is designated as more restrictive because new requirements related to the hydrogen mitigation system are being included in the ITS that are not required in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 - Removal of SR Requirement to the Surveillance Frequency Control Program)* CTS 4.6.4.3.a requires energizing the supply breakers and verifying that at least 66 of 68 igniters are energized at least once per 92 days. Additionally, CTS 4.6.4.3.a contains footnote * which states that inoperable igniters must not be on corresponding redundant circuits which provide coverage for the same region. CTS 4.6.4.3.b requires verification that the temperature of each igniter is a minimum of 1700 °F at least once per 18 months. ITS SR 3.6.8.1, SR 3.6.8.2, and SR 3.6.8.3 require similar Surveillances and specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the Surveillance Requirements and the Bases for the Frequencies to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA02 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.6.4.3.a requires, in part, the verification that at least 66 of 68 igniters are energized. ITS 3.6.8.1 requires, in part, verification that greater than or equal to 33 ignitors are energized in each train. This changes the CTS by moving the total number of ignitors to the Bases. The change to the number of ignitors on a train basis is in DOC A02.

The removal of these details, which are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify that at least 66 ignitors (33 per train) are energized. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.6.4.3 ACTION does not state what follow up ACTION to take when it cannot be met or when one containment region does not have an OPERABLE hydrogen ignitor. Thus, entry into CTS 3.0.3 is required. For this Specification, CTS 3.0.3 allows one hour to take action and 7 hours to place the unit in HOT STANDBY (MODE 3). ITS 3.6.8 ACTION B requires that when one containment region has no OPERABLE hydrogen ignitor to restore one hydrogen ignitor in the affected containment region to OPERABLE status within 7 days. ITS 3.6.8 ACTION C requires that when the Required Action and associated Completion Time of Condition A or B is not met, to be in MODE 3 within 6 hours. This changes the CTS by allowing 7 days to restore one hydrogen ignitor in the affected containment region to OPERABLE status. Additionally, it allows 6 hours to be in MODE 3 when one train of hydrogen mitigation can't be restored to OPERABLE status within 7 days or when the surveillance interval on the operable train cannot be met.

The change from CTS 3.0.3 to ITS 3.6.8 ACTION B is acceptable because the Required Action is used to establish remedial measures that must be taken in response to the degraded condition in order to minimize risk associated with continued operation while providing time to repair the inoperable feature. The 7 day Completion Time is based on the low probability of the occurrence of a degraded core event that would generate hydrogen in amounts equivalent to a metal water reaction of 75% of the core cladding, the length of time after the event that operator action would be required to prevent hydrogen accumulation from exceeding this limit, and the low probability of failure of the OPERABLE hydrogen mitigation system (HMS) train. Furthermore, the adjacent containment regions would provide flame propagation for the region without an OPERABLE ignitor. The addition of ITS 3.6.8 ACTION C is acceptable because when the Required Action or associated Completion Time of Condition A or B cannot be met, the ACTION will place the unit in a MODE which is outside of the

DISCUSSION OF CHANGES
ITS 3.6.8, HYDROGEN MITIGATION SYSTEM (HMS)

Applicability. The 6 hour Completion Time is acceptable because it is based on operating experience and is a reasonable time to reach MODE 3 from full power. This change is designated as less restrictive because a less stringent Required Actions are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

HMS ~~HIS (Ice Condenser)~~
3.6.~~10~~ 8 ①

3.6 CONTAINMENT SYSTEMS

3.6.~~10~~ 8 Hydrogen ~~Ignition~~ Mitigation System (~~HIS~~ HMS) ~~(Ice Condenser)~~ ①

3.6.4.3 LCO 3.6.~~10~~ 8 Two ~~HIS~~ HMS trains shall be OPERABLE. ①

INSERT 1 ⑤

Applicability APPLICABILITY: MODES 1 and 2.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION	A. One ~~HIS~~ HMS train inoperable.	A.1 Restore ~~HIS~~ HMS train to OPERABLE status.	7 days	①
		OR		
		A.2 Perform SR 3.6.~~10~~ 8.1 on the OPERABLE train.	Once per 7 days	①
DOC L01	B. One containment region with no OPERABLE hydrogen ignitor.	B.1 Restore one hydrogen ignitor in the affected containment region to OPERABLE status.	7 days	
DOC L01	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours	

⑤ INSERT 1

AND

Footnote * Each containment region shall have at least one OPERABLE hydrogen ignitor.

CTS

~~HIS (Ice Condenser)~~ HMS
3.6.~~10~~ 8 ①

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.4.3.a	SR 3.6.~~10~~ 8 .1	Energize each ~~HIS~~ HMS train power supply breaker and verify ≥ ~~[32]~~ 33 ignitors are energized in each train.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ④ ④
Footnote *	SR 3.6.~~10~~ 8 .2	Verify at least one hydrogen ignitor is OPERABLE in each containment region.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④
4.6.4.3.b	SR 3.6.~~10~~ 8 .3	Energize each hydrogen ignitor and verify temperature is ≥ ~~[~~1700~~]~~°F.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ④ ④

CTS

~~HIS (Ice Condenser)~~ HMS
3.6.~~10~~ 8 ①

3.6 CONTAINMENT SYSTEMS

3.6.~~10~~ 8 Hydrogen ~~Ignition~~ Mitigation System (~~HIS~~ HMS) ~~(Ice Condenser)~~ ①

3.6.4.3 LCO 3.6.~~10~~ 8 Two ~~HIS~~ HMS trains shall be OPERABLE. ①

INSERT 1 ⑤

Applicability APPLICABILITY: MODES 1 and 2.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION	A. One ~~HIS~~ HMS train inoperable.	A.1 Restore ~~HIS~~ HMS train to OPERABLE status. OR A.2 Perform SR 3.6.~~10~~ 8.1 on the OPERABLE train.	7 days Once per 7 days	① ①
DOC L01	B. One containment region with no OPERABLE hydrogen ignitor.	B.1 Restore one hydrogen ignitor in the affected containment region to OPERABLE status.	7 days	
DOC L01	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours	

⑤

INSERT 1

AND

Footnote * Each containment region shall have at least one OPERABLE hydrogen ignitor.

CTS

~~HIS (Ice Condenser)~~ HMS ①
3.6.~~10~~8

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.4.3.a	SR 3.6.~~10~~8.1	Energize each ~~HIS~~ HMS train power supply breaker and verify ≥ ~~[32]~~ 33 ignitors are energized in each train.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ④ ④
Footnote *	SR 3.6.~~10~~8.2	Verify at least one hydrogen ignitor is OPERABLE in each containment region.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④
4.6.4.3.b	SR 3.6.~~10~~8.3	Energize each hydrogen ignitor and verify temperature is ≥ ~~[~~1700~~]~~°F.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ④ ④

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.8, HYDROGEN MITIGATION SYSTEM (HMS)

1. The ISTS 3.6.10 title "Hydrogen Ignition System" has been changed to "Hydrogen Mitigation System" consistent with the Sequoyah Nuclear Plant (SQN) site specific terminology. The headings for ISTS 3.6.10 include the parenthetical expression (Ice Condenser). This identifying information is not included in the SQN ITS. This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.10 is renumbered as ITS 3.6.8.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.6.10.1, SR 3.6.10.2, and SR 3.6.10.3 (ITS SR 3.6.8.1, SR 3.6.8.2, and SR 3.6.8.3, respectively) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequencies for ITS SR 3.6.8.1, SR 3.6.8.2, and SR 3.6.8.3 are "In accordance with the Surveillance Frequency Control Program."

5. The second part of the LCO has been added to ensure consistency between the LCO, ACTIONS, and Surveillance Requirements. The ISTS LCO, ACTIONS, and do not match up since there is no explicit statement in the LCO requiring at least one hydrogen ignitor to be OPERABLE in each containment region. LCO 3.0.1 requires LCOs to be met during the MODES or other specified conditions in the Applicability. LCO 3.0.2 states that upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met. Currently, if one ignitor is inoperable in each train and the inoperable ignitors are in the same containment region, then the LCO is still met. Thus, ACTION B is not required to be entered since the LCO is still met. Therefore, the inclusion of the second portion of the LCO ensures consistency between the LCO, ACTIONS, and Surveillance Requirements.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~10~~ 8 Hydrogen ~~Ignition~~ Mitigation System (~~HIS~~ HMS) ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The ~~HIS~~ HMS reduces the potential for breach of primary containment due to a hydrogen oxygen reaction in post accident environments. The ~~HIS~~ HMS is required by 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), ~~and Appendix A, GDC 41, "Containment Atmosphere Cleanup" (Ref. 2),~~ to reduce the hydrogen concentration in the primary containment following a degraded core accident. The ~~HIS~~ HMS must be capable of handling an amount of hydrogen equivalent to that generated from a metal water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the plenum volume). ① ③ ①

10 CFR 50.44 (Ref. 1) requires units with ice condenser containments to install suitable hydrogen control systems that would accommodate an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water. The ~~HIS~~ HMS provides this required capability. This requirement was placed on ice condenser units because of their small containment volume and low design pressure (compared with pressurized water reactor dry containments). Calculations indicate that if hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water were to collect in the primary containment, the resulting hydrogen concentration would be far above the lower flammability limit such that, if ignited from a random ignition source, the resulting hydrogen burn would seriously challenge the containment and safety systems in the containment. ①

The ~~HIS~~ HMS is based on the concept of controlled ignition using thermal ignitors, designed to be capable of functioning in a post accident environment, seismically supported, and capable of actuation from the control room. A total of ~~[64]~~ 68 ignitors are distributed throughout the various regions of containment in which hydrogen could be released or to which it could flow in significant quantities. The ignitors are arranged in two independent trains such that each containment region has at least two ignitors, one from each train, controlled and powered redundantly so that ignition would occur in each region even if one train failed to energize. INSERT 1 ① ② ③

When the ~~HIS~~ HMS is initiated, the ignitor elements are energized and heat up to a surface temperature ≥ ~~[~~1700~~]~~°F. At this temperature, they ignite the hydrogen gas that is present in the airspace in the vicinity of the ignitor. The ~~HIS~~ HMS depends on the dispersed location of the ignitors so that local pockets of hydrogen at increased concentrations would burn before ① ② ①

③ INSERT 1

Additional information regarding containment regions and the distribution of hydrogen igniters within each region is contained in UFSAR Section 6.2.5A.

BASES

BACKGROUND (continued)

reaching a hydrogen concentration significantly higher than the lower flammability limit. Hydrogen ignition in the vicinity of the ignitors is assumed to occur when the local hydrogen concentration reaches ~~[~~8.0~~]~~ volume percent ~~(v/o)~~ and results in ~~[~~85~~]~~% of the hydrogen present being consumed. ② ⑨

APPLICABLE SAFETY ANALYSES

The ~~HIS~~ HMS causes hydrogen in containment to burn in a controlled manner as it accumulates following a degraded core accident (Ref. ~~3~~ 2). Burning occurs at the lower flammability concentration, where the resulting temperatures and pressures are relatively benign. Without the system, hydrogen could build up to higher concentrations that could result in a violent reaction if ignited by a random ignition source after such a buildup. ① ③

The hydrogen ignitors are not included for mitigation of a Design Basis Accident (DBA) because an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water is far in excess of the hydrogen calculated for the limiting DBA loss of coolant accident (LOCA). The hydrogen ignitors have been shown by probabilistic risk analysis to be a significant contributor to limiting the severity of accident sequences that are commonly found to dominate risk for units with ice condenser containments. The hydrogen Mitigation System ~~ignitors~~ satisf~~y~~ies Criterion 4 of 10 CFR 50.36(c)(2)(ii). ① ⑧

LCO

Two ~~HIS~~ HMS trains must be OPERABLE with power from two independent, safety related power supplies. ①

For this unit, an OPERABLE ~~HIS~~ HMS train consists of ~~32~~ 33 of ~~33~~ 34 ignitors energized on the train. ① ③

Operation with at least one ~~HIS~~ HMS train ensures that the hydrogen in containment can be burned in a controlled manner. Unavailability of both ~~HIS~~ HMS trains could lead to hydrogen buildup to higher concentrations, which could result in a violent reaction if ignited. The reaction could take place fast enough to lead to high temperatures and overpressurization of containment and, as a result, breach containment or cause containment leakage rates above those assumed in the safety analyses. Damage to safety related equipment located in containment could also occur. ①

INSERT 2 ④

APPLICABILITY

Requiring OPERABILITY in MODES 1 and 2 for the ~~HIS~~ HMS ensures its immediate availability after safety injection and scram actuated on a LOCA initiation. In the post accident environment, the two ~~HIS~~ HMS ~~subsystems~~ trains are required to control the hydrogen concentration within containment to near its flammability limit of 4.1 ~~v/o~~ volume percent assuming a worst case single failure. This prevents overpressurization of containment and damage to safety related equipment and instruments located within containment. ① ① ⑦ ⑨

④

INSERT 2

Each containment region must contain at least one OPERABLE hydrogen ignitor. This ensures that, assuming a single failure, there is still ignition capability in an adjacent region.

BASES

APPLICABILITY (continued)

In MODES 3 and 4, both the hydrogen production rate and the total hydrogen production after a LOCA would be significantly less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the ~~HIS~~ HMS is low. Therefore, the ~~HIS~~ HMS is not required in MODES 3 and 4. ①

In MODES 5 and 6, the probability and consequences of a LOCA are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ~~HIS~~ HMS is not required to be OPERABLE in MODES 5 and 6. ①

ACTIONS

A.1 and A.2

With one ~~HIS~~ HMS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days or the OPERABLE train must be verified OPERABLE frequently by performance of SR 3.6.~~10~~ 8.1. The 7 day Completion Time is based on the low probability of the occurrence of a degraded core event that would generate hydrogen in amounts equivalent to a metal water reaction of 75% of the core cladding, the length of time after the event that operator action would be required to prevent hydrogen accumulation from exceeding this limit, and the low probability of failure of the OPERABLE ~~HIS~~ HMS train. Alternative Required Action A.2, by frequent surveillances, provides assurance that the OPERABLE train continues to be OPERABLE. ① ① ①

B.1

Condition B is one containment region with no OPERABLE hydrogen ignitor. Thus, while in Condition B, or in Conditions A and B simultaneously, there would always be ignition capability in the adjacent containment regions that would provide redundant capability by flame propagation to the region with no OPERABLE ignitors.

Required Action B.1 calls for the restoration of one hydrogen ignitor in each region to OPERABLE status within 7 days. The 7 day Completion Time is based on the same reasons given under Required Action A.1.

C.1

The unit must be placed in a MODE in which the LCO does not apply if the ~~HIS~~ HMS subsystem(s) cannot be restored to OPERABLE status within the associated Completion Time. This is done by placing the unit in at least MODE 3 within 6 hours. The allowed Completion Time of 6 hours is ①

BASES

ACTIONS (continued)

reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~10~~8.1 ①

This SR confirms that ≥ ~~[32]~~ 33 of ~~33~~ 34 hydrogen ignitors can be successfully energized in each train. The ignitors are simple resistance elements. Therefore, energizing provides assurance of OPERABILITY. The allowance of one inoperable hydrogen ignitor is acceptable because, although one inoperable hydrogen ignitor in a region would compromise redundancy in that region, the containment regions are interconnected so that ignition in one region would cause burning to progress to the others (i.e., there is overlap in each hydrogen ignitor's effectiveness between regions). ~~[The Frequency of 92 days has been shown to be acceptable through operating experience.~~ ② ③ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥ ⑤

SR 3.6.~~10~~8.2 ①

INSERT 3 ~~This SR confirms that the two inoperable hydrogen ignitors allowed by SR 3.6.10.1 (i.e., one in each train) are not in the same containment region.~~ ~~[The Frequency of 92 days is acceptable based on the Frequency of SR 3.6.10.1, which provides the information for performing this SR.~~ ⑦ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

⑦ INSERT 3

This SR confirms that each containment region contains at least one OPERABLE hydrogen igniter.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~--------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥ ⑤

8
SR 3.6.~~10~~.3 ①

A more detailed functional test is performed to verify system OPERABILITY. ~~Each glow plug is visually examined to ensure that it is clean and that the electrical circuitry is energized.~~ All ignitors (glow plugs), including normally inaccessible ignitors, are visually checked for a glow to verify that they are energized. Additionally, the surface temperature of each glow plug is measured to be ≥ ~~[~~1700~~]~~°F to demonstrate that a temperature sufficient for ignition is achieved. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the [18] month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ⑦ ② ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~--------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥ ⑤

REFERENCES

1. 10 CFR 50.44.

~~2. 10 CFR 50, Appendix A, GDC 41.~~ ③

2 ~~3~~. U FSAR, Section ~~[~~6.2~~]~~. ③ ②

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~10~~ 8 Hydrogen ~~Ignition~~ Mitigation System (~~HIS~~ HMS) ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The ~~HIS~~ HMS reduces the potential for breach of primary containment due to a hydrogen oxygen reaction in post accident environments. The ~~HIS~~ HMS is required by 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), ~~and Appendix A, GDC 41, "Containment Atmosphere Cleanup" (Ref. 2),~~ to reduce the hydrogen concentration in the primary containment following a degraded core accident. The ~~HIS~~ HMS must be capable of handling an amount of hydrogen equivalent to that generated from a metal water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the plenum volume). ① ③ ①

10 CFR 50.44 (Ref. 1) requires units with ice condenser containments to install suitable hydrogen control systems that would accommodate an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water. The ~~HIS~~ HMS provides this required capability. This requirement was placed on ice condenser units because of their small containment volume and low design pressure (compared with pressurized water reactor dry containments). Calculations indicate that if hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water were to collect in the primary containment, the resulting hydrogen concentration would be far above the lower flammability limit such that, if ignited from a random ignition source, the resulting hydrogen burn would seriously challenge the containment and safety systems in the containment. ①

The ~~HIS~~ HMS is based on the concept of controlled ignition using thermal ignitors, designed to be capable of functioning in a post accident environment, seismically supported, and capable of actuation from the control room. A total of ~~[64]~~ 68 ignitors are distributed throughout the various regions of containment in which hydrogen could be released or to which it could flow in significant quantities. The ignitors are arranged in two independent trains such that each containment region has at least two ignitors, one from each train, controlled and powered redundantly so that ignition would occur in each region even if one train failed to energize. INSERT 1 ① ② ③

When the ~~HIS~~ HMS is initiated, the ignitor elements are energized and heat up to a surface temperature ≥ ~~[~~1700~~]~~°F. At this temperature, they ignite the hydrogen gas that is present in the airspace in the vicinity of the ignitor. The ~~HIS~~ HMS depends on the dispersed location of the ignitors so that local pockets of hydrogen at increased concentrations would burn before ① ② ①

③ INSERT 1

Additional information regarding containment regions and the distribution of hydrogen igniters within each region is contained in UFSAR Section 6.2.5A.

BASES

BACKGROUND (continued)

reaching a hydrogen concentration significantly higher than the lower flammability limit. Hydrogen ignition in the vicinity of the ignitors is assumed to occur when the local hydrogen concentration reaches ~~[~~8.0~~]~~ volume percent ~~(v/o)~~ and results in ~~[~~85~~]~~% of the hydrogen present being consumed. ② ⑨

APPLICABLE SAFETY ANALYSES

The ~~HIS~~ HMS causes hydrogen in containment to burn in a controlled manner as it accumulates following a degraded core accident (Ref. ~~3~~ 2). Burning occurs at the lower flammability concentration, where the resulting temperatures and pressures are relatively benign. Without the system, hydrogen could build up to higher concentrations that could result in a violent reaction if ignited by a random ignition source after such a buildup. ① ③

The hydrogen ignitors are not included for mitigation of a Design Basis Accident (DBA) because an amount of hydrogen equivalent to that generated from the reaction of 75% of the fuel cladding with water is far in excess of the hydrogen calculated for the limiting DBA loss of coolant accident (LOCA). The hydrogen ignitors have been shown by probabilistic risk analysis to be a significant contributor to limiting the severity of accident sequences that are commonly found to dominate risk for units with ice condenser containments. The hydrogen ~~ignitors~~ Mitigation System satisf~~y~~ ies Criterion 4 of 10 CFR 50.36(c)(2)(ii). ① ⑧

LCO

Two ~~HIS~~ HMS trains must be OPERABLE with power from two independent, safety related power supplies. ①

For this unit, an OPERABLE ~~HIS~~ HMS train consists of ~~32~~ 33 of ~~33~~ 34 ignitors energized on the train. ① ③

Operation with at least one ~~HIS~~ HMS train ensures that the hydrogen in containment can be burned in a controlled manner. Unavailability of both ~~HIS~~ HMS trains could lead to hydrogen buildup to higher concentrations, which could result in a violent reaction if ignited. The reaction could take place fast enough to lead to high temperatures and overpressurization of containment and, as a result, breach containment or cause containment leakage rates above those assumed in the safety analyses. Damage to safety related equipment located in containment could also occur. INSERT 2 ① ④

APPLICABILITY

Requiring OPERABILITY in MODES 1 and 2 for the ~~HIS~~ HMS ensures its immediate availability after safety injection and scram actuated on a LOCA initiation. In the post accident environment, the two ~~HIS~~ HMS ~~subsystems~~ trains are required to control the hydrogen concentration within containment to near its flammability limit of 4.1 ~~v/o~~ volume percent assuming a worst case single failure. This prevents overpressurization of containment and damage to safety related equipment and instruments located within containment. ① ① ⑦ ⑨

④ INSERT 2

Each containment region must contain at least one OPERABLE hydrogen ignitor. This ensures that, assuming a single failure, there is still ignition capability in an adjacent region.

BASES

APPLICABILITY (continued)

In MODES 3 and 4, both the hydrogen production rate and the total hydrogen production after a LOCA would be significantly less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the ~~HIS~~ HMS is low. Therefore, the ~~HIS~~ HMS is not required in MODES 3 and 4. ①

In MODES 5 and 6, the probability and consequences of a LOCA are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ~~HIS~~ HMS is not required to be OPERABLE in MODES 5 and 6. ①

ACTIONS

A.1 and A.2

With one ~~HIS~~ HMS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days or the OPERABLE train must be verified OPERABLE frequently by performance of SR 3.6.~~10~~ 8.1. The 7 day Completion Time is based on the low probability of the occurrence of a degraded core event that would generate hydrogen in amounts equivalent to a metal water reaction of 75% of the core cladding, the length of time after the event that operator action would be required to prevent hydrogen accumulation from exceeding this limit, and the low probability of failure of the OPERABLE ~~HIS~~ HMS train. Alternative Required Action A.2, by frequent surveillances, provides assurance that the OPERABLE train continues to be OPERABLE. ① ① ①

B.1

Condition B is one containment region with no OPERABLE hydrogen ignitor. Thus, while in Condition B, or in Conditions A and B simultaneously, there would always be ignition capability in the adjacent containment regions that would provide redundant capability by flame propagation to the region with no OPERABLE ignitors.

Required Action B.1 calls for the restoration of one hydrogen ignitor in each region to OPERABLE status within 7 days. The 7 day Completion Time is based on the same reasons given under Required Action A.1.

C.1

The unit must be placed in a MODE in which the LCO does not apply if the ~~HIS~~ HMS subsystem(s) cannot be restored to OPERABLE status within the associated Completion Time. This is done by placing the unit in at least MODE 3 within 6 hours. The allowed Completion Time of 6 hours is ①

BASES

ACTIONS (continued)

reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~10~~8.1 ①

This SR confirms that ≥ ~~[32]~~33 of ~~33~~34 hydrogen ignitors can be successfully energized in each train. The ignitors are simple resistance elements. Therefore, energizing provides assurance of OPERABILITY. The allowance of one inoperable hydrogen ignitor is acceptable because, although one inoperable hydrogen ignitor in a region would compromise redundancy in that region, the containment regions are interconnected so that ignition in one region would cause burning to progress to the others (i.e., there is overlap in each hydrogen ignitor's effectiveness between regions). ~~[The Frequency of 92 days has been shown to be acceptable through operating experience.~~ ② ③ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑥ ⑤

SR 3.6.~~10~~8.2 ①

INSERT 3 ~~This SR confirms that the two inoperable hydrogen ignitors allowed by SR 3.6.10.1 (i.e., one in each train) are not in the same containment region. [The Frequency of 92 days is acceptable based on the Frequency of SR 3.6.10.1, which provides the information for performing this SR.~~ ⑦ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

⑦ **INSERT 3**

This SR confirms that each containment region contains at least one OPERABLE hydrogen igniter.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑥ ⑤

SR 3.6.~~10~~8.3 ①

A more detailed functional test is performed to verify system OPERABILITY. ~~Each glow plug is visually examined to ensure that it is clean and that the electrical circuitry is energized.~~ ⑦ All ignitors (glow plugs), including normally inaccessible ignitors, are visually checked for a glow to verify that they are energized. Additionally, the surface temperature of each glow plug is measured to be ≥ ~~[~~1700~~]~~°F to demonstrate that a temperature sufficient for ignition is achieved. ② ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the SR when performed at the [18] month Frequency, which is based on the refueling cycle. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

~~OR~~ ⑤

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑥ ⑤

REFERENCES

1. 10 CFR 50.44.

~~2. 10 CFR 50, Appendix A, GDC 41.~~ ③

2 ~~3~~. U FSAR, Section ~~[~~6.2~~]~~. ③ ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.8 BASES, HYDROGEN MITIGATION SYSTEM (HMS)

1. The ISTS 3.6.10 title "Hydrogen Ignition System" has been changed to "Hydrogen Mitigation System" consistent with the Sequoyah Nuclear Plant (SQN) site specific terminology. The headings for ISTS 3.6.10 include the parenthetical expression (Ice Condenser). This identifying information is not included in the SQN ITS. This information is provided in NUREG-1431, Rev. 4, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.10 is renumbered as ITS 3.6.8.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

3. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

4. Changes are made to be consistent with changes made to the Specification.

5. ISTS SR 3.6.10.1, SR 3.6.10.2, and SR 3.6.10.3 (ITS SR 3.6.8.1, SR 3.6.8.2, and SR 3.6.8.3, respectively) Bases provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Additionally, the Frequency basis description which is being removed will be included in the Surveillance Frequency Control Program.

6. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

7. Changes are made to be consistent with the Specification.

8. Editorial/grammatical error corrected.

9. The abbreviation (v/o) has been removed from the Bases, as it is not used at SQN.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.8, HYDROGEN MITIGATION SYSTEM (HMS)

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 9

ITS 3.6.9, VACUUM RELIEF VALVES

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

CONTAINMENT SYSTEMS

3/4.6.6 VACUUM RELIEF LINES

LIMITING CONDITION FOR OPERATION

LCO 3.6.9

3.6.6 Three primary containment vacuum relief lines shall be OPERABLE.*

Applicability

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A

ACTION B

With one primary containment vacuum relief line inoperable, restore the line to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.9.1

4.6.6.1 No additional surveillance requirements other than those required by ~~Specification 4.0.5~~.

the Inservice Testing Program

A02

~~* Refer to LCO 3.6.3 if one or more containment vacuum relief isolation or containment vacuum relief valves are incapable of performing a containment isolation function.~~

A03

A01

CONTAINMENT SYSTEMS

3/4.6.6 VACUUM RELIEF LINES

LIMITING CONDITION FOR OPERATION

LCO 3.6.9

3.6.6 The primary containment vacuum relief lines shall be OPERABLE.*

Applicability

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A

ACTION B

With one primary containment vacuum relief line inoperable, restore the line to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.9.1

4.6.6.1 No additional surveillance requirements other than those required by ~~Specification 4.0.5~~ the Inservice Testing Program.

A02

~~* Refer to LCO 3.6.3 if one or more containment vacuum relief isolation or containment vacuum relief valves are incapable of performing a containment isolation function.~~

A03

This page intentionally left blank.

DISCUSSION OF CHANGES
ITS 3.6.9, VACUUM RELIEF VALVES

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications-Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 4.6.6.1 requires no additional Surveillance Requirements on the primary containment vacuum relief lines other than those required by Specification 4.0.5. ITS SR 3.6.9.1 requires verification that each vacuum relief line is OPERABLE in accordance with the Inservice Testing Program with a Frequency of in accordance with the Inservice Testing Program. This changes the CTS by stating vacuum relief line testing is performed in accordance with the Inservice Testing Program, and that the Frequency is in accordance with the Inservice Testing Program.

The purpose of CTS 4.6.6.1 is to verify each vacuum relief line is tested in accordance with Specification 4.0.5, which provides the requirements for the Inservice Testing Program. This change is acceptable, because the Frequency regarding the vacuum relief line testing remains the same. The inservice testing requirements of CTS 4.0.5 have been moved to the Inservice Testing Program contained in Section 5.5 of the ITS. This change is designated as administrative, because it does not result in a technical change to the CTS.

A03 CTS 3.6.6 LCO contains a footnote * stating "Refer to LCO 3.6.3 if one or more containment vacuum relief isolation or containment vacuum relief valves are incapable of performing a containment isolation function." ITS 3.6.9 does not contain this Note. This changes the CTS by not including a footnote in the ITS that was included in the CTS.

The purpose of CTS footnote * is to alert the user that the vacuum relief isolation valves or the vacuum relief valves also have containment isolation functions. It is an ITS convention to not include these types of footnotes or cross-references. This change is designated as administrative as it incorporates an ITS convention with no technical change to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

DISCUSSION OF CHANGES
ITS 3.6.9, VACUUM RELIEF VALVES

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.~~12~~ 9 Vacuum Relief Valves ~~(Atmospheric and Ice Condenser)~~ ①

3.6.6 LCO 3.6.~~12~~ 9 ~~[Two]~~ Three vacuum relief lines shall be OPERABLE. ① ②

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. One vacuum relief line inoperable.	A.1 Restore vacuum relief line to OPERABLE status.	72 hours
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
		AND	
		B.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.6.1	SR 3.6.~~12~~ 9.1	Verify each vacuum relief line is OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program	①

CTS

3.6 CONTAINMENT SYSTEMS

3.6.~~12~~ 9 Vacuum Relief Valves ~~(Atmospheric and Ice Condenser)~~ ①

3.6.6 LCO 3.6.~~12~~ 9 ~~[Two]~~ Three vacuum relief lines shall be OPERABLE. ① ②

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. One vacuum relief line inoperable.	A.1 Restore vacuum relief line to OPERABLE status.	72 hours
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.6.1	SR 3.6.~~12~~ 9.1 Verify each vacuum relief line is OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program	①

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.9, VACUUM RELIEF VALVES

1. The headings for ISTS 3.6.12 include the parenthetical expression (Atmospheric and Ice Condenser). This identifying information is not included in the Sequoyah Nuclear Plant (SQN) ITS. This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7), the Hydrogen Mixing System (ISTS 3.6.9), and the Iodine Cleanup System (ISTS 3.6.11). Therefore, ISTS 3.6.7, ISTS 3.6.9, and ISTS 3.6.11 are not included in the SQN ITS and ISTS 3.6.12 is renumbered as ITS 3.6.9.

2. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

3. Changes are made (additions, deletions, and/or changes) to the ISTS that reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~12~~ 9 Vacuum Relief Valves ~~(Atmospheric and Ice Condenser)~~ ①

BASES

BACKGROUND

The purpose of the vacuum relief lines is to protect the containment vessel against negative pressure (i.e., a lower pressure inside than outside). Excessive negative pressure inside containment can occur if there is an inadvertent actuation of containment cooling features, such as the Containment Spray System , the Air Return System, or both. Multiple equipment failures or human errors are necessary to cause inadvertent actuation of these systems. ②

The containment pressure vessel contains ~~two~~ three ~~100%~~ vacuum relief lines that protect the containment from excessive external loading. ③

~~[For this facility, the characteristics of the vacuum relief valves~~ INSERT 1 ~~and their locations in the containment pressure vessel are as follows:]~~ ④

APPLICABLE SAFETY ANALYSES

Design of the vacuum relief lines involves calculating the effect of inadvertent actuation of containment cooling features, which can reduce the atmospheric temperature (and hence pressure) inside containment (Ref. 1). Conservative assumptions are used for all the relevant parameters in the calculation; for example, for the Containment Spray System, the minimum spray water temperature, maximum initial containment temperature, maximum spray flow, all spray trains operating, etc. The resulting containment pressure versus time is calculated, including the effect of the opening of the vacuum relief lines when their negative pressure setpoint is reached. It is also assumed that one valve fails to open.

The containment was designed for an external pressure load equivalent to ~~[-2.5]~~ 0.5 psig. ④ The inadvertent actuation of the containment cooling features was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was ~~[-0.3] psig~~ 0.1 psi less than annulus pressure. This resulted in a minimum pressure inside containment of ~~[-2.0] psig~~ 0.49 psi less than annulus pressure, which is less than the design load. ④

The vacuum relief valves must also perform the containment isolation function in a containment high pressure event. For this reason, the system is designed to take the full containment positive design pressure and the environmental conditions (temperature, pressure, humidity, radiation, chemical attack, etc.) associated with the containment DBA.

The vacuum relief valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

④ **INSERT 1**

The vacuum relief system has three identical lines located on the dome, at the same elevation, and 120° apart. Each line contains a vacuum relief valve in series with a containment isolation valve, the vacuum relief valve being outside of the isolation valve. The lines are installed such that there is sufficient space between the vacuum relief system and the Shield Building to prevent contact during seismic or pressure transient motion and to allow for an adequate airflow path.

Each containment vessel vacuum relief valve is a 24 inch, self-actuated, horizontally installed, swing-disc valve, with an elastomer seat. The seat material will withstand post-LOCA temperature, pressure, and radiation conditions. Each line has a design airflow rate of 28 pounds per second at a pressure differential of 0.5 psid across the entire line. Each normally closed vacuum relief valve is equipped with limit switches so that open and closed positions of the valve are indicated in the main control room. The opening of any of these valves is indicated in the main control room. The valves begin opening at a containment external pressure differential of 0.1 psid and will be fully open in 2.2 seconds for a vacuum relief system design basis event.

Each containment vessel vacuum relief isolation valve is a pneumatically operated butterfly valve with an elastomer seat. The valve, including seat material, will withstand post-LOCA temperature, pressure, and radiation conditions. Two separate trains of control air supplies are available to the two independent solenoid valves which power the isolation valve. The isolation valve, which is normally open, fails open, and will close when containment high pressure reaches the set pressure of 1.5 psid. The high pressure signal is developed from either of two independent sets of three pressure sensors and is completely independent of other containment isolation signals for other systems. Each isolation valve is equipped with a limit switch so that open and closed positions are indicated in the main control room.

BASES

LCO

The LCO establishes the minimum equipment required to accomplish the vacuum relief function following the inadvertent actuation of containment cooling features. ~~Two~~ Three ~~100%~~ vacuum relief lines are required to be OPERABLE to ensure that at least ~~one~~ two are ~~is~~ available, assuming one ~~or~~ vacuum relief valve fails ~~both valves in the other line fail~~ to open. ③

APPLICABILITY

In MODES 1, 2, 3, and 4, the containment cooling features, such as the Containment Spray System and the Air Return System, are required to be OPERABLE to mitigate the effects of a DBA. Excessive negative pressure inside containment could occur ~~whenever these systems are required to be OPERABLE~~ due to inadvertent actuation of these systems. Therefore, the vacuum relief lines are required to be OPERABLE in MODES 1, 2, 3, and 4 to mitigate the effects of inadvertent actuation of the Containment Spray System, ~~Quench Spray (QS) System, or Containment Cooling~~ Air Return System, or both. ⑤ ②

In MODES 5 and 6, the probability and consequences of a DBA are reduced due to the pressure and temperature limitations of these MODES. The Containment Spray System~~, QS System,~~ and ~~Containment Cooling~~ Air Return System are not required to be OPERABLE in MODES 5 and 6. Therefore, maintaining OPERABLE vacuum relief valves is not required in MODE 5 or 6. ②

ACTIONS

A.1

When one of the required vacuum relief lines is inoperable, the inoperable line must be restored to OPERABLE status within 72 hours. The specified time period is consistent with other LCOs for the loss of one train of a system required to mitigate the consequences of a LOCA or other DBA.

B.1 and B.2

If the vacuum relief line cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.~~12~~.1 9 ①

This SR cites the Inservice Testing Program, which establishes the requirement that inservice testing of the ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with the ASME Code (Ref. 2). Therefore, SR Frequency is governed by the Inservice Testing Program.

REFERENCES

1. U FSAR, Section ~~[~~6.2~~]~~. ② ④

2. ASME Code for Operation and Maintenance of Nuclear Power Plants.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~12~~ 9 Vacuum Relief Valves ~~(Atmospheric and Ice Condenser)~~ ①

BASES

BACKGROUND

The purpose of the vacuum relief lines is to protect the containment vessel against negative pressure (i.e., a lower pressure inside than outside). Excessive negative pressure inside containment can occur if there is an inadvertent actuation of containment cooling features, such as the Containment Spray System , the Air Return System, or both. Multiple equipment failures or human errors are necessary to cause inadvertent actuation of these systems. ②

The containment pressure vessel contains ~~two~~ three ~~100%~~ vacuum relief lines that protect the containment from excessive external loading. ③

INSERT 1

~~[For this facility, the characteristics of the vacuum relief valves and their locations in the containment pressure vessel are as follows:]~~ ④

APPLICABLE SAFETY ANALYSES

Design of the vacuum relief lines involves calculating the effect of inadvertent actuation of containment cooling features, which can reduce the atmospheric temperature (and hence pressure) inside containment (Ref. 1). Conservative assumptions are used for all the relevant parameters in the calculation; for example, for the Containment Spray System, the minimum spray water temperature, maximum initial containment temperature, maximum spray flow, all spray trains operating, etc. The resulting containment pressure versus time is calculated, including the effect of the opening of the vacuum relief lines when their negative pressure setpoint is reached. It is also assumed that one valve fails to open.

The containment was designed for an external pressure load equivalent to ~~[-2.5]~~ 0.5 psig. ④ The inadvertent actuation of the containment cooling features was analyzed to determine the resulting reduction in containment pressure. The initial pressure condition used in this analysis was ~~[-0.3] psig~~ 0.1 psi less than annulus pressure. This resulted in a minimum pressure inside containment of ~~[-2.0] psig~~ 0.49 psi less than annulus pressure, which is less than the design load. ④

The vacuum relief valves must also perform the containment isolation function in a containment high pressure event. For this reason, the system is designed to take the full containment positive design pressure and the environmental conditions (temperature, pressure, humidity, radiation, chemical attack, etc.) associated with the containment DBA.

The vacuum relief valves satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

④ INSERT 1

The vacuum relief system has three identical lines located on the dome, at the same elevation, and 120° apart. Each line contains a vacuum relief valve in series with a containment isolation valve, the vacuum relief valve being outside of the isolation valve. The lines are installed such that there is sufficient space between the vacuum relief system and the Shield Building to prevent contact during seismic or pressure transient motion and to allow for an adequate airflow path.

Each containment vessel vacuum relief valve is a 24 inch, self-actuated, horizontally installed, swing-disc valve, with an elastomer seat. The seat material will withstand post-LOCA temperature, pressure, and radiation conditions. Each line has a design airflow rate of 28 pounds per second at a pressure differential of 0.5 psid across the entire line. Each normally closed vacuum relief valve is equipped with limit switches so that open and closed positions of the valve are indicated in the main control room. The opening of any of these valves is indicated in the main control room. The valves begin opening at a containment external pressure differential of 0.1 psid and will be fully open in 2.2 seconds for a vacuum relief system design basis event.

Each containment vessel vacuum relief isolation valve is a pneumatically operated butterfly valve with an elastomer seat. The valve, including seat material, will withstand post-LOCA temperature, pressure, and radiation conditions. Two separate trains of control air supplies are available to the two independent solenoid valves which power the isolation valve. The isolation valve, which is normally open, fails open, and will close when containment high pressure reaches the set pressure of 1.5 psid. The high pressure signal is developed from either of two independent sets of three pressure sensors and is completely independent of other containment isolation signals for other systems. Each isolation valve is equipped with a limit switch so that open and closed positions are indicated in the main control room.

BASES

LCO

The LCO establishes the minimum equipment required to accomplish the vacuum relief function following the inadvertent actuation of containment cooling features. ~~Two 100%~~ Three vacuum relief lines are required to be OPERABLE to ensure that at least ~~one is~~ two are available, assuming one ~~or both valves in the other line fail~~ vacuum relief valve fails to open. ③

APPLICABILITY

In MODES 1, 2, 3, and 4, the containment cooling features, such as the Containment Spray System and the Air Return System, are required to be OPERABLE to mitigate the effects of a DBA. Excessive negative pressure inside containment could occur ~~whenever these systems are required to be OPERABLE~~ due to inadvertent actuation of these systems. Therefore, the vacuum relief lines are required to be OPERABLE in MODES 1, 2, 3, and 4 to mitigate the effects of inadvertent actuation of the Containment Spray System, ~~Quench Spray (QS) System, or Containment Cooling~~ Air Return System, or both. ⑤ ②

In MODES 5 and 6, the probability and consequences of a DBA are reduced due to the pressure and temperature limitations of these MODES. The Containment Spray System~~, QS System,~~ and ~~Containment Cooling~~ Air Return System are not required to be OPERABLE in MODES 5 and 6. Therefore, maintaining OPERABLE vacuum relief valves is not required in MODE 5 or 6. ②

ACTIONS

A.1

When one of the required vacuum relief lines is inoperable, the inoperable line must be restored to OPERABLE status within 72 hours. The specified time period is consistent with other LCOs for the loss of one train of a system required to mitigate the consequences of a LOCA or other DBA.

B.1 and B.2

If the vacuum relief line cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

9
SR 3.6.~~12~~.1 ①

This SR cites the Inservice Testing Program, which establishes the requirement that inservice testing of the ASME Code Class 1, 2, and 3 pumps and valves shall be performed in accordance with the ASME Code (Ref. 2). Therefore, SR Frequency is governed by the Inservice Testing Program.

REFERENCES

U
1. FSAR, Section ~~[~~6.2~~]~~. ② ④

2. ASME Code for Operation and Maintenance of Nuclear Power Plants.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.9 BASES, VACUUM RELIEF VALVES

1. The headings for ISTS 3.6.12 include the parenthetical expression (Atmospheric and Ice Condenser). This identifying information is not included in the Sequoyah Nuclear Plant (SQN) ITS. This information is provided in NUREG-1431, Rev. 4.0, to assist in identifying the appropriate Specification to be used as a model for the plant specific ITS conversion, but serves no purpose in a plant specific implementation. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7), the Hydrogen Mixing System (ISTS 3.6.9), and the Iodine Cleanup System (ISTS 3.6.11). Therefore, ISTS 3.6.7, ISTS 3.6.9, and ISTS 3.6.11 are not included in the SQN ITS and ISTS 3.6.12 is renumbered as ITS 3.6.9.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Changes are made to be consistent with changes made to the Specification.

4. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. Editorial changes made to provide clarification and to correct grammar.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.9, VACUUM RELIEF VALVES

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 10

ITS 3.6.10, EMERGENCY GAS TREATMENT SYSTEM (EGTS)

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

CONTAINMENT SYSTEMS

EMERGENCY GAS TREATMENT SYSTEM - EGTS ~~- CLEANUP SUBSYSTEM~~

LIMITING CONDITION FOR OPERATION

LCO 3.6.10 3.6.1.8 Two ~~independent~~ emergency gas treatment system ~~cleanup subsystems~~ (EGTS) trains shall be OPERABLE. LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A / ACTION B With one EGTS ~~cleanup subsystem~~ train inoperable, restore the inoperable ~~subsystem~~ train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. LA01

SURVEILLANCE REQUIREMENTS

4.6.1.8 Each EGTS ~~cleanup subsystem~~ train shall be demonstrated OPERABLE: LA01

In accordance with the Surveillance Frequency Control Program LA02

SR 3.6.10.1 a. ~~At least once per 31 days~~ ~~on a STAGGERED TEST BASIS~~ ~~by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and~~ verifying that the system operates for at least ~~10 hours~~ 15 continuous minutes with the heaters on. L03 LA03 L04

~~on a STAGGERED TEST BASIS~~ L01

SR 3.6.10.5 b. ~~At least once per 18 months~~ or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by: See ITS 5.5.9

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Position C.5.a., C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 4000 cfm ± 10%.

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

SR 3.6.10.5 3. Verifying a system flow rate of 4000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975. See ITS 5.5.9

SR 3.6.10.2 Add proposed SR 3.6.10.2 A02

A01

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86°F) and a relative humidity of 70%.

See ITS 5.5.9

LA02

SR 3.6.10.3
SR 3.6.10.4

d. ~~At least once per 18 months by~~: In accordance with the Surveillance Frequency Control Program

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5 inches Water Gauge while operating the filter train at a flow rate of 4000 cfm ± 10%.

See ITS 5.5.9

SR 3.6.10.3 2. Verifying that the filter train starts on ~~a Phase A containment isolation Test~~ an actual or simulated Signal.

L02

LA01

SR 3.6.10.4 3. Verify the operation of the filter cooling bypass valves.

4. Verifying that each system produces a negative pressure of greater than or equal to 0.5 inches W. G. in the annulus within 1 minute after a start signal.

See ITS 3.6.7

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm ± 10%.

See ITS 5.5.9

CONTAINMENT SYSTEMS

CONTAINMENT VENTILATION SYSTEM (DELETED)

LIMITING CONDITION FOR OPERATION

A01

SHIELD BUILDING INTEGRITY

See ITS Chapter 1.0

1.30 SHIELD BUILDING INTEGRITY shall exist when:

a. The door in each access opening is closed except when the access opening is being used for normal transit entry and exit.

See ITS 3.6.7

LCO 3.6.10 b. The emergency gas treatment system is OPERABLE.

c. The sealing mechanism associated with each penetration (e.g., welds, bellows or 0-rings) is OPERABLE.

See ITS 3.6.7

SHUTDOWN MARGIN

1.31 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn.

SITE BOUNDARY

1.32 The SITE BOUNDARY shall be that line beyond which the land is not owned, leased, or otherwise controlled by the licensee.

SOLIDIFICATION

See ITS Chapter 1.0

1.33 Deleted

SOURCE CHECK

1.34 Deleted

STAGGERED TEST BASIS

1.35 A STAGGERED TEST BASIS shall consist of:

a. A test schedule for n systems, subsystems, trains or other designated components obtained by dividing the specified test interval into n equal subintervals,

b. The testing of one system, subsystem, train or other designated component at the beginning of each subinterval.

THERMAL POWER

1.36 THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

ITS

A01

ITS 3.6.10

CONTAINMENT SYSTEMS

EMERGENCY GAS TREATMENT SYSTEM - EGTS ~~- CLEANUP SUBSYSTEM~~

LIMITING CONDITION FOR OPERATION

LCO 3.6.10

3.6.1.8 Two ~~independent~~ emergency gas treatment system ~~cleanup subsystems~~ (EGTS) trains shall be OPERABLE.

LA01

Applicability

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A

ACTION B

With one EGTS ~~cleanup subsystem~~ train inoperable, restore the inoperable ~~subsystem~~ train to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

LA01

SURVEILLANCE REQUIREMENTS

LA01

LA02

4.6.1.8 Each EGTS ~~cleanup subsystem~~ train shall be demonstrated OPERABLE: In accordance with the Surveillance Frequency Control Program

L03

LA03

L04

SR 3.6.10.1 a. ~~At least once per 31 days~~ ~~on a STAGGERED TEST BASIS~~ ~~by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and~~ verifying that the system operates for at least ~~10 hours~~ 15 continuous minutes with the heaters on.

~~on a STAGGERED TEST BASIS~~

L01

SR 3.6.10.5 b. ~~At least once per 18 months~~ or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

1. Verifying that the cleanup system satisfies the in-place testing acceptance criteria and uses the test procedures of Regulatory Position C.5.a., C.5.c and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978 (except for the provisions of ANSI N510 Sections 8 and 9), and the system flow rate is 4000 cfm ± 10%.

See ITS 5.5.9

2. Verifying within 31 days after removal that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86° F) and a relative humidity of 70%.

SR 3.6.10.5 3. Verifying a system flow rate of 4000 cfm ± 10% during system operation when tested in accordance with ANSI N510-1975.

See ITS 5.5.9

SR 3.6.10.2 ← Add proposed SR 3.6.10.2 A02

A01

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

c. After every 720 hours of charcoal adsorber operation by verifying within 31 days after removal that a laboratory analysis of representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, shows the methyl iodide penetration less than 2.5% when tested in accordance with ASTM D3803-1989 at a temperature of 30°C (86° F) and a relative humidity of 70%.

See ITS 5.5.9

SR 3.6.10.3
SR 3.6.10.4
d. ~~At least once per 18 months by~~: In accordance with the Surveillance Frequency Control Program

LA02

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 5 inches Water Gauge while operating the filter train at a flow rate of 4000 cfm + 10%.

See ITS 5.5.9

SR 3.6.10.3
2. Verifying that the filter train starts on ~~a~~ an actual or simulated ~~Phase A containment isolation Test~~ Signal.

L02

SR 3.6.10.4
3. Verify the operation of the filter cooling bypass valves.

LA01

4. Verifying that each system produces a negative pressure of greater than or equal to 0.5 inches W.G. in the annulus within 1 minute after a start signal.

See ITS 3.6.7

e. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove greater than or equal to 99.95% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm + 10%.

f. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove greater than or equal to 99.95% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the system at a flow rate of 4000 cfm + 10%.

See ITS 5.5.9

A01

CONTAINMENT SYSTEMS

CONTAINMENT VENTILATION SYSTEM (DELETED)

LIMITING CONDITION FOR OPERATION

A01

RATED THERMAL POWER (RTP)

1.27 RATED THERMAL POWER (RTP) shall be a total reactor core heat transfer rate to the reactor coolant of 3455 MWt.

REACTOR TRIP SYSTEM (RTS) RESPONSE TIME

1.28 The REACTOR TRIP SYSTEM RESPONSE TIME shall be the time interval from when the monitored parameter exceeds its (RTS) trip setpoint at the channel sensor until loss of stationary gripper coil voltage. The response time may be measured by means of any series of sequential, overlapping, or total steps so that the entire response time is measured. In lieu of measurement, response time may be verified for selected components provided that the components and the methodology for verification have been previously reviewed and approved by NRC.

See ITS Chapter 1.0

REPORTABLE EVENT

1.29 DELETED

SHIELD BUILDING INTEGRITY

1.30 SHIELD BUILDING INTEGRITY shall exist when:

See ITS Chapter 1.0

a. The door in each access opening is closed except when the access opening is being used for normal transit entry and exit.

LCO 3.6.10

b. The emergency gas treatment system is OPERABLE.

c. The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.

See ITS 3.6.7

SHUTDOWN MARGIN

1.31 SHUTDOWN MARGIN shall be the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth which is assumed to be fully withdrawn.

See ITS Chapter 1.0

SITE BOUNDARY

1.32 The SITE BOUNDARY shall be that line beyond which the land is not owned, leased, or otherwise controlled by the licensee.

DISCUSSION OF CHANGES
ITS 3.6.10, EMERGENCY GAS TREATMENT SYSTEM (EGTS)

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 4.6.1.8.b.1, CTS 4.6.1.8.b.2, CTS 4.6.1.8.c, CTS 4.6.1.8.d.1, CTS 4.6.1.8.e, and CTS 4.6.1.8.f provide filter testing requirements for the EGTS. ITS SR 3.6.10.2 requires performance of EGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP) at a frequency in accordance with the VFTP. CTS does not include a VFTP, but the requirements that make up the VFTP are being moved to ITS 5.5. This changes the CTS by requiring testing in accordance with the VFTP, whose requirements are being moved to ITS 5.5.

This change is acceptable because filter testing requirements are being moved to the VFTP as part of ITS 5.5, and ITS SR 3.6.10.2 references the VFTP for performing these tests. This change is designated as administrative because it does not result in a technical change the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.1.8 states that two "independent" emergency gas treatment system cleanup subsystems shall be OPERABLE. ITS 3.6.10 requires two emergency gas treatment system trains to be OPERABLE, but does not include the details of what constitutes OPERABILITY. CTS 4.6.1.8.d.2 requires each Emergency Gas Treatment System (EGTS) filter train to start on a Phase A containment isolation test signal. ITS SR 3.6.10.3 requires verification that each EGTS train actuates on an actual or simulated actuation signal. This changes the CTS by moving the detail that the "cleanup subsystem" portion of EGTS must be "independent" to the Bases. This also changes the CTS by moving the detail that the EGTS trains are actuated on a "Phase A containment isolation" signal to the Bases. The additional allowance to test EGTS train actuation on an actual or simulated actuation signal is discussed in DOC L02.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement that two emergency gas treatment system trains shall be OPERABLE, and verifies that each train starts on a valid signal. This change is acceptable, because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.1.8 requires each EGTS cleanup subsystem to be operated for at least 10 hours with the heaters on at least once per 31 days. ITS SR 3.6.10.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.1.8.b.3 requires, in part, verification of each EGTS cleanup subsystem flow rate every 18 months. ITS SR 3.6.10.5 requires the same verification and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.1.8.d.2 requires verification that each EGTS cleanup subsystem filter train starts on a Phase A containment isolation Test signal at least once per 18 months. ITS SR 3.6.10.3 requires a similar verification and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.1.8.d.3 requires verification that the EGTS cleanup subsystem filter cooling bypass valves operate at least one per 18 months. ITS SR 3.6.10.4 requires a similar verification and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA03 *(Type 4 – Removal of LCO, SR, or other TS Requirements to the TRM, UFSAR, ODCM, NQAP, CLRT Program, IST Program, or ISI Program)* CTS 4.6.1.8.a requires each EGTS cleanup subsystem to be operated for a specified time with the heaters on, and specifies that flow through the HEPA filters and charcoal adsorbers be initiated from the control room. ITS SR 3.6.10.1 includes the surveillance to operate each EGTS train for a specified time with the heaters on, but does not include the requirement that flow through the HEPA filters and charcoal adsorbers be initiated from the control room. This changes the CTS by moving the requirement that flow through the HEPA filters and charcoal adsorbers be initiated from the control room to the TS Bases.

The removal of these details, that are related to methods of surveillance test performance, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirements for operating each EGTS train for a specified time with the heaters on. In addition, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to methods of surveillance test performance is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.6.1.8.b.3 requires each EGTS cleanup subsystem flowrate to be verified within limits at least once per 18 months. ITS 3.6.10.5 requires a similar test; however, it is required to be performed using one EGTS train every 18 months "on a STAGGERED TEST BASIS." This changes the CTS by requiring the test to be performed using each EGTS train at least once per 36 months.

The purpose of CTS 4.6.1.8.b.3 is to ensure each EGTS train produces the required flow rate. This change is acceptable because the new Surveillance provides an acceptable level of reliability. This proposed Surveillance Frequency will continue to require the test every 18 months. This will ensure that each EGTS train can produce the required flow rate. ITS SR 3.6.10.3 requires performance of a test to ensure that each EGTS train actuates on an actual or simulated initiation signal. Therefore, each train will continue to be tested to ensure it can be automatically aligned to the correct mode of operation; however, the verification that the system flow rate is within limits will only be required with one train in operation each 18 months. This change is designated as less restrictive because the Surveillance will only be required to be performed on one EGTS train every 18 months instead of on both EGTS trains.

DISCUSSION OF CHANGES
ITS 3.6.10, EMERGENCY GAS TREATMENT SYSTEM (EGTS)

L02 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.6.1.8.d.2 requires that each Emergency Gas Treatment System (EGTS) filter train starts on a Phase A containment isolation test signal. ITS SR 3.6.10.3 requires verification that each EGTS train actuates on an actual or simulated actuation signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of CTS 4.6.1.8.d.2 is to ensure the EGTS actuates upon receipt of a Phase A containment isolation signal. This change is acceptable, because it has been determined that the current Surveillance Requirement acceptance criteria are not the only method that can be used for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual" or "simulated" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L03 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.8.1.8.a requires each EGTS cleanup subsystem to be demonstrated OPERABLE by verifying that the system operates for at least 10 hours with the heaters on, at a Frequency of at least once per 31 days on a STAGGERED TEST BASIS. ITS SR 3.6.10.1 requires a similar verification of each EGTS train at a Frequency of "in accordance with the Surveillance Frequency Control Program." The discussion of moving the Surveillance Frequency to the Surveillance Frequency Control Program as discussed in DOC LA02. This changes the CTS by deleting the requirement to test on a STAGGERED TEST BASIS.

The purpose of CTS 4.8.1.8.a is to ensure each EGTS train is OPERABLE and that moisture on the associated adsorbers and HEPA filters is eliminated. CTS 1.35, STAGGERED TEST BASIS definition, defines a testing schedule for n systems, subsystems, or trains by dividing the specified test interval into n equal subintervals, with the testing of one system, subsystem, or train occurring at the beginning of each subinterval. In other words, a Surveillance Requirement to verify the OPERABILITY of each train in a two train system at a Frequency of 31 days on a STAGGERED TEST BASIS would result in each train being verified OPERABLE every 31 days, with one train being verified in alternating 15.5 day subintervals. Removal of the STAGGERED TEST BASIS scheduling requirement does not change the requirement to verify the OPERABLILITY of each train every 31 days, but rather removes the requirement to schedule testing every 15.5 days. The new Surveillance Frequency will not change the testing Frequency of each train. The intent of the current staggered testing requirement is to evenly distribute testing of each train across the system. However, as each train of EGTS is independent, no increase in reliability or safety is achieved by evenly staggering the testing subintervals. This change is acceptable because removal of the staggered testing requirement will increase operational and scheduling flexibility without decreasing safety or system reliability. This change is designated as less restrictive, because the intervals between performances of the Surveillances for the two fans can be larger or smaller under the ITS than under the CTS.

L04 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.6.1.8.a requires the periodic operation of each EGTS train for at least 10 hours with the heaters on. ITS SR 3.6.10.1 requires the periodic operation of each EGTS train for at least 15 continuous minutes with the heaters on. This changes the CTS by reducing the amount of time each EGTS train is required to be operated.

The purpose of CTS 4.6.1.8.a is to periodically verify that each train of EGTS can operate properly. The requirement to operate each train for at least 10 hours per month with the heaters on in order to reduce the buildup of moisture on the adsorbers and HEPA filters was derived from the guidance provided in Regulatory Guide (RG) 1.52, "Design, Testing, and Maintenance Criteria for Post Accident Engineered-Safety-Feature Atmosphere Cleanup System Air Filtration and Adsorption Units of Light-Water-Cooled Nuclear Power Plants," Revision 2, Regulatory Position 4.d. However, this was changed in RG 1.52, Revision 3. RG 1.52, Revision 3, Regulatory Position 6.1 states, "Each ESF atmosphere cleanup train should be operated continuously for at least 15 minutes each month, with the heaters on (if so equipped), to justify the operability of the system and all its components." The Ventilation Filter Testing Program (VFTP) also requires that a laboratory test of a sample of the charcoal adsorber used in each of the Engineered Safety Features (ESF) systems be tested in accordance with ASTM D3803-1989. Generic Letter 99-02, "Laboratory Testing of Nuclear-Grade Activated Charcoal," dated June 3, 1999, informed licensees that the use of any standard other than ASTM D3803-1989 to test the charcoal sample may result in an overestimation of the capability of the charcoal to adsorb radioiodine. As a result, TVA requested license amendments to the Sequoyah Nuclear Plant (SQN) Unit 1 and Unit 2 Technical Specifications to revise the required filter testing to be in accordance with ASTM D3803-1989. The NRC approved the SQN Unit 1 and Unit 2 license amendments on November 2, 2000 (ADAMS Accession Number ML003766942). This change is acceptable because the ASTM D3803-1989 Standard no longer requires operation for 10 hours utilizing the heaters. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

~~SBACS (Dual and Ice Condenser)~~ EGTS
3.6.~~13~~ 10 ①

3.6 CONTAINMENT SYSTEMS

3.6.~~13~~ 10 ~~Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser)~~ Emergency Gas Treatment System (EGTS)

3.6.1.8 LCO 3.6.~~13~~ 10 Two ~~SBACS~~ EGTS trains shall be OPERABLE. ①

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action	A. One ~~SBACS~~ EGTS train inoperable.	A.1 Restore ~~SBACS~~ EGTS train to OPERABLE status.	7 days	①
Action	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.1.8.a	SR 3.6.~~13~~ 10.1 Operate each ~~SBACS~~ EGTS train for ~~[~~≥ ~~10~~ 15 continuous ~~hours~~ minutes [with heaters operating ~~or (for systems without heaters) ≥ 15 minutes]~~.	~~[31 days~~ ① ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ④ TSTF-522
DOC A02	SR 3.6.~~13~~ 10.2 Perform required ~~SBACS~~ EGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP	①

CTS

~~SBACS (Dual and Ice Condenser)~~ EGTS
3.6.~~13~~ 10 ①

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.6.1.8.d.2	SR 3.6.~~13~~ 10.3	Verify each ~~SBACS~~ EGTS train actuates on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④
4.6.1.8.d.3	SR 3.6.~~13~~ 10.4	~~[~~ Verify each ~~SBACS~~ EGTS filter cooling bypass ~~damper~~ valve can be ~~opened~~ operated.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	① ③ ④ ④
4.6.1.8.b.3	SR 3.6.~~13~~ 10.5	Verify each ~~SBACS~~ EGTS train flow rate is ~~≥ [ ]~~ ≥ 3600 and ≤ 4400 cfm.	~~[[18] months on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ④ ④

CTS

~~SBACS (Dual and Ice Condenser)~~ EGTS
3.6.~~13~~ 10 ①

3.6 CONTAINMENT SYSTEMS

3.6.~~13~~ 10 ~~Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser)~~ Emergency Gas Treatment System (EGTS) ①

3.6.1.8 LCO 3.6.~~13~~ 10 Two ~~SBACS~~ EGTS trains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action	A. One ~~SBACS~~ EGTS train inoperable.	A.1 Restore ~~SBACS~~ EGTS train to OPERABLE status.	7 days	①
Action	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours	
		AND		
		B.2 Be in MODE 5.	36 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.1.8.a	SR 3.6.~~13~~ 10.1 Operate each ~~SBACS~~ EGTS train for ~~[~~ ≥ ~~10~~ 15 continuous ~~hours~~ minutes [with heaters operating ~~or (for systems without heaters) ≥ 15 minutes]~~.	~~[31 days~~ ① ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ④ TSTF-522
DOC A02	SR 3.6.~~13~~ 10.2 Perform required ~~SBACS~~ EGTS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP	①

CTS

~~SBACS (Dual and Ice Condenser)~~ EGTS
3.6.~~13~~ 10 ①

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.6.1.8.d.2	SR 3.6.~~13~~.3 10 Verify each ~~SBACS~~ EGTS train actuates on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ④
4.6.1.8.d.3	SR 3.6.~~13~~.4 10 ~~[~~ Verify each ~~SBACS~~ EGTS filter cooling bypass ~~damper~~ valve can be ~~opened~~ operated.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	① ③ ④ ④
4.6.1.8.b.3	SR 3.6.~~13~~.5 10 Verify each ~~SBACS~~ EGTS train flow rate is ~~≥ [ ]~~ ≥ 3600 and ≤ 4400 cfm.	~~[[18] months on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ④ ④

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.10, EMERGENCY GAS TREATMENT SYSTEM (EGTS)

1. The ISTS 3.6.13 title "Shield Building Air Cleanup System (SBACS)" has been changed to "Emergency Gas Treatment System (EGTS)" consistent with the Sequoyah Nuclear Plant (SQN) site specific terminology. The heading for ISTS 3.6.13 includes the parenthetical expression (Dual and Ice Condenser). This identifying information is not included in the SQN ITS. This information is provided in the NUREG-1431, Rev. 4.0 to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.13 is renumbered as ITS 3.6.10.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.6.13.1, SR 3.6.13.3, SR 3.6.13.4, and SR 3.6.13.5 (ITS SR 3.6.10.1, SR 3.6.10.3, SR 3.6.10.4, and SR 3.6.10.5, respectively) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.10.1, SR 3.6.10.3, SR 3.6.10.4, and SR 3.6.10.5 under the Surveillance Frequency Control Program.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~13~~ 10 ~~Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser)~~ Emergency Gas Treatment System (EGTS) ①

BASES

EGTS

BACKGROUND

The ~~SBACS~~ EGTS is required by 10 CFR 50, Appendix A, GDC 41, "Containment Atmosphere Cleanup" (Ref. 1), to ensure that radioactive materials that leak from the primary containment into the shield building (secondary containment) following a Design Basis Accident (DBA) are filtered and adsorbed prior to exhausting to the environment. ①

The containment has a secondary containment called the shield building, which is a concrete structure that surrounds the steel primary containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects any containment leakage that may occur following a loss of coolant accident (LOCA). This space also allows for periodic inspection of the outer surface of the steel containment vessel.

INSERT 1 ~~The SBACS establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment.~~ ② Shield building OPERABILITY is required to ensure retention of primary containment leakage and proper operation of the ~~SBACS~~ EGTS. ①

The ~~SBACS~~ EGTS consists of two separate and redundant trains. Each train includes a heater, ~~[cooling coils,]~~ ③ a prefilter, moisture separators, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, and a fan. Ductwork, valves and/or dampers, and instrumentation also form part of the system. The moisture separators function to reduce the moisture content of the airstream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter bank. Only the upstream HEPA filter and the charcoal adsorber section are credited in the analysis. The system initiates and maintains a negative air pressure in the shield building by means of filtered exhaust ventilation of the shield building following receipt of a ~~safety injection (SI)~~ Phase A containment isolation signal. The system is described in Reference 2. ④

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters may be included to reduce the relative humidity of the airstream on systems that operate in high humidity. ~~Continuous operation of each train, for at least 10 hours per month, with heaters on, reduces moisture buildup on their HEPA filters and adsorbers.~~ TSTF-522 ~~[The cooling coils cool the air to keep the charcoal beds from becoming too hot due to absorption of fission product.]~~ ③

② **INSERT 1**

The EGTS design consists of two subsystems common to both units. The annulus vacuum control subsystem is used to establish and maintain a negative pressure within the secondary containment annulus during normal plant operation (non safety-related). The air cleanup subsystem is actuated following a LOCA to maintain a negative pressure in the annulus between the shield building and the steel containment. Filters in the air cleanup subsystem then control the release of radioactive contaminants to the environment. The air cleanup subsystem is the portion of EGTS that performs a safety function and is required to be OPERABLE.

BASES

BACKGROUND (continued)

~~During normal operation, the Shield Building Cooling System is aligned to bypass the SBACS's HEPA filters and charcoal adsorbers. For SBACS operation following a DBA, however, the bypass dampers automatically reposition to draw the air through the filters and adsorbers.~~ ②

The ~~SBACS~~ EGTS reduces the radioactive content in the shield building atmosphere following a DBA. Loss of the ~~SBACS~~ EGTS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis. ①

APPLICABLE SAFETY ANALYSES

The ~~SBACS~~ EGTS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) assumes that only one train of the ~~SBACS~~ EGTS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the remaining one train of this filtration system. The amount of fission products available for release from containment is determined for a LOCA. ①

The modeled ~~SBACS~~ EGTS actuation in the safety analyses is based upon a worst case response time following ~~an SI~~ a Phase A containment isolation initiated at the limiting setpoint. The total response time, from exceeding the signal setpoint to attaining the negative pressure of ~~[~~0.5~~]~~ inch water gauge in the shield building, is ~~[22~~ 60 seconds~~]~~. This response time is composed of signal delay, diesel generator startup and sequencing time, system startup time, and time for the system to attain the required pressure after starting. ① ④ ③

The ~~SBACS~~ EGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). ①

LCO

In the event of a DBA, one ~~SBACS~~ EGTS train is required to provide the minimum particulate iodine removal assumed in the safety analysis. Two trains of the ~~SBACS~~ EGTS must be OPERABLE to ensure that at least one train will operate, assuming that the other train is disabled by a single active failure. ①

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could lead to fission product release to containment that leaks to the shield building. The large break LOCA, on which this system's design is based, is a full power event. Less severe LOCAs and leakage still require the system to be OPERABLE throughout these MODES. The probability and severity of a LOCA decrease as core power and Reactor Coolant System pressure decrease. With the reactor shut down, the probability of release of radioactivity resulting from such an accident is low.

BASES

APPLICABILITY (continued)

In MODES 5 and 6, the probability and consequences of a DBA are low due to the pressure and temperature limitations in these MODES. Under these conditions, the Filtration System is not required to be OPERABLE (although one or more trains may be operating for other reasons, such as habitability during maintenance in the shield building annulus).

ACTIONS

A.1

EGTS ①

With one ~~SBACS~~ train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant ~~SBACS~~ train and the low probability of a DBA occurring during this period. The Completion Time is adequate to make most repairs.

EGTS ①

B.1 and B.2

EGTS ①

If the ~~SBACS~~ train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~13~~.1

10 ① ② ⑤

EGTS INSERT 2

Operating each ~~SBACS~~ train ~~for ≥ 15 minutes~~ ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~For systems with heaters, operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. Experience from filter testing at operating units indicates that the 10 hour period is adequate for moisture elimination on the adsorbers and HEPA filters.~~ ~~[The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability of the Containment Spray System.~~

TSTF-522

⑥

② **INSERT 2**

from the Control Room with flow through the HEPA filters and charcoal adsorbers

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑦

SR 3.6.~~13~~ 10 .2 ①

This SR verifies that the required ~~SBACS~~ EGTS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.6.~~13~~ 10 .3 ①

The automatic startup ensures that each ~~SBACS~~ EGTS train responds properly. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore the Frequency was concluded to be acceptable from a reliability standpoint. Furthermore, the SR interval was developed considering that the SBACS equipment OPERABILITY is demonstrated at a 31 day Frequency by SR 3.6.13.1.~~

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑦

~~[~~ SR 3.6.~~13~~ 10 .4 ①

INSERT 3

The ~~SBACS~~ EGTS filter cooling bypass ~~dampers~~ valves are tested to verify OPERABILITY. ~~The dampers are in the bypass position during normal operation and must reposition for accident operation to draw air through the filters.~~ ⑤ ~~[The [18] month Frequency is considered to be acceptable based on damper reliability and design, mild environmental conditions in the vicinity of the dampers, and the fact that operating experience has shown that the dampers usually pass the Surveillance when performed at the [18] month Frequency.~~

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~ ⑦

SR 3.6.~~13~~ 10 .5 ①

The proper functioning of the fans, dampers, filters, adsorbers, etc., as a system is verified by the ability of each train to produce the required system flow rate. ~~[The [18] month Frequency on a STAGGERED TEST BASIS is consistent with Regulatory Guide 1.52 (Ref. 4) guidance for functional testing.~~

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

⑤ **INSERT 3**

The ability to cool the filters and adsorbers in an inactive air cleanup unit is accomplished with two crossover flow ducts that draw a small stream of air from the active air cleanup unit through the inactive air cleanup unit. The valves in the inactive train automatically receive a signal to open. The capability to manually open the suction valve for the inactive train and align to the affected unit is provided in the main control room to complete the flow path through the inactive unit.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑦

REFERENCES

1. 10 CFR 50, Appendix A, GDC 41.
2. U FSAR, Section ~~[6.5]~~ 6.2.
3. U FSAR, Chapter ~~[~~15~~]~~.
4. Regulatory Guide 1.52, Revision ~~[~~2~~]~~.

① ③

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~13~~ 10 ~~Shield Building Air Cleanup System (SBACS) (Dual and Ice Condenser)~~ Emergency Gas Treatment System (EGTS) ①

BASES

BACKGROUND

The ~~SBACS~~ EGTS is required by 10 CFR 50, Appendix A, GDC 41, "Containment Atmosphere Cleanup" (Ref. 1), to ensure that radioactive materials that leak from the primary containment into the shield building (secondary containment) following a Design Basis Accident (DBA) are filtered and adsorbed prior to exhausting to the environment. ①

The containment has a secondary containment called the shield building, which is a concrete structure that surrounds the steel primary containment vessel. Between the containment vessel and the shield building inner wall is an annular space that collects any containment leakage that may occur following a loss of coolant accident (LOCA). This space also allows for periodic inspection of the outer surface of the steel containment vessel.

INSERT 1 ~~The SBACS establishes a negative pressure in the annulus between the shield building and the steel containment vessel. Filters in the system then control the release of radioactive contaminants to the environment.~~ ② Shield building OPERABILITY is required to ensure retention of primary containment leakage and proper operation of the ~~SBACS~~ EGTS. ①

The ~~SBACS~~ EGTS consists of two separate and redundant trains. Each train includes a heater, ~~[cooling coils,]~~ ③ a prefilter, moisture separators, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, and a fan. Ductwork, valves and/or dampers, and instrumentation also form part of the system. The moisture separators function to reduce the moisture content of the airstream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter bank. Only the upstream HEPA filter and the charcoal adsorber section are credited in the analysis. The system initiates and maintains a negative air pressure in the shield building by means of filtered exhaust ventilation of the shield building following receipt of a ~~safety injection (SI)~~ Phase A containment isolation signal. ④ The system is described in Reference 2.

The prefilters remove large particles in the air, and the moisture separators remove entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal absorbers. Heaters may be included to reduce the relative humidity of the airstream on systems that operate in high humidity. ~~Continuous operation of each train, for at least 10 hours per month, with heaters on, reduces moisture buildup on their HEPA filters and adsorbers.~~ TSTF-522 ~~[The cooling coils cool the air to keep the charcoal beds from becoming too hot due to absorption of fission product.]~~ ③

② **INSERT 1**

The EGTS design consists of two subsystems common to both units. The annulus vacuum control subsystem is used to establish and maintain a negative pressure within the secondary containment annulus during normal plant operation (non safety-related). The air cleanup subsystem is actuated following a LOCA to maintain a negative pressure in the annulus between the shield building and the steel containment. Filters in the air cleanup subsystem then control the release of radioactive contaminants to the environment. The air cleanup subsystem is the portion of EGTS that performs a safety function and is required to be OPERABLE.

BASES

BACKGROUND (continued)

~~During normal operation, the Shield Building Cooling System is aligned to bypass the SBACS's HEPA filters and charcoal adsorbers. For SBACS operation following a DBA, however, the bypass dampers automatically reposition to draw the air through the filters and adsorbers.~~ ②

The ~~SBACS~~ EGTS reduces the radioactive content in the shield building atmosphere following a DBA. Loss of the ~~SBACS~~ EGTS could cause site boundary doses, in the event of a DBA, to exceed the values given in the licensing basis. ①

APPLICABLE SAFETY ANALYSES

The ~~SBACS~~ EGTS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 3) assumes that only one train of the ~~SBACS~~ EGTS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the remaining one train of this filtration system. The amount of fission products available for release from containment is determined for a LOCA. ①

The modeled ~~SBACS~~ EGTS actuation in the safety analyses is based upon a worst case response time following ~~an SI~~ a Phase A containment isolation initiated at the limiting setpoint. ① ④ The total response time, from exceeding the signal setpoint to attaining the negative pressure of ~~[~~0.5~~]~~ inch water gauge in the shield building, is ~~[22~~ 60 seconds~~]~~. ③ This response time is composed of signal delay, diesel generator startup and sequencing time, system startup time, and time for the system to attain the required pressure after starting.

The ~~SBACS~~ EGTS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). ①

LCO

In the event of a DBA, one ~~SBACS~~ EGTS train is required to provide the minimum particulate iodine removal assumed in the safety analysis. Two trains of the ~~SBACS~~ EGTS must be OPERABLE to ensure that at least one train will operate, assuming that the other train is disabled by a single active failure. ①

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could lead to fission product release to containment that leaks to the shield building. The large break LOCA, on which this system's design is based, is a full power event. Less severe LOCAs and leakage still require the system to be OPERABLE throughout these MODES. The probability and severity of a LOCA decrease as core power and Reactor Coolant System pressure decrease. With the reactor shut down, the probability of release of radioactivity resulting from such an accident is low.

BASES

APPLICABILITY (continued)

In MODES 5 and 6, the probability and consequences of a DBA are low due to the pressure and temperature limitations in these MODES. Under these conditions, the Filtration System is not required to be OPERABLE (although one or more trains may be operating for other reasons, such as habitability during maintenance in the shield building annulus).

ACTIONS

A.1

EGTS ①

With one ~~SBACS~~ train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7 day Completion Time is based on consideration of such factors as the availability of the OPERABLE redundant ~~SBACS~~ train and the low probability of a DBA occurring during this period. The Completion Time is adequate to make most repairs.

EGTS ①

B.1 and B.2

EGTS ①

If the ~~SBACS~~ train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~13~~.1 10

EGTS INSERT 2 ① ② ⑤

Operating each ~~SBACS~~ train ~~for ≥ 15 minutes~~ ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~For systems with heaters, operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. Experience from filter testing at operating units indicates that the 10 hour period is adequate for moisture elimination on the adsorbers and HEPA filters.~~ ~~[The 31 day Frequency was developed in consideration of the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability of the Containment Spray System.~~

TSTF-522

⑥

② INSERT 2

from the Control Room with flow through the HEPA filters and charcoal adsorbers

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑦

10

SR 3.6.~~13~~.2 ①

EGTS

This SR verifies that the required ~~SBACS~~ filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

10

SR 3.6.~~13~~.3 ①

EGTS

The automatic startup ensures that each ~~SBACS~~ train responds properly. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore the Frequency was concluded to be acceptable from a reliability standpoint. Furthermore, the SR interval was developed considering that the SBACS equipment OPERABILITY is demonstrated at a 31 day Frequency by SR 3.6.13.1.~~

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑦

10

~~[~~ SR 3.6.~~13~~.4 ①

EGTS cooling valves

The ~~SBACS~~ filter bypass ~~dampers~~ are tested to verify OPERABILITY. ⑤

INSERT 3 →

~~The dampers are in the bypass position during normal operation and must reposition for accident operation to draw air through the filters.~~
~~[The [18] month Frequency is considered to be acceptable based on damper reliability and design, mild environmental conditions in the vicinity of the dampers, and the fact that operating experience has shown that the dampers usually pass the Surveillance when performed at the [18] month Frequency.~~

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~ ⑦

10

SR 3.6.~~13~~.5 ①

The proper functioning of the fans, dampers, filters, adsorbers, etc., as a system is verified by the ability of each train to produce the required system flow rate. ~~[The [18] month Frequency on a STAGGERED TEST BASIS is consistent with Regulatory Guide 1.52 (Ref. 4) guidance for functional testing.~~

~~OR~~ ⑥

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

⑤ INSERT 3

The ability to cool the filters and adsorbers in an inactive air cleanup unit is accomplished with two crossover flow ducts that draw a small stream of air from the active air cleanup unit through the inactive air cleanup unit. The valves in the inactive train automatically receive a signal to open. The capability to manually open the suction valve for the inactive train and align to the affected unit is provided in the main control room to complete the flow path through the inactive unit.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~ ~~]~~ ⑦

REFERENCES

1. 10 CFR 50, Appendix A, GDC 41.
2. U FSAR, Section ~~[6.5]~~ 6.2.
3. U FSAR, Chapter ~~[~~15~~]~~.
4. Regulatory Guide 1.52, Revision ~~[~~2~~]~~.

① ③

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.10 BASES, EMERGENCY GAS TREATMENT SYSTEM (EGTS)

1. The ISTS 3.6.13 title "Shield Building Air Cleanup System (SBACS)" has been changed to "Emergency Gas Treatment System (EGTS)" consistent with the Sequoyah Nuclear Plant (SQN) site specific terminology. The heading for ISTS 3.6.13 includes the parenthetical expression (Dual and Ice Condenser). This identifying information is not included in the SQN ITS. This information is provided in the NUREG-1431, Rev. 4.0 to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.13 is renumbered as ITS 3.6.10.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

4. SQN design of EGTS actuation is on a Phase A containment isolation signal.

5. Changes have been made to be consistent with changes made to the Specification.

6. ISTS SR 3.6.13.1, SR 3.6.13.3, SR 3.6.13.4, and SR 3.6.13.5 (ITS SR 3.6.10.1, SR 3.6.10.3, SR 3.6.10.4, and SR 3.6.10.5, respectively) provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.10.1, SR 3.6.10.2, SR 3.6.10.3, SR 3.6.10.4, and SR 3.6.10.5 under the Surveillance Frequency Control Program.

7. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.10, EMERGENCY GAS TREATMENT SYSTEM (EGTS)

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 11

ITS 3.6.11, AIR RETURN SYSTEM

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ⓐ A01

CONTAINMENT SYSTEMS

~~CONTAINMENT~~ AIR RETURN ~~FANS~~ System (ARS) A01

LIMITING CONDITION FOR OPERATION

LCO 3.6.11 3.6.5.6 Two ~~independent~~ ~~containment~~ air return fans shall be OPERABLE. A01 LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A, ACTION B: With one ~~containment~~ air return fan inoperable, restore the inoperable fan to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. A01

SURVEILLANCE REQUIREMENTS

SR 3.6.11.1, SR 3.6.11.2, SR 3.6.11.3: 4.6.5.6 Each ~~containment~~ air return fan shall be demonstrated OPERABLE: A01

a. ~~At least once per 92 days~~ ~~on a STAGGERED TEST BASIS~~ ~~by:~~ L02

SR 3.6.11.2: 1. Verifying that the fan motor current is 32 ± 7.5 amps with the backdraft dampers closed, and

SR 3.6.11.3: 2. Verifying that with the fan off, the air return fan damper opens when a torque of less than or equal to 68.1 inch-pounds is appied to the counterweight.

SR 3.6.11.1: b. ~~At least once per 18 months by~~ verifying that the air return fan starts on an ~~auto-start~~ actual or simulated signal after a 10 ± 1 minute delay and operates for at least 15 minutes. L01

In accordance with the Surveillance Frequency Control Program LA02

A01

CONTAINMENT SYSTEMS

~~CONTAINMENT~~ AIR RETURN ~~FANS~~ System (ARS)

A01

LIMITING CONDITION FOR OPERATION

A01

LCO 3.6.11 3.6.5.6 Two ~~independent~~ ~~containment~~ air return fans shall be OPERABLE.

LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A / ACTION B With one ~~containment~~ air return fan inoperable, restore the inoperable fan to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

A01

SURVEILLANCE REQUIREMENTS

SR 3.6.11.1, SR 3.6.11.2, SR 3.6.11.3 4.6.5.6 Each ~~containment~~ air return fan shall be demonstrated OPERABLE:

A01

a. ~~At least once per 92 days~~ ~~on a STAGGERED TEST BASIS~~ ~~by:~~

L02

SR 3.6.11.2 1. Verifying that the fan motor current is 32 ± 7.5 amps with the backdraft dampers closed, and

SR 3.6.11.3 2. verifying that with the fan off, the air return fan damper opens when a torque of less than or equal to 68.1 inch-pounds is applied to the counterweight.

SR 3.6.11.1 b. ~~At least once per 18 months by~~ verifying that the air return fan starts on an ~~auto-start~~ actual or simulated signal after a 10 ± 1 minute delay and operates for at least 15 minutes.

L01

In accordance with the Surveillance Frequency Control Program

LA02

DISCUSSION OF CHANGES
ITS 3.6.11, AIR RETURN SYSTEM

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.5.6 states that two "independent" containment air return fans shall be OPERABLE. ITS 3.6.11 requires two containment air return fans to be OPERABLE, but does not include the details of what constitutes OPERABILITY. This changes the CTS by moving the detail that the fans must be "independent" to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that two air return system fans shall be OPERABLE. Also, this change is acceptable, because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.5.6.a.1 requires verification of the air return fan motor current with the backdraft dampers closed at least once per 92 days. ITS SR 3.6.11.2 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.6.a.2 requires verification of the air return fan damper opening torque with the air return fan off at least once per 92 days. ITS SR 3.6.11.3 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.6.b requires verification of air return fan start on an auto-start signal (after a specified delay) and fan operation (for a specified duration) at least once per 18 months. ITS SR 3.6.11.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs and the Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.5.6.b requires verification of the start of the air return fan on an "auto-start" signal. ITS SR 3.6.11.1 specifies that the signal may be from either an "actual" or simulated (i.e., test) signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of CTS 4.6.5.6.b is to ensure the air return fans start upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal. Therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation, if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.6.5.6.a requires each air return fan to be demonstrated OPERABLE by verifying the fan motor current is within limits with the backdraft dampers closed, and verifying that with the fan off, the air return fan damper opens with an applied torque within the specified limits. Each of these verifications is performed at a Frequency of at least once per 92 days on a STAGGERED TEST BASIS. ITS SR 3.6.11.2 and SR 3.6.11.3 require similar verifications of each air return fan at a Frequency of "in accordance with the Surveillance Frequency Control Program." The Surveillance Frequencies being moved to the Surveillance Frequency Control Program are 92 days. The discussion of moving the Surveillance Frequencies to the Surveillance Frequency Control Program as discussed in DOC LA02. This changes the CTS by deleting the requirement to test on a STAGGERED TEST BASIS.

The purpose of CTS 4.6.5.6.a is to ensure each air return fan is OPERABLE and available to assist in providing the required heat removal capability to limit post accident conditions to less than the containment design values. CTS 1.35, STAGGERED TEST BASIS definition, defines a testing schedule for n systems, subsystems, or trains by dividing the specified test interval into n equal subintervals, with the testing of one system, subsystem, or train occurring at the beginning of each subinterval. In other words, a Surveillance Requirement to verify the OPERABILITY of each fan in a two fan system at a Frequency of 92 days on a STAGGERED TEST BASIS would result in each fan being verified OPERABLE every 92 days, with one fan being verified in alternating 46 day subintervals. Removal of the STAGGERED TEST BASIS scheduling requirement does not change the requirement to verify the OPERABLILITY of each fan every 92 days, but rather removes the requirement to schedule testing every 46 days. The new Surveillance Frequency will not change the testing Frequency of each fan. The intent of the current staggered testing requirement is to evenly distribute testing of each fan within the system. However, as each air return fan is independent, no increase in reliability or safety is achieved by evenly staggering the testing subintervals. This change is acceptable because removal of the staggered testing requirement will increase operational and scheduling flexibility without decreasing safety or system reliability. This change is designated as less restrictive, because the intervals between performances of the Surveillances for the two fans can be larger or smaller under the ITS than under the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.~~14~~11 Air Return System (ARS) ~~(Ice Condenser)~~ ①

3.6.5.6 LCO 3.6.~~14~~11 Two ARS ~~trains~~ fans shall be OPERABLE. ① ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION	A. One ARS ~~train~~ fan inoperable.	A.1 Restore ARS ~~train~~ fan to OPERABLE status.	72 hours	③
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours	
		AND		
		B.2 Be in MODE 5.	36 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.5.6.b	SR 3.6.~~14~~11.1 Verify each ARS fan starts on an actual or simulated actuation signal, after a delay of ≥ ~~[~~9.0~~]~~ minutes and ≤ ~~[~~11.0~~]~~ minutes, and operates for ≥ 15 minutes.	~~[[92] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ⑤ ⑤

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.5.6.a.1	SR 3.6.~~14~~.2 11	Verify, with the ARS fan dampers closed, each ARS fan motor current is ≥ ~~[20.5]~~ 24.5 amps and ≤ ~~[35.5]~~ 39.5 amps ~~[when the fan speed is ≥ [840] rpm and ≤ [900] rpm]~~.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program	① ④ ⑤
4.6.5.6.a.2	SR 3.6.~~14~~.3 11	Verify, with the ARS fan not operating, each ARS fan damper opens when ≤ ~~[11.0] lb~~ 68.1 in-lb of torque is applied to the counterweight.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ⑤ ⑤
	~~SR 3.6.14.4~~	~~[Verify each motor operated valve in the hydrogen collection header that is not locked, sealed, or otherwise secured in position, opens on an actual or simulated actuation signal after a delay of ≥ [9.0] minutes and ≤ [11.0] minutes.~~	~~[92 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	⑥

CTS

ARS ~~(Ice Condenser)~~ ①
3.6.~~14~~ 11

3.6 CONTAINMENT SYSTEMS

3.6.~~14~~ 11 Air Return System (ARS) ~~(Ice Condenser)~~ ①

3.6.5.6 LCO 3.6.~~14~~ 11 Two ARS ~~trains~~ fans shall be OPERABLE. ① ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
ACTION	A. One ARS ~~train~~ fan inoperable.	A.1 Restore ARS ~~train~~ fan to OPERABLE status.	72 hours	③
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.5.6.b	SR 3.6.~~14~~ 11.1 Verify each ARS fan starts on an actual or simulated actuation signal, after a delay of ≥ ~~[~~9.0~~]~~ minutes and ≤ ~~[~~11.0~~]~~ minutes, and operates for ≥ 15 minutes.	~~[[92] days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ⑤ ⑤

CTS

ARS ~~(Ice Condenser)~~ ①
3.6.~~14~~11

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.5.6.a.1	SR 3.6.~~14~~11.2	Verify, with the ARS fan dampers closed, each ARS fan motor current is ≥ ~~[20.5]~~ 24.5 amps and ≤ ~~[35.5]~~ 39.5 amps ~~[when the fan speed is ≥ [840] rpm and ≤ [900] rpm]~~.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program	① ④ ⑤
4.6.5.6.a.2	SR 3.6.~~14~~11.3	Verify, with the ARS fan not operating, each ARS fan damper opens when ≤ ~~[11.0] lb~~ 68.1 in-lb of torque is applied to the counterweight.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ④ ⑤ ⑤
	~~SR 3.6.14.4~~	~~[Verify each motor operated valve in the hydrogen collection header that is not locked, sealed, or otherwise secured in position, opens on an actual or simulated actuation signal after a delay of ≥ [9.0] minutes and ≤ [11.0] minutes.~~	~~[92 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	⑥

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.11, AIR RETURN SYSTEM

1. The heading and title for ISTS 3.6.14 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.14 is renumbered as ITS 3.6.11.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS 3.6.14 and ACTION A refer to ARS "train" or "trains." However, the SQN ARS design consists of two 100% capacity fans (and associated dampers) connected to common hydrogen collection headers servicing the primary containment. The SQN ARS design does not consist of two fully redundant ARS trains. Therefore, it is necessary to define the OPERABILITY requirements of the Air Return System in terms of "fans." This is acceptable since the common hydrogen collection headers are passive components and are not susceptible to an active failure.

4. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ISTS SR 3.6.14.1, SR 3.6.14.2, and SR 3.6.14.3 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.11.1, SR 3.6.11.2, and SR 3.6.11.3 under the Surveillance Frequency Control Program.

6. ISTS SR 3.6.14.4 requires verification that each motor operated valve in the hydrogen collection header that is not locked, sealed, or otherwise secured in position, opens on an actual or simulated actuation signal after the specified delay. However, the SQN Air Return System hydrogen collection headers do not include motor operated valves (or dampers) that receive actuation signals. Therefore, this surveillance is unnecessary and has not been included in the SQN ITS.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~14~~ 11 Air Return System (ARS) ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The ARS is designed to assure the rapid return of air from the upper to the lower containment compartment after the initial blowdown following a Design Basis Accident (DBA). The return of this air to the lower compartment and subsequent recirculation back up through the ice condenser assists in cooling the containment atmosphere and limiting post accident pressure and temperature in containment to less than design values. Limiting pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

The ARS provides post accident hydrogen mixing in selected areas of containment. ~~The associated Hydrogen Skimmer System consists of~~ hydrogen collection headers are routed to potential hydrogen pockets in containment, terminating on the suction side of either of the two ARS fans ~~at the header isolation valves~~. The minimum design flow from each potential hydrogen pocket is sufficient to limit the local concentration of hydrogen. ② ②

The ARS consists of two separate ~~trains of equal capacity, each capable of meeting the design bases. Each train includes a~~ 100% capacity air return fans, associated dampers, and common hydrogen collection headers ~~with isolation valves~~. Each ~~train~~ fan is powered from a separate Engineered Safety Features (ESF) bus. ③ ②

The ARS fans are automatically started ~~and the hydrogen collection header isolation valves are opened~~ by the ~~containment pressure High-High signal~~ Phase B containment isolation signal approximately 10 minutes after the containment pressure reaches the pressure setpoint. The ~~time delay~~ fan backdraft dampers ensure~~s~~ that no energy released during the initial phase of a DBA will bypass the ice bed through the ARS fans ~~or Hydrogen Skimmer System~~. ②

After starting, the fans displace air from the upper compartment to the lower compartment, thereby returning the air that was displaced by the high energy line break blowdown from the lower compartment ~~and equalizing pressures throughout containment~~. After discharge into the lower compartment, air flows with steam produced by residual heat through the ice condenser doors into the ice condenser compartment where the steam portion of the flow is condensed. The air flow returns to the upper compartment through the top deck doors in the upper portion of the ice condenser compartment. The ARS fans operate continuously after actuation, circulating air through the containment volume and ②

BASES

BACKGROUND (continued)

purging all potential hydrogen pockets in containment. ~~When the containment pressure falls below a predetermined value, the ARS fans are automatically de-energized. Thereafter, the fans are automatically cycled on and off if necessary to control any additional containment pressure transients.~~ ②

The ARS also functions, after all the ice has melted, to circulate any steam still entering the lower compartment to the upper compartment where the Containment Spray System can cool it.

The ARS is an ESF system. It is designed to ensure that the heat removal capability required during the post accident period can be attained. The operation of the ARS, in conjunction with the ice bed, the Containment Spray System, and the Residual Heat Removal (RHR) System spray, provides the required heat removal capability to limit post accident conditions to less than the containment design values.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one ~~train each of the~~ Containment Spray System, RHR System, and ARS being inoperable (Ref. 1). The DBA analyses show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure.

fan
train
an
③

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The analysis for minimum internal containment pressure (i.e., maximum external differential containment pressure) assumes inadvertent simultaneous actuation of both the ARS and the Containment Spray System. The containment vacuum relief valves are designed to accommodate inadvertent actuation of either or both systems.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The modeled ARS actuation from the containment analysis is based upon a response time associated with exceeding the containment pressure High-High signal setpoint to achieving full ARS air flow. ~~A delayed response time initiation provides conservative analyses of peak~~ INSERT 1 ~~calculated containment temperature and pressure responses~~. The ARS total response time of 600 seconds consists of the built in signal delay. ②

The ARS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

In the event of a DBA, one ~~train of the~~ ARS fan ~~with the Hydrogen Skimmer System~~ is required to provide the minimum air recirculation for heat removal and hydrogen mixing assumed in the safety analyses. To ensure this requirement is met, two ~~trains of the~~ ARS fans ~~with the Hydrogen Skimmer System~~ must be OPERABLE. This will ensure that at least one ~~train~~ fan will operate, assuming the worst case single failure occurs, which is in the ESF power supply. ③

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ARS. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ARS is not required to be OPERABLE in these MODES.

ACTIONS

A.1

If one ~~of the required trains of the~~ ARS fan is inoperable, it must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing 100% of the flow ~~and hydrogen skimming~~ needs after an accident. The 72 hour Completion Time was developed taking into account the redundant flow ~~and hydrogen skimming~~ capability of the OPERABLE ARS ~~train~~ fan and the low probability of a DBA occurring in this period. ③ ②

B.1 and B.2

If the ARS ~~train~~ fan cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on ③

② INSERT 1

A delayed response time initiation ensures that no energy released during the initial phase of a DBA will bypass the ice bed through the ARS fans.

BASES

ACTIONS (continued)

operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~14~~.1 11 ①

Verifying that each ARS fan starts on an actual or simulated actuation signal, after a delay ≥ ~~[~~9.0~~]~~ minutes and ≤ ~~[~~11.0~~]~~ minutes, and operates for ≥ 15 minutes is sufficient to ensure that all fans are OPERABLE and that all associated controls and time delays are functioning properly. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. ~~[The [92] day Frequency was developed considering the known reliability of fan motors and controls and the two train redundancy available.~~ ④ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

SR 3.6.~~14~~.2 11 ①

Verifying ARS fan motor current ~~to be at rated speed~~ with the return air dampers closed confirms one operating condition of the fan. This test is indicative of overall fan motor performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. ~~[The Frequency of 92 days conforms with the testing requirements for similar ESF equipment and considers the known reliability of fan motors and controls and the two train redundancy available.~~ ⑧ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

11

SR 3.6.~~14~~.3 ①

Verifying the OPERABILITY of the return air damper provides assurance that the proper flow path will exist when the fan is started. By applying the correct counterweight, the damper operation can be confirmed. ~~[The Frequency of 92 days was developed considering the importance of the dampers, their location, physical environment, and probability of failure. Operating experience has also shown this Frequency to be acceptable.~~ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

~~[SR 3.6.14.4~~

~~Verifying the OPERABILITY of the motor operated valve in the Hydrogen Skimmer System hydrogen collection header to the lower containment compartment provides assurance that the proper flow path will exist when the valve receives an actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. This Surveillance also confirms that the time delay to open is within specified tolerances. [The 92 day Frequency was developed considering the known reliability of the motor operated valves and controls and the two train redundancy available. Operating experience has also shown this Frequency to be acceptable.~~ ⑦

~~OR~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]]~~ ⑦

REFERENCES

1. U FSAR, Section ~~[~~6.2~~]~~. ② ④

2. 10 CFR 50, Appendix K.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~14~~11 Air Return System (ARS) ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The ARS is designed to assure the rapid return of air from the upper to the lower containment compartment after the initial blowdown following a Design Basis Accident (DBA). The return of this air to the lower compartment and subsequent recirculation back up through the ice condenser assists in cooling the containment atmosphere and limiting post accident pressure and temperature in containment to less than design values. Limiting pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

The ARS provides post accident hydrogen mixing in selected areas of containment. ~~The associated Hydrogen Skimmer System consists of~~ hydrogen collection headers are routed to potential hydrogen pockets in containment, terminating on the suction side of either of the two ARS fans ~~at the header isolation valves~~. The minimum design flow from each potential hydrogen pocket is sufficient to limit the local concentration of hydrogen. ② ②

The ARS consists of two separate ~~trains of equal capacity, each capable of meeting the design bases. Each train includes a~~ 100% capacity air return fans, associated dampers, and common hydrogen collection headers ~~with isolation valves~~. Each ~~train~~ fan is powered from a separate Engineered Safety Features (ESF) bus. ③ ②

The ARS fans are automatically started ~~and the hydrogen collection header isolation valves are opened~~ by the ~~containment pressure High-High signal~~ Phase B containment isolation signal approximately 10 minutes after the containment pressure reaches the pressure setpoint. The ~~time delay~~ fan backdraft dampers ensure~~s~~ that no energy released during the initial phase of a DBA will bypass the ice bed through the ARS fans ~~or Hydrogen Skimmer System~~. ②

After starting, the fans displace air from the upper compartment to the lower compartment, thereby returning the air that was displaced by the high energy line break blowdown from the lower compartment ~~and equalizing pressures throughout containment~~. After discharge into the lower compartment, air flows with steam produced by residual heat through the ice condenser doors into the ice condenser compartment where the steam portion of the flow is condensed. The air flow returns to the upper compartment through the top deck doors in the upper portion of the ice condenser compartment. The ARS fans operate continuously after actuation, circulating air through the containment volume and ②

BASES

BACKGROUND (continued)

purging all potential hydrogen pockets in containment. ~~When the containment pressure falls below a predetermined value, the ARS fans are automatically de-energized. Thereafter, the fans are automatically cycled on and off if necessary to control any additional containment pressure transients.~~ ②

The ARS also functions, after all the ice has melted, to circulate any steam still entering the lower compartment to the upper compartment where the Containment Spray System can cool it.

The ARS is an ESF system. It is designed to ensure that the heat removal capability required during the post accident period can be attained. The operation of the ARS, in conjunction with the ice bed, the Containment Spray System, and the Residual Heat Removal (RHR) System spray, provides the required heat removal capability to limit post accident conditions to less than the containment design values.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively. The postulated DBAs are analyzed, in regard to ESF systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one ~~train each of the~~ Containment Spray System; RHR System, and ARS being inoperable (Ref. 1). The DBA analyses show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure.

fan
train
an
③

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The analysis for minimum internal containment pressure (i.e., maximum external differential containment pressure) assumes inadvertent simultaneous actuation of both the ARS and the Containment Spray System. The containment vacuum relief valves are designed to accommodate inadvertent actuation of either or both systems.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The modeled ARS actuation from the containment analysis is based upon a response time associated with exceeding the containment pressure High-High signal setpoint to achieving full ARS air flow. ~~A delayed response time initiation provides conservative analyses of peak calculated containment temperature and pressure responses~~. The ARS total response time of 600 seconds consists of the built in signal delay.

INSERT 1 ②

The ARS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

fan

fans

In the event of a DBA, one ~~train of the~~ ARS ~~with the Hydrogen Skimmer System~~ is required to provide the minimum air recirculation for heat removal and hydrogen mixing assumed in the safety analyses. To ensure this requirement is met, two ~~trains of the~~ ARS ~~with the Hydrogen Skimmer System~~ must be OPERABLE. This will ensure that at least one ~~train~~ will operate, assuming the worst case single failure occurs, which is in the ESF power supply.

fan

③

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ARS. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ARS is not required to be OPERABLE in these MODES.

ACTIONS

A.1

fan

If one ~~of the required trains of the~~ ARS is inoperable, it must be restored to OPERABLE status within 72 hours. The components in this degraded condition are capable of providing 100% of the flow ~~and hydrogen skimming~~ needs after an accident. The 72 hour Completion Time was developed taking into account the redundant flow ~~and hydrogen skimming~~ capability of the OPERABLE ARS ~~train~~ and the low probability of a DBA occurring in this period.

fan

③ ②

B.1 and B.2

fan

If the ARS ~~train~~ cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on

③

② INSERT 1

A delayed response time initiation ensures that no energy released during the initial phase of a DBA will bypass the ice bed through the ARS fans.

BASES

ACTIONS (continued)

operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~14~~.1 11 ①

Verifying that each ARS fan starts on an actual or simulated actuation signal, after a delay ≥ ~~[~~9.0~~]~~ minutes and ≤ ~~[~~11.0~~]~~ minutes, and operates for ≥ 15 minutes is sufficient to ensure that all fans are OPERABLE and that all associated controls and time delays are functioning properly. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. ~~[The [92] day Frequency was developed considering the known reliability of fan motors and controls and the two train redundancy available.~~ ④

~~OR~~ ⑤

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

SR 3.6.~~14~~.2 11 ①

Verifying ARS fan motor current ~~to be at rated speed~~ with the return air dampers closed confirms one operating condition of the fan. This test is indicative of overall fan motor performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. ~~[The Frequency of 92 days conforms with the testing requirements for similar ESF equipment and considers the known reliability of fan motors and controls and the two train redundancy available.~~ ⑧

~~OR~~ ⑤

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

SURVEILLANCE REQUIREMENTS (continued)

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

11

SR 3.6.~~14~~.3 ①

Verifying the OPERABILITY of the return air damper provides assurance that the proper flow path will exist when the fan is started. By applying the correct counterweight, the damper operation can be confirmed. ~~[The Frequency of 92 days was developed considering the importance of the dampers, their location, physical environment, and probability of failure. Operating experience has also shown this Frequency to be acceptable.~~ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

~~[SR 3.6.14.4~~

~~Verifying the OPERABILITY of the motor operated valve in the Hydrogen Skimmer System hydrogen collection header to the lower containment compartment provides assurance that the proper flow path will exist when the valve receives an actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. This Surveillance also confirms that the time delay to open is within specified tolerances. [The 92 day Frequency was developed considering the known reliability of the motor operated valves and controls and the two train redundancy available. Operating experience has also shown this Frequency to be acceptable.~~ ⑦

~~OR~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ~~]~~

⑦

REFERENCES

1. U FSAR, Section ~~[~~6.2~~]~~. ② ④

2. 10 CFR 50, Appendix K.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.11 BASES, AIR RETURN SYSTEM

1. The heading and title for ISTS 3.6.14 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.14 is renumbered as ITS 3.6.11.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases that reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS LCO 3.6.14 Bases refer to ARS "train" or "trains." However, the SQN ARS design consists of two 100% capacity fans (and associated dampers) connected to common hydrogen collection headers servicing the primary containment. The SQN ARS design does not consist of two fully redundant ARS trains. Therefore, it is necessary to define the OPERABILITY requirements of the Air Return System in terms of "fans." This is acceptable since the common hydrogen collection headers are passive components and are not susceptible to an active failure.

4. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

5. ISTS SR 3.6.14.1, SR 3.6.14.2, and SR 3.6.14.3 Bases provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.11.1, SR 3.6.11.2, and SR 3.6.11.3 under the Surveillance Frequency Control Program.

6. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

7. ISTS SR 3.6.14.4 Bases describes the surveillance requirement to verify that each motor operated valve in the hydrogen collection header that is not locked, sealed, or otherwise secured in position, opens on an actual or simulated actuation signal after the specified delay. However, the SQN Air Return System hydrogen collection headers do not include motor operated valves (or dampers) that receive actuation signals. Therefore, the Bases description of this surveillance is unnecessary and has not been included in the SQN ITS.

8. Changes are made to be consistent with changes made to the Specification.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.11, AIR RETURN SYSTEM

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 12

ITS 3.6.12, ICE BED

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

LCO 3.6.12 3.6.5.1. The ice bed shall be OPERABLE with:

SR 3.6.12.5 a. The stored ice having a boron concentration of ≥ 1800 ppm and ≤ 2500 ppm boron ~~as sodium tetraborate~~ and a pH of 9.0 to 9.5, LA01

SR 3.6.12.4 b. Flow channels through the ice condenser,

SR 3.6.12.1 c. A maximum ice bed temperature of less than or equal 27°F,

SR 3.6.12.2 d. A total ice weight of at least ~~2,225,880~~ ~~2,540,808~~ 2,187,250 pounds at a 95% level of confidence, and L01 A02

~~e. 1944 ice baskets.~~ LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least
ACTION B HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

SR 3.6.12.1 a. ~~At least once per 12 hours by~~ verifying that the maximum ice bed temperature is less than or equal to 27°F. LA02

SR 3.6.12.4 b. ~~At least once per 18 months by~~ verifying, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section. LA02

In accordance with the Surveillance Frequency Control Program LA02

A01

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

In accordance with the Surveillance Frequency Control Program — LA02

SR 3.6.12.6 c. ~~At least once per 40 months by~~ lifting and visually inspecting ~~the accessible portions of~~ at least two ice baskets from each ~~1/3~~ of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. ~~The ice baskets shall be raised at least 10 feet for this inspection.~~

INSERT 1

L02

SR 3.6.12.2 d. ~~At least once per 18 months by:~~

In accordance with the Surveillance Frequency Control Program — LA02

1. Deleted.

2. ~~Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1145 lbs of ice. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1145 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1145 pounds/basket at a 95% level of confidence.~~

~~1307~~ A02

Add proposed zone requirements.

~~1307~~ A02

~~The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1145 pounds/basket at a 95% level of confidence.~~

~~1307~~ A02

~~The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,225,880 pounds.~~

~~2,540,808~~ A02

L01

SR 3.6.12.5 e. ~~At least once per 54 months by~~ chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay verify:

In accordance with the Surveillance Frequency Control Program — LA02

1. Ice bed boron concentration is ≥ 1800 ppm and ≤ 2500 ppm ~~as sodium tetraborate~~ and;

LA01

2. pH is ≥ 9.0 and ≤ 9.5

SR 3.6.12.5 Note — NOTE: The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified above.

SR 3.6.12.7 f. Each ice addition verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 4.6.5.1.e.

SR 3.6.12.7 Note — NOTE: The chemical analysis may be performed on either the liquid solution or the resulting ice.

Add proposed SR 3.6.12.3 ~~at a Frequency of 18 months~~.

M01

In accordance with the Surveillance Frequency Control Program — LA02

INSERT 1

L02

Group of bays as defined below:

a. Group 1 - bays 1 through 8;

b. Group 2 - bays 9 through 16; and

c. Group 3 - bays 17 through 24.

A01

CONTAINMENT SYSTEMS

ICE BED TEMPERATURE MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.2 This specification is deleted.

A01

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

LCO 3.6.12 3.6.5.1 The ice bed shall be OPERABLE with:

SR 3.6.12.5 a. The stored ice having a boron concentration of ≥ 1800 ppm and ≤ 2500 ppm boron ~~as sodium tetraborate~~ and a pH of 9.0 to 9.5, LA01

SR 3.6.12.4 b. Flow channels through the ice condenser, 2,187,250 L01

SR 3.6.12.1 c. A maximum ice bed temperature of less than or equal to 27°F, ~~2,540,808~~ A02

SR 3.6.12.2 d. A total ice weight of at least ~~2,225,880~~ pounds at a 95% level of confidence, and

~~e.~~ ~~1944 ice baskets.~~ LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least
ACTION B HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

SR 3.6.12.1 a. ~~At least once per 12 hours~~ verifying that the maximum ice bed temperature is less than or equal to 27°F. LA02

SR 3.6.12.4 b. ~~At least once per 18 months~~ by verifying, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section. LA02

In accordance with the Surveillance Frequency Control Program LA02

A01

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

In accordance with the Surveillance Frequency Control Program LA02

SR 3.6.12.6 c. ~~At least once per 40 months~~ by lifting and visually inspecting ~~the accessible portions of~~ at least two ice baskets from each ~~1/3~~ of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage.~~ The ice baskets shall be raised at least 10 feet for this inspection.~~ L02

INSERT 1

d. ~~At least once per 18 months~~ by:

In accordance with the Surveillance Frequency Control Program LA02

1. Deleted.

SR 3.6.12.2 2. ~~Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1145 lbs of ice. The representative sample shall include 6 baskets from each of the 24 ice condenser bays and shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8 and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1145 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1145 pounds/basket at a 95% level of confidence.~~

~~1307~~ A02

Add proposed zone requirements.

~~1307~~ A02

L01

~~The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - bays 1 through 8, Group 2 - bays 9 through 16, and Group 3 - bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8 and 9 in each group shall not be less than 1145 pounds/basket at a 95% level of confidence.~~

~~1307~~ A02

~~The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,225,880 pounds.~~

~~2,540,808~~ A02

SR 3.6.12.5 e. ~~At least once per 54 months~~ by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay verify:

In accordance with the Surveillance Frequency Control Program LA02

1. Ice bed boron concentration is ≥ 1800 ppm and ≤ 2500 ppm ~~as sodium tetraborate~~ and; LA01

2. pH is ≥ 9.0 and ≤ 9.5

SR 3.6.12.5 Note NOTE: The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified above.

SR 3.6.12.7 f. Each ice addition verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 4.6.5.1.e.

SR 3.6.12.7 Note NOTE: The chemical analysis may be performed on either the liquid solution or the resulting ice

Add proposed SR 3.6.12.3 ~~at a Frequency of 18 months~~. M01

In accordance with the Surveillance Frequency Control Program LA02

INSERT 1

L02

Group of bays as defined below:

a. Group 1 - bays 1 through 8;

b. Group 2 - bays 9 through 16; and

c. Group 3 - bays 17 through 24.

A01

CONTAINMENT SYSTEMS

ICE BED TEMPERATURE MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.2 This specification is deleted.

DISCUSSION OF CHANGES
ITS 3.6.12, ICE BED

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 This change is provided consistent with Technical Specification Amendment request TS-SQN-12-04, "Application to Modify Ice Condenser Technical Specifications to Address Revisions in Westinghouse Mass and Energy Release Calculation (TS-SQN-12-04)," submitted to the USNRC for approval in a letter from J.W. Shea (TVA), dated July 3, 2012 (ADAMS Accession No. ML13199A281). In addition, letter TS-SQN-12-04 requested an approval date of May 31, 2014. As it is anticipated that the SQN ITS Conversion License Amendment Request (LAR) will not be approved by the NRC before this date, any revisions made to CTS markups included in letter TS-SQN-12-04 prior to its approval will be reflected in the SQN ITS Conversion LAR. As such, these changes are administrative.

MORE RESTRICTIVE CHANGES

M01 CTS 4.6.5.1.d.2 requires weighing a sample of at least 144 ice baskets and verifying each basket contains at least 1307 lbs of ice. CTS 4.6.5.1.d.2 also specifies that if any ice basket contains less than 1307 lbs of ice, additional ice baskets must be weighed. ITS SR 3.6.12.2 requires a verification of the total ice mass by calculating the mass of stored ice in each of three radial zones by selecting, at random, 30 ice baskets in each radial zone. It also verifies that each radial zone contains the required ice mass. (See DOC A02 for the discussion of changes related to changing the individual ice basket weight from 1145 lbs of ice to 1307 lbs of ice. See DOC L01 for the discussion of changes for eliminating the requirement to verify each sampled basket contains at least 1307 lbs of ice, and for eliminating the requirement for weighing additional ice baskets if one or more ice baskets do not contain at least 1307 lbs of ice.) ITS 3.6.12.3 adds a new Surveillance to verify that the ice mass of each basket sampled in SR 3.6.12.2 is at least 600 lbs every 18 months. This changes the CTS by adding the additional Surveillance verification. (See DOC LA02 for moving the 18 month Frequency for this Surveillance Requirement to the Surveillance Frequency Control Program.)

The containment ice bed provides a large heat sink in the event of a release of energy from a design basis accident (DBA) in containment. The ice absorbs energy and therefore, limits containment peak pressure and temperature. The ice baskets contain the ice within the ice condenser. The ice baskets position the ice within the ice bed in an arrangement that promotes heat transfer from steam to ice. The arrangement enhances the ice condenser's ability to condense steam and absorb heat energy released to the containment during a DBA. Therefore, it is vital that the ice be appropriately distributed around the ice condenser bays. This is especially important during the initial blowdown, so that the steam and water mixture entering the lower compartment does not pass through only part of the ice condenser, depleting the ice there while bypassing the ice in other bays. The ice bed can become degraded over a long service period through loss due to melting or sublimation, and by obstruction of flow passages through the ice bed due to buildup of ice. The purpose of ITS 3.6.12 is to ensure the required quantity of stored ice is appropriately distributed in the ice bed with open flow paths through the ice to effectively absorb the heat energy associated with a DBA without exceeding containment design pressure and temperature. Therefore, ITS 3.6.12 adds a specific Surveillance (ITS SR 3.6.12.3) to verify that each selected sample basket contains at least 600 lbs of ice in the as-found (pre-maintenance) condition every 18 months, thereby ensuring that a significant localized degraded ice mass condition is avoided. This change is designated as more restrictive because it adds a Surveillance verification to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.5.1.e requires the ice bed to be OPERABLE with 1944 baskets. CTS 3.6.5.1 and CTS 4.6.5.1.e state that the boron being used to meet the limit for stored ice boron concentration is in the form of sodium tetraborate. ITS LCO 3.6.12 requires the ice bed to be OPERABLE, but does not specify the number of ice baskets. ITS SR 3.6.12.5 specifies an upper and lower limit (≥ 1800 ppm and ≤ 2500 ppm) for stored boron concentration, but does not include the form of the boron (i.e., sodium tetraborate). This changes the CTS by moving the details that the ice bed contains 1944 ice baskets, and that the boron must be in the form of sodium tetraborate to the Bases.

The removal of these details, which are related to system design limits, from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS LCO 3.6.12 still requires the ice bed to be OPERABLE, and ITS SR 3.6.12.5 still retains the requirement concerning the boron concentration limits. Also, this change is acceptable, because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because information relating to system design limits is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Requirement to the Surveillance Frequency Control Program)* CTS 4.6.5.1.a requires verification that the maximum ice bed temperature is within limits at least once per 12 hours. ITS SR 3.6.12.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.1.b requires verification that the accumulation of ice on the structural members comprising flow channels through the ice bed is within limits at least once per 18 months. ITS SR 3.6.12.4 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.1.c requires a verification that the ice baskets are free from detrimental structural wear, cracks, corrosion or other damage at least once per 40 months. ITS SR 3.6.12.6 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.1.d requires a verification that the total weight of the ice baskets is within limits by weighing a representative sample at least once per 18 months. ITS SR 3.6.12.2 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.1.e requires a verification that the boron concentration and pH of a random sampling of ice baskets are within limits at least once per 54 months. ITS SR 3.6.12.5 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program. Additionally, ITS SR 3.6.12.3 has been added to verify that each selected sample basket contains at least 600 lbs of ice in the as-found (pre-maintenance) condition every 18 months. (See DOC M01 for the discussion on adding the SR.) The 18 month Frequency for this Surveillance has been relocated to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.5.1.d.2 requires weighing a sample of at least 144 ice baskets and verifying each ice basket contains at least 1307 lbs of ice to determine the total as-left ice condenser ice weight to be not less than 2,540,808 lbs at a 95%

confidence level. CTS 4.6.5.1.d.2 specifies the locations of the ice basket to be sampled and, if any ice basket contains less than 1307 lbs of ice, additional ice baskets must be weighed. It also requires the weighed baskets to be divided into three groups, with each group averaging 1307 lbs of ice per ice basket. ITS SR 3.6.12.2 requires a verification of the total as-found ice mass (2,187,250 lbs) by calculating the mass of stored ice in each of three radial zones by selecting, at random, 30 ice baskets in each radial zone. It also verifies that each radial zone contains at least 729,084 lbs of ice (total of 2,187,250 divided by three and rounded up for conservatism). ITS SR 3.6.12.3 requires a verification that each ice basket sampled in SR 3.6.12.2 contains at least 600 lbs of ice. This changes the CTS by deleting the requirement to sample six baskets from each of the 24 ice condenser bays. This requirement is replaced with a requirement for a representative sample size of at least 30 baskets in each of three radial zones. This also changes the CTS by requiring verification of an as-found ice basket weight versus an as-left ice basket weight that includes an additional amount of ice to account for ice sublimation during the operating cycle. This change also deletes the requirement to sample additional ice baskets, if any ice basket contains less than 1307 lbs of ice. The addition of SR 3.6.12.3 is discussed in DOC M01.

The purpose of CTS 3.6.5.1.d and CTS 4.6.5.1.d.2 is to verify a sufficient ice condenser ice mass is available to provide a heat sink in the event of an energy release in containment from a loss-of-coolant accident (LOCA) or a steam line break (SLB). This change is acceptable because the relaxed Surveillance Requirement acceptance criteria continue to ensure the ice bed can perform its required function. The proposed statistical sampling plan change (ITS SR 3.6.12.2) stratifies the ice bed population into three radial zones that contain rows of ice baskets exhibiting similar characteristics and requires at least 30 random sample ice baskets for ice mass verification in each radial zone. The stratified sampling allows subpopulations to be defined that have similar mean mass characteristics resulting in better estimates of total ice mass. A 30-ice basket random sample from each radial zone maintains a 95% confidence level for calculation of total stored ice. The modified sampling methodology provides the validation of total ice mass and verification of ice mass distribution within the ice bed, in lieu of a limited azimuthal row-group surveillance. The proposed ice bed sub-populations (radial zones) and sample size directly applies Ice Condenser Utility Group (ICUG) ice bed historical operating experience, provides clear linkage to statistical sampling methodology provided in NUREG-1475, "Applying Statistics," and supports validation of total stored ice for the long-term/overall DBA analysis. In addition, the new minimum blowdown ice mass acceptance criteria value for each ice basket sampled (SR 3.6.12.3) ensures that an anomalous gross degradation of the ice bed does not exist, supports the DBA analysis during the blowdown phase, and directly applies the blowdown data from the original Westinghouse Waltz-Mill testing as described in the UFSAR. These changes are designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.6.5.1.c requires lifting (at least 10 feet) and visually inspecting the accessible portions of at least two ice baskets from each one-third of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. CTS 4.6.5.1.d.2 defines the three groups of baskets as; Group 1 – bays 1 through 8, Group 2 – bays 9 through 16, and Group 3 – bays 17 through 24. ITS SR 3.6.12.6 requires a visual inspection, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of three bays (as Group 1 – bays 1 through 8, Group 2 – bays 9 through 16, and Group 3 – bays 17 through 24). The Bases for ITS SR 3.6.12.6 includes clarifying guidance that indicates the intent of the inspection is to perform an inspection of the full-length of the basket. This changes the CTS by removing the requirement to raise the ice basket at least 10 feet for the inspection.

The purpose of CTS 4.6.5.1.c is to verify that a representative sampling of ice baskets has not been degraded by wear, cracks, corrosion, or other damage. The Surveillance Requirement consists of a full-length inspection of a sample of baskets and is intended to monitor the effect of the ice condenser environment on ice baskets. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria continue to ensure the ice bed can perform its required function. These changes are designated as less restrictive, because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.~~15~~ 12 Ice Bed ~~(Ice Condenser)~~ ①

3.6.5.1 LCO 3.6.~~15~~ 12 The ice bed shall be OPERABLE. ①

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. Ice bed inoperable.	A.1 Restore ice bed to OPERABLE status.	48 hours
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.5.1.a 3.6.5.1.c	SR 3.6.~~15~~ 12.1 Verify maximum ice bed temperature is ≤ ~~[~~27~~]~~°F.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③ ③

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.6.5.1.d 4.6.5.1.d.2 3.6.5.1.d 3.6.5.1.e	SR 3.6.~~15~~.2 12	Verify total mass of stored ice is ≥ ~~[2,200,000]~~ 2,187,250 lbs by calculating the mass of stored ice, at a 95% confidence level, in each of three Radial Zones as defined below, by selecting a random sample of ≥ 30 ice baskets in each Radial Zone, and Verify: a ~~1~~. Zone A (radial rows ~~[7,8,9]~~ 1, 2, 3), has a total mass of ≥ ~~[733,400]~~ 729,084 lbs. b ~~2~~. Zone B (radial rows ~~[~~4,5,6~~]~~), has a total mass of ≥ ~~[733,400]~~ 729,084 lbs. c ~~3~~. Zone C (radial rows ~~[1,2,3]~~ 7, 8, 9), has a total mass of ≥ ~~[733,400]~~ 729,084 lbs.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③ ③ ② ④
DOC M01	SR 3.6.~~15~~.3 12	Verify that the ice mass of each basket sampled in SR 3.6.~~15~~.2 12 is ≥ 600 lbs.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③
4.6.5.1.b	SR 3.6.~~15~~.4 12	Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③

CTS

Ice Bed ~~(Ice Condenser)~~
3.6.~~15~~12 ①

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
4.6.5.1.e SR 3.6.~~15~~12.5 ① ------------------------------NOTE------------------------------ The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified below. --- Verify, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed: a. Boron concentration is a ≥ ~~[~~1800~~]~~ ppm and ≤ ~~[2000]~~ 2500 ppm and b. pH is ≥ ~~[~~9.0~~]~~ and ≤ ~~[~~9.5~~]~~.	~~[[54] months~~ ~~OR~~ ③ In accordance with the Surveillance Frequency Control Program ~~]~~ ② ③
4.6.5.1.c SR 3.6.~~15~~12.6 Visually inspect, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of bays as defined below: a. Group 1 - bays 1 through 8; b. Group 2 - bays 9 through 16; and c. Group 3 - bays 17 through 24.	~~[40 months~~ ~~OR~~ ① ③ In accordance with the Surveillance Frequency Control Program ~~]~~ ③
4.6.5.1.f 4.6.5.1.f Note SR 3.6.~~15~~12.7 ① ------------------------------NOTE------------------------------ The chemical analysis may be performed on either the liquid solution or on the resulting ice. --- Verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 3.6.~~15~~12.5.	Each ice addition ①

CTS

3.6 CONTAINMENT SYSTEMS

3.6.~~15~~ 12 Ice Bed ~~(Ice Condenser)~~ ①

3.6.5.1 LCO 3.6.~~15~~ 12 The ice bed shall be OPERABLE. ①

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION	A. Ice bed inoperable.	A.1 Restore ice bed to OPERABLE status.	48 hours
ACTION	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.5.1.a 3.6.5.1.c	SR 3.6.~~15~~ 12.1 Verify maximum ice bed temperature is ≤ ~~[~~27~~]~~°F.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③ ③

CTS

Ice Bed ~~(Ice Condenser)~~
3.6.~~15~~ 12 ①

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.6.5.1.d 4.6.5.1.d.2 3.6.5.1.d 3.6.5.1.e	SR 3.6.~~15~~.2 (12) Verify total mass of stored ice is ≥ 2,187,250 ~~[2,200,000]~~ lbs by calculating the mass of stored ice, at a 95% confidence level, in each of three Radial Zones as defined below, by selecting a random sample of ≥ 30 ice baskets in each Radial Zone, and Verify: a ~~1~~. Zone A (radial rows 1, 2, 3 ~~[7,8,9]~~), has a total mass of ≥ 729,084 ~~[733,400]~~ lbs. b ~~2~~. Zone B (radial rows ~~[~~4,5,6~~]~~), has a total mass of ≥ 729,084 ~~[733,400]~~ lbs. c ~~3~~. Zone C (radial rows 7, 8, 9 ~~[1,2,3]~~), has a total mass of ≥ 729,084 ~~[733,400]~~ lbs.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③ ③ ② ④
DOC M01	SR 3.6.~~15~~.3 (12) Verify that the ice mass of each basket sampled in SR 3.6.~~15~~.2 (12) is ≥ 600 lbs.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③
4.6.5.1.b	SR 3.6.~~15~~.4 (12) Verify, by visual inspection, accumulation of ice on structural members comprising flow channels through the ice bed is ≤ 15 percent blockage of the total flow area for each safety analysis section.	~~[18 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.6.5.1.e	SR 3.6.~~15~~12.5 ------------------------------NOTE------------------------------ The requirements of this SR are satisfied if the boron concentration and pH values obtained from averaging the individual sample results are within the limits specified below. --- Verify, by chemical analysis of the stored ice in at least one randomly selected ice basket from each ice condenser bay, that ice bed: a. Boron concentration is a ≥ ~~[~~1800~~]~~ ppm and ≤ ~~[2000]~~ 2500 ppm and b. pH is ≥ ~~[~~9.0~~]~~ and ≤ ~~[~~9.5~~]~~.	~~[[54] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ② ③
4.6.5.1.c	SR 3.6.~~15~~12.6 Visually inspect, for detrimental structural wear, cracks, corrosion, or other damage, two ice baskets from each group of bays as defined below: a. Group 1 - bays 1 through 8; b. Group 2 - bays 9 through 16; and c. Group 3 - bays 17 through 24.	~~[40 months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ③
4.6.5.1.f 4.6.5.1.f Note	SR 3.6.~~15~~12.7 ------------------------------NOTE------------------------------ The chemical analysis may be performed on either the liquid solution or on the resulting ice. --- Verify, by chemical analysis, that ice added to the ice condenser meets the boron concentration and pH requirements of SR 3.6.~~15~~12.5.	Each ice addition	① ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.12, ICE BED

1. The heading and title for ISTS 3.6.15 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear Plant (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS, and ISTS 3.6.15 is renumbered as ITS 3.6.12.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

3. ISTS SR 3.6.15.1, SR 3.6.15.2, SR 3.6.15.3, SR 3.6.15.4, SR 3.6.15.5, SR 3.6.15.6, and SR 3.6.15.7 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.12.1, SR 3.6.12.2, SR 3.6.12.3, SR 3.6.12.4, SR 3.6.12.5, SR 3.6.12.6, and SR 3.6.12.7 under the Surveillance Frequency Control Program.

4. These changes are grammatical corrections, correcting punctuation, or other changes that are consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~15~~ Ice Bed ~~(Ice Condenser)~~

12 ①

BASES

2,187,250 ②

BACKGROUND

The ice bed consists of a minimum of ~~[2,200,000]~~ lb of ice stored within the ice condenser. The primary purpose of the ice bed is to provide a large heat sink in the event of a release of energy from a Design Basis Accident (DBA) in containment. The ice would absorb energy and limit containment peak pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

degrees ③

The ice condenser is an annular compartment enclosing approximately 300~~°~~ of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The lower portion has a series of hinged doors exposed to the atmosphere of the lower containment compartment, which, for normal unit operation, are designed to remain closed. At the top of the ice condenser is another set of doors exposed to the atmosphere of the upper compartment, which also remain closed during normal unit operation. Intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. These doors also remain closed during normal unit operation. The upper plenum area is used to facilitate surveillance and maintenance of the ice bed.

1944 ④

~~The~~ ice baskets contain the ice within the ice condenser. The ice bed is considered to consist of the total volume from the bottom elevation of the ice baskets to the top elevation of the ice baskets. The ice baskets position the ice within the ice bed in an arrangement to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condenser limits the pressure and temperature buildup in containment. A divider barrier (i.e., operating deck and extensions thereof) separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

BASES

BACKGROUND (continued)

The ice, together with the containment spray, is adequate to absorb the initial blowdown of steam and water from a DBA and the additional heat loads that would enter containment during several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves ~~to equalize pressures in containment and~~ to continue circulating heated air and steam from the lower compartment through the ice condenser where the heat is removed by the remaining ice. ④

As ice melts, the water passes through the ice condenser floor drains into the lower compartment. Thus, a second function of the ice bed is to be a large source of borated water (via the containment sump) for long term Emergency Core Cooling System (ECCS) and Containment Spray System heat removal functions in the recirculation mode.

A third function of the ice bed and melted ice is to remove fission product iodine that may be released from the core during a DBA. Iodine removal occurs during the ice melt phase of the accident and continues as the melted ice is sprayed into the containment atmosphere by the Containment Spray System. The ice is adjusted to an alkaline pH that facilitates removal of radioactive iodine from the containment atmosphere. ~~The alkaline pH also minimizes the occurrence of the chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation.~~ ⑤

It is important for ice to exist in the ice baskets, the ice to be appropriately distributed around the 24 ice condenser bays, and for open flow paths to exist around ice baskets. This is especially important during the initial blowdown so that the steam and water mixture entering the lower compartment do not pass through only part of the ice condenser, depleting the ice there while bypassing the ice in other bays.

Two phenomena that can degrade the ice bed during the long service period are:

a. Loss of ice by melting or sublimation ; ~~and~~ ⑥

b. Obstruction of flow passages through the ice bed due to buildup of ice.

BASES

BACKGROUND (continued)

Both of these degrading phenomena are reduced by minimizing air leakage into and out of the ice condenser.

The ice bed limits the temperature and pressure that could be expected following a DBA, thus limiting leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are not assumed to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed in regards to containment Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train ~~each~~ of the Containment Spray System and one ARS fan being inoperable. ⑦

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. For certain aspects of the transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the ECCS during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature."

In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The ice bed satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The ice bed LCO requires the existence of the required quantity of stored ice, appropriate distribution of the ice ~~and~~ within the ice bed, open flow paths through the ice bed, and appropriate chemical content and pH of the stored ice. The stored ice functions to absorb heat during the blowdown phase and long term phase of a DBA, thereby limiting containment air temperature and pressure. The chemical content and pH of the stored ice provide core SDM (boron content) and remove radioactive iodine from the containment atmosphere when the melted ice is recirculated through the ECCS and the Containment Spray System, respectively. ⑥

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ice bed. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ice bed is not required to be OPERABLE in these MODES.

ACTIONS

A.1

If the ice bed is inoperable, it must be restored to OPERABLE status within 48 hours. The Completion Time was developed based on operating experience, which confirms that due to the very large mass of stored ice, the parameters comprising OPERABILITY do not change appreciably in this time period. ~~Because of this fact, the Surveillance Frequencies are long (months), except for the ice bed temperature, which is checked every 12 hours.~~ ⑧ If a degraded condition is identified, even for temperature, with such a large mass of ice it is not possible for the degraded condition to significantly degrade further in a 48 hour period. Therefore, 48 hours is a reasonable amount of time to correct a degraded condition before initiating a shutdown.

B.1 and B.2

If the ice bed cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES ①

SURVEILLANCE REQUIREMENTS

SR 3.6.~~15~~ 12 .1

Verifying that the maximum temperature of the ice bed is ≤ ~~[~~27~~]~~°F ensures that the ice is kept well below the melting point. ~~[The 12 hour Frequency was based on operating experience, which confirmed that, due to the large mass of stored ice, it is not possible for the ice bed temperature to degrade significantly within a 12 hour period and was also based on assessing the proximity of the LCO limit to the melting temperature.~~ ② ⑧

~~Furthermore, the 12 hour Frequency is considered adequate in view of indications in the control room, including the alarm, to alert the operator to an abnormal ice bed temperature condition. This SR may be satisfied by use of the Ice Bed Temperature Monitoring System.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑨

SR 3.6.~~15~~ 12 .2 ①

Ice mass determination methodology is designed to verify the total as-found (pre-maintenance) mass of ice in the ice bed, and the appropriate distribution of that mass, using a random sampling of individual baskets. The random sample will include at least 30 baskets from each of three defined Radial Zones (at least 90 baskets total). Radial Zone A consists of baskets located in rows ~~[7, 8, and 9]~~ 1, 2, and 3 (innermost rows adjacent to the crane wall), Radial Zone B consists of baskets located in rows ~~[~~4, 5, and 6~~]~~ (middle rows of the ice bed), and Radial Zone C consists of baskets located in rows ~~[1, 2, and 3]~~ 7, 8, and 9 (outermost rows adjacent to the containment vessel). ②

The Radial Zones chosen include the row groupings nearest the inside and outside walls of the ice bed and the middle rows of the ice bed. These groupings facilitate the statistical sampling plan by creating sub-populations of ice baskets that have similar mean mass and sublimation characteristics.

BASES

SURVEILLANCE REQUIREMENTS (continued)

Methodology for determining sample ice basket mass will be ~~either~~ by direct lifting ~~or by alternative techniques~~. ~~Any~~ This method ~~chosen~~ will include procedural allowances for the accuracy of the method ~~used~~. ~~[~~The number of sample baskets in any Radial Zone may be increased ~~one~~ once by adding 20 or more randomly selected baskets to verify the total mass of that Radial Zone.~~]~~ ⑩ ② ②

In the event the mass of a selected basket in a sample population (initial or expanded) cannot be determined by any available means (e.g., due to surface ice accumulation or obstruction), a randomly selected representative alternate basket may be used to replace the original selection in that sample population. If employed, the representative alternate must meet the following criteria:

a. Alternate selection must be from the same bay-Zone (i.e., same bay, same Radial Zone) as the original selection, and

b. Alternate selection cannot be a repeated selection (original or alternate) in the current Surveillance, and cannot have been used as an analyzed alternate selection in the three most recent Surveillances.

The complete basis for the methodology used in establishing the 95% confidence level in the total ice bed mass is documented in Reference 4 and approved in Reference 5.

The total ice mass and individual Radial Zone ice mass requirements defined in this Surveillance, and the minimum ice mass per basket requirement defined by SR 3.6.~~15~~12.3, are the minimum requirements for OPERABILITY. Additional ice mass beyond the SRs is maintained to address sublimation. This sublimation allowance is generally applied to baskets in each Radial Zone, as appropriate, at the beginning of an operating cycle to ensure sufficient ice is available at the end of the operating cycle for the ice condenser to perform its intended design function. ①

~~[The Frequency of 18 months was based on ice storage tests, and the typical sublimation allowance maintained in the ice mass over and above the minimum ice mass assumed in the safety analyses. Operating and maintenance experience has verified that, with the 18 month Frequency, the minimum mass and distribution requirements in the ice bed are maintained.~~ ⑧

~~OR~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑨

12

SR 3.6.~~15~~.3 ①

12

Verifying that each selected sample basket from SR 3.6.~~15~~.2 contains at least 600 lbs of ice in the as-found (pre-maintenance) condition ensures that a significant localized degraded mass condition is avoided.

This SR establishes a per basket limit to ensure any ice mass degradation is consistent with the initial conditions of the DBA by not significantly affecting the containment pressure response. Reference 4 provides insights through sensitivity runs that demonstrate that the containment peak pressure during a DBA is not significantly affected by the ice mass in a large localized region of baskets being degraded below the required safety analysis mean, when the Radial Zone and total ice mass requirements of SR 3.6.~~15~~.2 are satisfied. Any basket identified as containing less than 600 lbs of ice requires appropriately entering the TS Required Action for an inoperable ice bed due to the potential that it may represent a significant condition adverse to quality. 12 ①

As documented in Reference 4, maintenance practices actively manage individual ice basket mass above the required safety analysis mean for each Radial Zone. Specifically, each basket is serviced to keep its ice mass above ~~[1132]~~ lbs for Radial Zone A, ~~[1132]~~ lbs for Radial Zone B, and ~~[1132]~~ lbs for Radial Zone C. If a basket sublimates below the safety analysis mean value, this instance is identified within the plant's corrective action program, including evaluating maintenance practices to identify the cause and correct any deficiencies. These maintenance practices provide defense in depth beyond compliance with the ice bed Surveillance Requirements by limiting the occurrence of individual baskets with ice mass less than the required safety analysis mean.

1125.13
1125.13 ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

12 ①

SR 3.6.~~15~~.4

This SR ensures that the flow channels through the ice bed have not accumulated ice blockage that exceeds 15 percent of the total flow area through the ice bed region. The allowable 15 percent buildup of ice is based on the analysis of the sub-compartment response to a design basis LOCA with partial blockage of the ice condenser flow channels. The analysis did not perform detailed flow area modeling, but lumped the ice condenser bays into six sections ranging from 2.75 bays to 6.5 bays. Individual bays are acceptable with greater than 15 percent blockage, as long as 15 percent blockage is not exceeded for any analysis section.

To provide a 95 percent confidence that flow blockage does not exceed the allowed 15 percent, the visual inspection must be made for at least 54 (33 percent) of the 162 flow channels per ice condenser bay. The visual inspection of the ice bed flow channels is to inspect the flow area, by looking down from the top of the ice bed, and where view is achievable up from the bottom of the ice bed. Flow channels to be inspected are determined by random sample. As the most restrictive ice bed flow passage is found at a lattice frame elevation, the 15 percent blockage criteria only applies to "flow channels" that comprise the area:

a. between ice baskets, and

b. past lattice frames and wall panels.

Due to a significantly larger flow area in the regions of the upper deck grating and the lower inlet plenum support structures and turning vanes, a gross buildup of ice on these structures would be required to degrade air and steam flow. Therefore, these structures are excluded as part of a flow channel for application of the 15 percent blockage criteria. Industry experience has shown that removal of ice from the excluded structures during the refueling outage is sufficient to ensure they remain OPERABLE throughout the operating cycle. Removal of any gross ice buildup on the excluded structures is performed following outage maintenance activities.

Operating experience has demonstrated that the ice bed is the region that is the most flow restrictive, due to the normal presence of ice accumulation on lattice frames and wall panels. The flow area through the ice basket support platform is not a more restrictive flow area because it is easily accessible from the lower plenum and is maintained clear of ice accumulation. There is no mechanistically credible method for ice to

BASES

SURVEILLANCE REQUIREMENTS (continued)

accumulate on the ice basket support platform during plant operation. Plant and industry experience has shown that the vertical flow area through the ice basket support platform remains clear of ice accumulation that could produce blockage. Normally only a glaze may develop or exist on the ice basket support platform which is not significant to blockage of flow area. Additionally, outage maintenance practices provide measures to clear the ice basket support platform following maintenance activities of any accumulation of ice that could block flow areas.

Frost buildup or loose ice is not to be considered as flow channel blockage, whereas attached ice is considered blockage of a flow channel. Frost is the solid form of water that is loosely adherent, and can be brushed off with the open hand.

12

SR 3.6.~~15~~.5 ①

Verifying the chemical composition of the stored ice ensures that the stored ice has a boron concentration ≥ ~~[~~1800~~]~~ ppm and ≤ ~~[2000]~~ 2500 ppm as sodium tetraborate and a high pH, ≥ ~~[~~9.0~~]~~ and ≤ ~~[~~9.5~~]~~, in order to meet the requirement for borated water when the melted ice is used in the ECCS recirculation mode of operation. ② Additionally, the minimum boron concentration value is used to assure reactor subcriticality in a post LOCA environment, while the maximum boron concentration is used as the bounding value in the hot leg switchover timing calculation (Ref. 3). This is accomplished by obtaining at least 24 ice samples. Each sample is taken approximately one foot from the top of the ice of each randomly selected ice basket in each ice condenser bay. The SR is modified by a Note that allows the boron concentration and pH value obtained from averaging the individual samples' analysis results to satisfy the requirements of the SR. If either the average boron concentration or average pH value is outside their prescribed limit, then entry into Condition A is required. Sodium tetraborate has been proven effective in maintaining the boron content for long storage periods, and it also enhances the ability of the solution to remove and retain fission product iodine. The high pH is required to enhance the effectiveness of the ice and the melted ice in removing iodine from the containment atmosphere. This pH range also minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation. ~~[The Frequency of [54] months is intended to be consistent with the expected length of three fuel cycles, and was developed considering these facts:~~ ⑧

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~a. Long term ice storage tests have determined that the chemical composition of the stored ice is extremely stable,~~

~~b. There are no normal operating mechanisms that decrease the boron concentration of the stored ice, and pH remains within a 9.0-9.5 range when boron concentrations are above approximately 1200 ppm,~~

~~c. Operating experience has demonstrated that meeting the boron concentration and pH requirements has never been a problem, and~~

~~d. Someone would have to enter the containment to take the sample, and, if the unit is at power, that person would receive a radiation dose.~~

~~OR~~

8

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

9

12

SR 3.6.~~15~~.6

1

This SR ensures that a representative sampling of ice baskets, which are relatively thin walled, perforated cylinders, have not been degraded by wear, cracks, corrosion, or other damage. The SR is designed around a full-length inspection of a sample of baskets, and is intended to monitor the effect of the ice condenser environment on ice baskets. The groupings defined in the SR (two baskets in each azimuthal third of the ice bed) ensure that the sampling of baskets is reasonably distributed~~. [The Frequency of 40 months for a visual inspection of the structural soundness of the ice baskets is based on engineering judgment and considers such factors as the thickness of the basket walls relative to corrosion rates expected in their service environment and the results of the long term ice storage testing.~~

8

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ⑧

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑨

12

SR 3.6.~~15~~.7 ①

12

This SR ensures that initial ice fill and any subsequent ice additions meet the boron concentration and pH requirements of SR 3.6.~~15~~.5. The SR is modified by a Note that allows the chemical analysis to be performed on either the liquid or resulting ice of each sodium tetraborate solution prepared. If ice is obtained from offsite sources, then chemical analysis data must be obtained for the ice supplied.

REFERENCES

U

1. FSAR, Section ~~[~~6.2~~]~~. ④ ②
2. 10 CFR 50, Appendix K.
3. ~~[Westinghouse letter, WAT-D-10686, "Upper Limit Ice Boron Concentration In Safety Analysis."]~~ INSERT 1 ②
4. Topical Report ICUG-001, "Application of the Active Ice Mass Management (AIMM) Concept to the Ice Condenser Ice Mass Technical Specifications," Revision 3, September 2003.
5. NRC Letter dated September 11, 2003, "Safety Evaluation for Ice Condenser Utility Group Topical Report No. ICUG-001, Revision 2 RE: Application of the Active Ice Mass Management Concept to the Ice Condenser Ice Mass Technical Specification (TAC No. MB3379)."

③ INSERT 1

Sequoyah Nuclear Plant Units 1 and 2 – Nuclear Steam Supply System Engineering Support Services – Contract 99NAN-251787 – Letter N9873, Contract Work Authorization N20000 020 – Tritium Production Core – Post Loss of Coolant Accident (LOCA) Long Term Core Cooling Analysis – N2N 058, dated August 13, 2001.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~15~~ Ice Bed ~~(Ice Condenser)~~

12 ①

BASES

2,187,250 ②

BACKGROUND

The ice bed consists of a minimum of ~~[2,200,000]~~ lb of ice stored within the ice condenser. The primary purpose of the ice bed is to provide a large heat sink in the event of a release of energy from a Design Basis Accident (DBA) in containment. The ice would absorb energy and limit containment peak pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

degrees ③

The ice condenser is an annular compartment enclosing approximately 300~~°~~ of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The lower portion has a series of hinged doors exposed to the atmosphere of the lower containment compartment, which, for normal unit operation, are designed to remain closed. At the top of the ice condenser is another set of doors exposed to the atmosphere of the upper compartment, which also remain closed during normal unit operation. Intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. These doors also remain closed during normal unit operation. The upper plenum area is used to facilitate surveillance and maintenance of the ice bed.

1944 ④

~~The~~ ice baskets contain the ice within the ice condenser. The ice bed is considered to consist of the total volume from the bottom elevation of the ice baskets to the top elevation of the ice baskets. The ice baskets position the ice within the ice bed in an arrangement to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condenser limits the pressure and temperature buildup in containment. A divider barrier (i.e., operating deck and extensions thereof) separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

BASES

BACKGROUND (continued)

The ice, together with the containment spray, is adequate to absorb the initial blowdown of steam and water from a DBA and the additional heat loads that would enter containment during several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves ~~to equalize pressures in containment and~~ to continue circulating heated air and steam from the lower compartment through the ice condenser where the heat is removed by the remaining ice. ④

As ice melts, the water passes through the ice condenser floor drains into the lower compartment. Thus, a second function of the ice bed is to be a large source of borated water (via the containment sump) for long term Emergency Core Cooling System (ECCS) and Containment Spray System heat removal functions in the recirculation mode.

A third function of the ice bed and melted ice is to remove fission product iodine that may be released from the core during a DBA. Iodine removal occurs during the ice melt phase of the accident and continues as the melted ice is sprayed into the containment atmosphere by the Containment Spray System. The ice is adjusted to an alkaline pH that facilitates removal of radioactive iodine from the containment atmosphere. ~~The alkaline pH also minimizes the occurrence of the chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation.~~ ⑤

It is important for ice to exist in the ice baskets, the ice to be appropriately distributed around the 24 ice condenser bays, and for open flow paths to exist around ice baskets. This is especially important during the initial blowdown so that the steam and water mixture entering the lower compartment do not pass through only part of the ice condenser, depleting the ice there while bypassing the ice in other bays.

Two phenomena that can degrade the ice bed during the long service period are:

a. Loss of ice by melting or sublimation ; and ⑥

b. Obstruction of flow passages through the ice bed due to buildup of ice.

BACKGROUND (continued)

Both of these degrading phenomena are reduced by minimizing air leakage into and out of the ice condenser.

The ice bed limits the temperature and pressure that could be expected following a DBA, thus limiting leakage of fission product radioactivity from containment to the environment.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are not assumed to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed in regards to containment Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train ~~each~~ of the Containment Spray System and one ARS fan being inoperable. ⑦

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. For certain aspects of the transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of the ECCS during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature."

In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The ice bed satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The ice bed LCO requires the existence of the required quantity of stored ice, appropriate distribution of the ice within ~~and~~ the ice bed, open flow paths ⑥ through the ice bed, and appropriate chemical content and pH of the stored ice. The stored ice functions to absorb heat during the blowdown phase and long term phase of a DBA, thereby limiting containment air temperature and pressure. The chemical content and pH of the stored ice provide core SDM (boron content) and remove radioactive iodine from the containment atmosphere when the melted ice is recirculated through the ECCS and the Containment Spray System, respectively.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ice bed. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ice bed is not required to be OPERABLE in these MODES.

ACTIONS

A.1

If the ice bed is inoperable, it must be restored to OPERABLE status within 48 hours. The Completion Time was developed based on operating experience, which confirms that due to the very large mass of stored ice, the parameters comprising OPERABILITY do not change appreciably in this time period. ~~Because of this fact, the Surveillance Frequencies are long (months), except for the ice bed temperature, which is checked every 12 hours.~~ ⑧ If a degraded condition is identified, even for temperature, with such a large mass of ice it is not possible for the degraded condition to significantly degrade further in a 48 hour period. Therefore, 48 hours is a reasonable amount of time to correct a degraded condition before initiating a shutdown.

B.1 and B.2

If the ice bed cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES ①

12

SURVEILLANCE REQUIREMENTS

SR 3.6.~~15~~.1

Verifying that the maximum temperature of the ice bed is ≤ ~~[~~27~~]~~°F ensures that the ice is kept well below the melting point. ~~[The 12 hour Frequency was based on operating experience, which confirmed that, due to the large mass of stored ice, it is not possible for the ice bed temperature to degrade significantly within a 12 hour period and was also based on assessing the proximity of the LCO limit to the melting temperature.~~ ② ⑧

~~Furthermore, the 12 hour Frequency is considered adequate in view of indications in the control room, including the alarm, to alert the operator to an abnormal ice bed temperature condition. This SR may be satisfied by use of the Ice Bed Temperature Monitoring System.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑨

12

SR 3.6.~~15~~.2 ①

Ice mass determination methodology is designed to verify the total as-found (pre-maintenance) mass of ice in the ice bed, and the appropriate distribution of that mass, using a random sampling of individual baskets. The random sample will include at least 30 baskets from each of three defined Radial Zones (at least 90 baskets total). Radial Zone A consists of baskets located in rows ~~[7, 8, and 9]~~ 1, 2, and 3 (innermost rows adjacent to the crane wall), Radial Zone B consists of baskets located in rows ~~[~~4, 5, and 6~~]~~ (middle rows of the ice bed), and Radial Zone C consists of baskets located in rows ~~[~~1, 2, and 3~~]~~ 7, 8, and 9 (outermost rows adjacent to the containment vessel). ②

The Radial Zones chosen include the row groupings nearest the inside and outside walls of the ice bed and the middle rows of the ice bed. These groupings facilitate the statistical sampling plan by creating sub-populations of ice baskets that have similar mean mass and sublimation characteristics.

BASES

SURVEILLANCE REQUIREMENTS (continued)

This Methodology for determining sample ice basket mass will be ~~either~~ by ⑩
direct lifting ~~or by alternative techniques~~. ~~Any~~ method ~~chosen~~ will include
procedural allowances for the accuracy of the method ~~used~~. ~~[~~The number
once of sample baskets in any Radial Zone may be increased ~~one~~ by adding ②
20 or more randomly selected baskets to verify the total mass of that
Radial Zone.~~]~~ ②

In the event the mass of a selected basket in a sample population (initial or expanded) cannot be determined by any available means (e.g., due to surface ice accumulation or obstruction), a randomly selected representative alternate basket may be used to replace the original selection in that sample population. If employed, the representative alternate must meet the following criteria:

a. Alternate selection must be from the same bay-Zone (i.e., same bay, same Radial Zone) as the original selection, and

b. Alternate selection cannot be a repeated selection (original or alternate) in the current Surveillance, and cannot have been used as an analyzed alternate selection in the three most recent Surveillances.

The complete basis for the methodology used in establishing the 95% confidence level in the total ice bed mass is documented in Reference 4 and approved in Reference 5.

The total ice mass and individual Radial Zone ice mass requirements defined in this Surveillance, and the minimum ice mass per basket
12 requirement defined by SR 3.6.~~15~~.3, are the minimum requirements for ①
OPERABILITY. Additional ice mass beyond the SRs is maintained to address sublimation. This sublimation allowance is generally applied to baskets in each Radial Zone, as appropriate, at the beginning of an operating cycle to ensure sufficient ice is available at the end of the operating cycle for the ice condenser to perform its intended design function.

~~[The Frequency of 18 months was based on ice storage tests, and the typical sublimation allowance maintained in the ice mass over and above the minimum ice mass assumed in the safety analyses. Operating and maintenance experience has verified that, with the 18 month Frequency, the minimum mass and distribution requirements in the ice bed are maintained.~~ ⑧

~~OR~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑨

SR 3.6.~~15~~12.3 ①

Verifying that each selected sample basket from SR 3.6.~~15~~12.2 contains at least 600 lbs of ice in the as-found (pre-maintenance) condition ensures that a significant localized degraded mass condition is avoided.

This SR establishes a per basket limit to ensure any ice mass degradation is consistent with the initial conditions of the DBA by not significantly affecting the containment pressure response. Reference 4 provides insights through sensitivity runs that demonstrate that the containment peak pressure during a DBA is not significantly affected by the ice mass in a large localized region of baskets being degraded below the required safety analysis mean, when the Radial Zone and total ice mass requirements of SR 3.6.~~15~~12.2 are satisfied. ① Any basket identified as containing less than 600 lbs of ice requires appropriately entering the TS Required Action for an inoperable ice bed due to the potential that it may represent a significant condition adverse to quality.

As documented in Reference 4, maintenance practices actively manage individual ice basket mass above the required safety analysis mean for each Radial Zone. Specifically, each basket is serviced to keep its ice mass above ~~[1132]~~ 1125.13 lbs for Radial Zone A, ~~[1132]~~ 1125.13 lbs for Radial Zone B, and ~~[1132]~~ 1125.13 lbs for Radial Zone C. ② If a basket sublimates below the safety analysis mean value, this instance is identified within the plant's corrective action program, including evaluating maintenance practices to identify the cause and correct any deficiencies. These maintenance practices provide defense in depth beyond compliance with the ice bed Surveillance Requirements by limiting the occurrence of individual baskets with ice mass less than the required safety analysis mean.

SURVEILLANCE REQUIREMENTS (continued)

①

12

SR 3.6.~~15~~.4

This SR ensures that the flow channels through the ice bed have not accumulated ice blockage that exceeds 15 percent of the total flow area through the ice bed region. The allowable 15 percent buildup of ice is based on the analysis of the sub-compartment response to a design basis LOCA with partial blockage of the ice condenser flow channels. The analysis did not perform detailed flow area modeling, but lumped the ice condenser bays into six sections ranging from 2.75 bays to 6.5 bays. Individual bays are acceptable with greater than 15 percent blockage, as long as 15 percent blockage is not exceeded for any analysis section.

To provide a 95 percent confidence that flow blockage does not exceed the allowed 15 percent, the visual inspection must be made for at least 54 (33 percent) of the 162 flow channels per ice condenser bay. The visual inspection of the ice bed flow channels is to inspect the flow area, by looking down from the top of the ice bed, and where view is achievable up from the bottom of the ice bed. Flow channels to be inspected are determined by random sample. As the most restrictive ice bed flow passage is found at a lattice frame elevation, the 15 percent blockage criteria only applies to "flow channels" that comprise the area:

a. between ice baskets, and

b. past lattice frames and wall panels.

Due to a significantly larger flow area in the regions of the upper deck grating and the lower inlet plenum support structures and turning vanes, a gross buildup of ice on these structures would be required to degrade air and steam flow. Therefore, these structures are excluded as part of a flow channel for application of the 15 percent blockage criteria. Industry experience has shown that removal of ice from the excluded structures during the refueling outage is sufficient to ensure they remain OPERABLE throughout the operating cycle. Removal of any gross ice buildup on the excluded structures is performed following outage maintenance activities.

Operating experience has demonstrated that the ice bed is the region that is the most flow restrictive, due to the normal presence of ice accumulation on lattice frames and wall panels. The flow area through the ice basket support platform is not a more restrictive flow area because it is easily accessible from the lower plenum and is maintained clear of ice accumulation. There is no mechanistically credible method for ice to

BASES

SURVEILLANCE REQUIREMENTS (continued)

accumulate on the ice basket support platform during plant operation. Plant and industry experience has shown that the vertical flow area through the ice basket support platform remains clear of ice accumulation that could produce blockage. Normally only a glaze may develop or exist on the ice basket support platform which is not significant to blockage of flow area. Additionally, outage maintenance practices provide measures to clear the ice basket support platform following maintenance activities of any accumulation of ice that could block flow areas.

Frost buildup or loose ice is not to be considered as flow channel blockage, whereas attached ice is considered blockage of a flow channel. Frost is the solid form of water that is loosely adherent, and can be brushed off with the open hand.

12

SR 3.6.~~15~~.5 ①

Verifying the chemical composition of the stored ice ensures that the stored ice has a boron concentration ≥ ~~[~~1800~~]~~ ppm and ≤ ~~[2000]~~ 2500 ppm as sodium tetraborate and a high pH, ≥ ~~[~~9.0~~]~~ and ≤ ~~[~~9.5~~]~~, in order to meet the requirement for borated water when the melted ice is used in the ECCS recirculation mode of operation. ② Additionally, the minimum boron concentration value is used to assure reactor subcriticality in a post LOCA environment, while the maximum boron concentration is used as the bounding value in the hot leg switchover timing calculation (Ref. 3). This is accomplished by obtaining at least 24 ice samples. Each sample is taken approximately one foot from the top of the ice of each randomly selected ice basket in each ice condenser bay. The SR is modified by a Note that allows the boron concentration and pH value obtained from averaging the individual samples' analysis results to satisfy the requirements of the SR. If either the average boron concentration or average pH value is outside their prescribed limit, then entry into Condition A is required. Sodium tetraborate has been proven effective in maintaining the boron content for long storage periods, and it also enhances the ability of the solution to remove and retain fission product iodine. The high pH is required to enhance the effectiveness of the ice and the melted ice in removing iodine from the containment atmosphere. This pH range also minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluids in the recirculation mode of operation. ~~[The Frequency of [54] months is intended to be consistent with the expected length of three fuel cycles, and was developed considering these facts:~~ ⑧

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~a. Long term ice storage tests have determined that the chemical composition of the stored ice is extremely stable,~~

~~b. There are no normal operating mechanisms that decrease the boron concentration of the stored ice, and pH remains within a 9.0-9.5 range when boron concentrations are above approximately 1200 ppm,~~

~~c. Operating experience has demonstrated that meeting the boron concentration and pH requirements has never been a problem, and~~

~~d. Someone would have to enter the containment to take the sample, and, if the unit is at power, that person would receive a radiation dose.~~

~~OR~~

⑧

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

⑨

12

SR 3.6.~~15~~.6

①

This SR ensures that a representative sampling of ice baskets, which are relatively thin walled, perforated cylinders, have not been degraded by wear, cracks, corrosion, or other damage. The SR is designed around a full-length inspection of a sample of baskets, and is intended to monitor the effect of the ice condenser environment on ice baskets. The groupings defined in the SR (two baskets in each azimuthal third of the ice bed) ensure that the sampling of baskets is reasonably distributed~~. [The Frequency of 40 months for a visual inspection of the structural soundness of the ice baskets is based on engineering judgment and considers such factors as the thickness of the basket walls relative to corrosion rates expected in their service environment and the results of the long term ice storage testing.~~

⑧

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ⑧

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----REVIEWER'S NOTE-----~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~-----]~~ ⑨

12

SR 3.6.~~15~~.7 ①

12

This SR ensures that initial ice fill and any subsequent ice additions meet the boron concentration and pH requirements of SR 3.6.~~15~~.5. The SR is modified by a Note that allows the chemical analysis to be performed on either the liquid or resulting ice of each sodium tetraborate solution prepared. If ice is obtained from offsite sources, then chemical analysis data must be obtained for the ice supplied.

REFERENCES

U

1. FSAR, Section ~~[~~6.2~~]~~. ④ ②
2. 10 CFR 50, Appendix K.
3. ~~[Westinghouse letter, WAT-D-10686, "Upper Limit Ice Boron Concentration In Safety Analysis."]~~ INSERT 1 ②
4. Topical Report ICUG-001, "Application of the Active Ice Mass Management (AIMM) Concept to the Ice Condenser Ice Mass Technical Specifications," Revision 3, September 2003.
5. NRC Letter dated September 11, 2003, "Safety Evaluation for Ice Condenser Utility Group Topical Report No. ICUG-001, Revision 2 RE: Application of the Active Ice Mass Management Concept to the Ice Condenser Ice Mass Technical Specification (TAC No. MB3379)."

③ INSERT 1

Sequoyah Nuclear Plant Units 1 and 2 – Nuclear Steam Supply System Engineering Support Services – Contract 99NAN-251787 – Letter N9873, Contract Work Authorization N20000 020 – Tritium Production Core – Post Loss of Coolant Accident (LOCA) Long Term Core Cooling Analysis – N2N 058, dated August 13, 2001.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.12 BASES, ICE BED

1. The heading and title for ISTS 3.6.15 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear Plant (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS, and ISTS 3.6.15 is renumbered as ITS 3.6.12.

2. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

3. Changes are made to provide clarity concerning the extent of the perimeter of the upper containment that the ice condenser encloses.

4. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

5. Corrosion protection at SQN does not take credit for the alkaline pH of the ice bed for minimizing chloride and caustic stress corrosion on mechanical systems and components exposed to ECCS and Containment Spray System fluid in the recirculation mode of operation.

6. Typographical/grammatical error corrected.

7. The SQN ARS design consists of two 100% capacity fans (and associated dampers) connected to common hydrogen collection headers servicing the primary containment. The SQN ARS design does not consist of two fully redundant ARS trains. Therefore, it is necessary to define the OPERABILITY requirements of the Air Return System in terms of "fans."

8. ISTS SR 3.6.15.1, SR 3.6.15.2, SR 3.6.15.3, SR 3.6.15.4, SR 3.6.15.5, SR 3.6.15.6, and SR 3.6.15.7 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.12.1, SR 3.6.12.2, SR 3.6.12.3, SR 3.6.12.4, SR 3.6.12.5, SR 3.6.12.6, and SR 3.6.12.7 under the Surveillance Frequency Control Program.

9. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

10. The direct lifting alternate techniques discussion has been removed, as SQN does not plan to use any technique to determine ice basket weight, other than direct lifting of the ice basket.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.12, ICE BED

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 13

ITS 3.6.13, ICE CONDENSER DOORS

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS 3.6.13

A01

CONTAINMENT SYSTEMS

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

LCO 3.6.13 3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add ACTIONS Note 1 L01

Add ACTIONS Note 2 L02

ACTION A a. With one or more ice condenser inlet doors inoperable due to being physically restrained from opening, restore all inlet doors to OPERABLE status within 1 hour

ACTION D or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION B b. With one or more ice condenser doors open or otherwise inoperable for reasons other than action a., POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F; ~~otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours~~

Add proposed Condition C M01

ACTION D or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION C

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

L03

~~every 12 hours~~

SR 3.6.13.1 a. ~~Continuously monitored and~~ determined closed, and

In accordance with the Surveillance Frequency Control Program LA01

b. Demonstrated OPERABLE at least ~~once per 18 months~~ by:

SR 3.6.13.4 1. Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds.

SR 3.6.13.3 2. Verifying that opening of each door is not impaired by ice, frost, debris, or obstruction.

Perform a torque test of

SR 3.6.13.5 3. ~~Verifying that the torque required to open~~ each door ~~is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component.~~ LA02

A01

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

~~4. Verifying that the torque required to keep each door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque minus a frictional torque component.~~

~~5. Calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be less than or equal to 40 inch-pounds.~~

LA02

4.6.5.3.2 Intermediate Deck Doors - Each ice condenser intermediate deck door shall be:

M02

, ice, and debris

SR 3.6.13.2 a. Verified closed and free of frost accumulation by a visual inspection ~~at least once per 7 days~~, and

In accordance with the Surveillance Frequency Control Program

LA01

SR 3.6.13.6 b. Demonstrated OPERABLE ~~at least once per 18 months~~ by visually verifying no structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement ~~when lifted with the applicable force shown below:~~

~~Door~~	~~Lifting Force~~
~~0-1, 0-5~~	~~Less than or equal to 37.4 lbs.~~
~~0-2, 0-6~~	~~Less than or equal to 33.8 lbs.~~
~~0-3, 0-7~~	~~Less than or equal to 31.0 lbs.~~
~~0-4, 0-8~~	~~Less than or equal to 31.8 lbs.~~

LA03

SR 3.6.13.7 4.6.5.3.3 Top Deck Doors - Each ice condenser top deck door shall be determined closed and OPERABLE ~~at least once per 92 days~~ by visually verifying:

In accordance with the Surveillance Frequency Control Program

LA01

a. That the doors are in place, and

b. That no condensation, frost, or ice has formed on the doors or blankets which would restrict their lifting and opening if required.

CONTAINMENT SYSTEMS

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 This specification is deleted.

A01

CONTAINMENT SYSTEMS

ICE CONDENSER DOORS

LIMITING CONDITION FOR OPERATION

LCO 3.6.13 3.6.5.3 The ice condenser inlet doors, intermediate deck doors, and top deck doors shall be closed and OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add ACTIONS Note 1 L01

Add ACTIONS Note 2 L02

ACTION A a. With one or more ice condenser inlet doors inoperable due to being physically retrained from opening, restore all inlet doors to OPERABLE status within 1 hour or be in at least HOT STANDBY

ACTION D within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION B b. With one or more ice condenser doors open or otherwise inoperable for reasons other than action a., POWER OPERATION may continue for up to 14 days provided the ice bed temperature is monitored at least once per 4 hours and the maximum ice bed temperature is maintained less than or equal to 27°F; ~~otherwise, restore the doors to their closed positions or OPERABLE status (as applicable) within 48 hours~~ or be in at least HOT STANDBY within the next 6 hours and in COLD

ACTION D
ACTION C SHUTDOWN within the following 30 hours.

Add proposed Condition C M01

SURVEILLANCE REQUIREMENTS

4.6.5.3.1 Inlet Doors - Ice condenser inlet doors shall be:

L03

~~every 12 hours~~

SR 3.6.13.1 a. ~~Continuously monitored and~~ determined closed, and

In accordance with the Surveillance Frequency Control Program LA01

b. Demonstrated OPERABLE ~~at least once per 18 months~~ by:

SR 3.6.13.4 1. Verifying that the torque required to initially open each door is less than or equal to 675 inch pounds.

SR 3.6.13.3 2. Verifying that opening of each door is not impaired by ice, frost, debris, or obstruction.

Perform a torque test of

SR 3.6.13.5 3. ~~Verifying that the torque required to open~~ each door ~~is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component.~~ LA02

A01

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

~~4. Verifying that the torque required to keep each door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque minus a frictional torque component.~~

~~5. Calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be less than or equal to 40 inch-pounds.~~

LA02

4.6.5.3.2 Intermediate Deck Doors - Each ice condenser intermediate deck door shall be:

M02 , ice, and debris

SR 3.6.13.2 a. Verified closed and free of frost accumulation by a visual inspection ~~at least once per 7 days~~, and

In accordance with the Surveillance Frequency Control Program

LA01

SR 3.6.13.6 b. Demonstrated OPERABLE ~~at least once per 18 months~~ by visually verifying no structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement ~~when lifted with the applicable force shown below:~~

~~Door~~	~~Lifting Force~~
~~0-1, 0-5~~	~~≤ 37.4 lbs.~~
~~0-2, 0-6~~	~~≤ 33.8 lbs.~~
~~0-3, 0-7~~	~~≤ 31.0 lbs.~~
~~0-4, 0-8~~	~~≤ 31.8 lbs.~~

LA03

SR 3.6.13.7 4.6.5.3.3 Top Deck Doors - Each ice condenser top deck door shall be determined closed and OPERABLE ~~at least once per 92 days~~ by visually verifying:

In accordance with the Surveillance Frequency Control Program

LA01

a. That the doors are in place, and

b. That no condensation, frost, or ice has formed on the doors or blankets which would restrict their lifting and opening if required.

Ⓐ01

CONTAINMENT SYSTEMS

INLET DOOR POSITION MONITORING SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.5.4 This specification is deleted.

DISCUSSION OF CHANGES
ITS 3.6.13, ICE CONDENSER DOORS

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.6.5.3, Action b. allows continued unit power operation for up to 14 days with one of more ice condenser doors open or inoperable for reasons other than the door is physically restrained from opening, provided the ice bed temperature is verified to not exceed 27°F every 4 hours. Otherwise, the ice condenser door shall be restored to its closed position or OPERABLE status within 48 hours (as applicable), or the unit shall be in hot standby within 6 hours and cold shutdown in 36 hours. ITS 3.6.13, Condition B is entered when one of more ice condenser doors are open or inoperable for reasons other than the door is physically restrained from opening. In this Condition, ice bed temperature is verified to not exceed 27°F once per 4 hours, and the inoperable ice condenser door(s) is required to be in the closed position and restored to an OPERABLE status within 14 days. If the inoperable or open ice condenser door is not closed and restored to an OPERABLE status within 14 days, the unit shall be in MODE 3 in 6 hours and MODE 5 in 36 hours. If ice bed temperature exceeds 27°F, Required Action C.1 requires entry into the applicable Conditions and Required Actions of LCO 3.6.12, "Ice Bed." This changes the CTS by removing the 48 hour allowance to restore or close the ice condenser door after the 14 day allowed outage time has expired. Additionally, entry into the applicable Condition and Required Actions of LCO 3.6.12 are being specified for an inoperable ice bed.

The purpose of the CTS 3.6.5.3 Actions is to minimize the time the unit is operating with inoperable or open ice condenser doors. This change is acceptable, because it is consistent with the assumption made for continued operation under the condition of an open or inoperable ice condenser door that could impact the OPERABILITY of the ice bed. The Completion Time to restore a door in this condition is 14 days. In addition, during this 14 day period, the ice bed temperature must be verified to be less than or equal to 27°F once every 4 hours. Therefore, the Completion Time of 14 days is appropriate, since during this time the ice bed is verified OPERABLE by ensuring the ice bed temperature is less than or equal to 27°F. Additionally, if during the 14 day allowed outage time the ice bed temperature is found to exceed 27°F, the appropriate ACTIONS to take for an inoperable ice bed are contained in ITS LCO 3.6.12. This change is designated as more restrictive, because more stringent Required Actions are being applied in the ITS than were applied in the CTS.

M02 CTS 4.6.5.6.2.a requires verification, by visual inspection, that each intermediate deck door is closed and free of frost accumulation. ITS SR 3.6.13.2 adds the additional requirements to visually verify that each intermediate deck door is not impaired by ice or debris. This changes the CTS by adding additional visual inspection requirements for the intermediate deck door Surveillance.

The purpose of the additional visual inspection requirements of ITS SR 3.6.13.2 is to ensure each intermediate deck door is not obstructed from opening. This change is acceptable, because it provides additional assurance that the intermediate deck doors will be capable of performing their safety functions. This change is designated as more restrictive, because it adds visual inspection requirements to the intermediate deck door Surveillance.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.5.3.1.a requires the ice condenser inlet doors to be continuously monitored and determined to be closed. (See DOC L03 for frequency change to 12 hours). ITS SR 3.6.13.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.3.1.b.1 requires verification that the initial opening torque of the ice condenser inlet doors is within limit at least once per 18 months. ITS SR 3.6.13.4 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.3.1.b.2 requires verification that the opening of the ice condenser inlet doors is not impaired by ice, frost, debris, or obstruction at least once per 18 months. ITS SR 3.6.13.3 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.3.1.b.3 through 4.6.5.3.1.b.5 require the performance torque testing for each ice condenser inlet door at least once per 18 months. ITS SR 3.6.13.5 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.3.2.a requires visual verification that each ice condenser intermediate deck door is closed and free of frost accumulation at least once per 7 days. ITS SR 3.6.13.2 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.3.2.b requires demonstrating the OPERABILITY of each ice condenser intermediate deck door by visually verifying no structural deterioration, verifying free movement of the vent assemblies, and by ascertaining free movement of the door when lifted with the specified force at least once per 18 months. ITS SR 3.6.13.6 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.3.3.a and 4.6.5.3.3.b require verification that the each ice condenser top deck door is closed by verifying the door is in place, and that no condensation, frost, or ice has formed on the doors or blankets which could restrict its lifting and opening at least once per 92 days. ITS SR 3.6.13.7 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.5.3.1.b.3 requires testing each ice condenser inlet door and verifying that the torque required to open the door is less than 195 inch-pounds when the door is 40 degrees open. This torque is defined as the "door opening torque" and is equal to the nominal door torque plus a frictional torque component. CTS 4.6.5.3.1.b.4 requires testing each ice condenser inlet door and verifying that the torque required to keep the door from closing is greater than 78 inch-pounds when the door is 40 degrees open. This torque is defined as the "door closing torque" and is equal to the nominal door torque plus a frictional torque component. CTS 4.6.5.3.1.b.5 requires a calculation of the frictional torque of each door tested in accordance with 3 and 4, above. The calculated frictional torque shall be less than or equal to 40 inch-pounds. ITS SR 3.6.13.5 requires the performance of a torque test on each ice condenser inlet door. This changes the CTS by moving the torque design limits and definitions to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to perform a torque test on the inlet doors. Also, this change is acceptable because the removed information will be adequately controlled in ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

DISCUSSION OF CHANGES
ITS 3.6.13, ICE CONDENSER DOORS

LA03 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.6.5.3.2.b requires an inspection of each ice condenser intermediate deck door by visually verifying no structural deterioration, by verifying free movement of the vent assemblies, and by ascertaining free movement when lifted with the specified force. CTS 4.6.5.3.2.b also lists the required lifting force for each ice condenser intermediate deck door. ITS SR 3.6.13.6 requires the same inspections. However, the door identifiers and associated lifting forces are not listed. This changes the CTS by moving the door identifiers and associated lifting forces to the Bases.

The removal of these details for performing a Surveillance Requirement from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify free movement of each intermediate door. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.6.5.3 provides Actions for inoperable ice condenser doors. ITS 3.6.13 provides similar ACTIONS, however a Note is added to the CTS Action (ITS 3.6.13 ACTIONS Note) that states, "Separate Condition entry is allowed for each ice condenser door." This modifies the CTS by providing a specific allowance to enter the Action for each ice condenser door separately.

The purpose of the CTS 3.6.5.3 Actions is to minimize the time the unit is operating with inoperable ice condenser doors. This change is acceptable, because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation, while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. ITS 3.6.13 ACTION A minimizes the time one or more ice condenser inlet doors are inoperable due to being physically restrained from opening. The Completion Time for restoration is one hour. ITS 3.6.13 ACTION B covers the condition of one or more ice condenser doors inoperable for reasons other than Condition A or not closed. The Completion Time to restore a door in this condition is 14 days. In addition, during this 14 day period, the ice bed temperature must be verified to be less than or equal to 27°F once every 4 hours. ITS 3.6.13 ACTION A minimizes the time the ice condenser doors are inoperable by being physically restrained from opening and therefore, minimizes the time allowed to be outside the containment analysis assumptions. When operating in ITS 3.6.13 ACTION B, the ice bed is verified OPERABLE by ensuring the ice bed temperature is less than or equal to 27°F. Therefore, the Completion Time of 14 days is appropriate. The addition of the ITS 3.6.13 ACTIONS Note is acceptable, since the proposed compensatory actions minimize risk associated with continued operation while providing time to repair inoperable features. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.6.5.3 provides specific Actions to be taken if an ice condenser intermediate deck or top deck door is open or inoperable. ITS 3.6.13 ACTIONS Note 2 states that when an ice condenser intermediate deck or top deck door is inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, entry into associated Conditions and Required Actions is not required. This changes the CTS by allowing an intermediate deck or top deck door to be inoperable for a short duration to perform routine evolutions without requiring entry into the associated Actions.

The purpose of the CTS 3.6.5.3 Action is to minimize the time the unit is operating with inoperable ice condenser doors. This change is acceptable, because the doors are inoperable only for short durations. Furthermore, the reasons for the inoperability are to either perform required Surveillances, perform preventative maintenance to improve reliability of the doors or ensure the doors do not become inoperable, or due to walking on or opening the doors for inspections. In addition, during this short duration, the ice bed temperature is normally continuously monitored (as described in the Bases). This helps to ensure that an ice bed temperature change due to an open door will be detected and appropriate actions taken (as required by ITS 3.6.12). Also, the number of doors walked on simultaneously (and therefore, potentially incapable of opening) is small when compared to the total number of doors. This change is designated as less restrictive, because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.6.5.3.1.a requires the ice condenser inlet doors to be "continuously monitored" and determined to be closed. ITS SR 3.6.13.1 requires verification that all ice condenser inlet doors are closed "In accordance with the Surveillance Frequency Control Program." The specified Surveillance Frequency that is being moved to the Surveillance Frequency Control Program is "12 hours." This changes the CTS by allowing the ice condenser inlet doors to be monitored less frequently. Moving the specified Surveillance Frequency to the Surveillance Frequency Control Program is discussed in DOC LA01.

The purpose of CTS 4.6.5.3.1.a is to ensure the ice condenser inlet doors are closed. This change is acceptable because the new Surveillance Frequency will provide an acceptable level of equipment reliability. The inlet doors will open when there is significant pressure buildup in the containment lower compartment. During an accident this pressure buildup is generated by the energy introduced by the Reactor Coolant System blowdown or by operation of the Air Return System. During normal operation these conditions are not expected and the doors should remain closed. Therefore, the 12 hour Frequency is considered sufficient. This change is designated as less restrictive, because Surveillances will be performed less frequently under the ITS than under the CTS.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.6 CONTAINMENT SYSTEMS

3.6.~~16~~ 13 Ice Condenser Doors ~~(Ice Condenser)~~ ①

3.6.5.3 LCO 3.6.~~16~~ 13 The ice condenser inlet doors, intermediate deck doors, and top deck ~~[~~doors~~]~~ shall be OPERABLE and closed. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

S

---NOTE---

DOC L01 1. Separate Condition entry is allowed for each ice condenser door. INSERT 1 ④

	CONDITION	REQUIRED ACTION		COMPLETION TIME
3.6.5.3.a	A. One or more ice condenser inlet doors inoperable due to being physically restrained from opening.	A.1	Restore inlet door to OPERABLE status.	1 hour
3.6.5.3.b	B. One or more ice condenser doors inoperable for reasons other than Condition A or not closed.	B.1	Verify maximum ice bed temperature is ≤ ~~[~~27~~]~~°F.	Once per 4 hours ③
		AND		
		B.2	Restore ice condenser door to OPERABLE status and closed position~~s~~.	14 days ⑤
3.6.5.3.b	C. Required Action B.1 and associated Completion Time ~~of Condition B~~ not met.	C.1	~~Restore ice condenser door to OPERABLE status and closed positions.~~ INSERT 2	~~48 hours~~ Immediately ⑥
3.6.5.3.b	D. Required Action and associated Completion Time of Condition A ~~or C~~ not met. INSERT 3	D.1	Be in MODE 3.	6 hours
		AND		
		D.2	Be in MODE 5.	36 hours ⑥

CTS

④ INSERT 1

DOC L02 2. When an ice condenser intermediate deck or top deck door is inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, entry into associated Conditions and Required Actions is not required.

⑥ INSERT 2

DOC M01

Enter the applicable Conditions and Required Actions of LCO 3.6.12, "Ice Bed," for ice bed temperature > 27°F.

⑥ INSERT 3

<u>OR</u>

Required Action B.2 and associated Completion Time not met.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.5.3.1.a	SR 3.6.~~16~~13.1	Verify all inlet doors ~~indicate~~ are closed ~~by the Inlet Door Position Monitoring System~~.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	⑦ ① ⑧ ⑧
4.6.5.3.2.a	SR 3.6.~~16~~13.2	Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑧ ⑧
4.6.5.3.1.b.2	SR 3.6.~~16~~13.3	Verify, by visual inspection, each inlet door is not impaired by ice, frost, or debris.	~~[3 months during first year after receipt of license]~~ ~~AND~~ ~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑧ ⑧

CTS

Ice Condenser Doors ~~(Ice Condenser)~~
3.6.~~16~~ 13 ①

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.6.5.3.1.b.1	SR 3.6.~~16~~.4 13	Verify torque required to cause each inlet door to begin to open is ≤ ~~[~~675~~]~~ in-lb.	~~[3 months during first year after receipt of license]~~ ~~AND~~ ~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ⑧ ⑧
4.6.5.3.1.b.3	SR 3.6.~~16~~.5 13	Perform a torque test on ~~[a sampling of ≥ 25% of the]~~ each inlet door~~s~~.	~~[3 months during first year after receipt of license]~~ ~~AND~~ ~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ⑧ ⑧

CTS

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.6.5.3.2.b	SR 3.6.~~16~~.6 13	Verify for each intermediate deck door: a. No visual evidence of structural deterioration~~,~~ ; b. Free movement of the vent assemblies~~,~~ ; and c. Free movement of the door.	~~[3 months during first year after receipt of license]~~ ~~AND~~ ~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑤ ⑧ ⑧
4.6.5.3.3.a 4.6.5.3.3.b	SR 3.6.~~16~~.7 13	Verify, by visual inspection, each top deck ~~[~~door~~]~~: a. Is in place and closed; and b. Has no condensation, frost, or ice formed on the ~~[~~door~~]~~ that would restrict its opening.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ⑧ ⑨ ③ ⑧

CTS

Ice Condenser Doors ~~(Ice Condenser)~~
3.6.~~16~~ 13 ①

3.6 CONTAINMENT SYSTEMS

3.6.~~16~~ 13 Ice Condenser Doors ~~(Ice Condenser)~~ ①

3.6.5.3 LCO 3.6.~~16~~ 13 The ice condenser inlet doors, intermediate deck doors, and top deck ~~[~~doors~~]~~ shall be OPERABLE and closed. ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

S

---NOTE---

DOC L01 1. Separate Condition entry is allowed for each ice condenser door. INSERT 1 ④

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.6.5.3.a	A. One or more ice condenser inlet doors inoperable due to being physically restrained from opening.	A.1 Restore inlet door to OPERABLE status.	1 hour
3.6.5.3.b	B. One or more ice condenser doors inoperable for reasons other than Condition A or not closed.	B.1 Verify maximum ice bed temperature is ≤ ~~[~~27~~]~~°F. AND B.2 Restore ice condenser door to OPERABLE status and closed position~~s~~.	Once per 4 hours ③ 14 days ⑤
3.6.5.3.b	C. Required Action B.1 and associated Completion Time ~~of Condition B~~ not met.	C.1 ~~Restore ice condenser door to OPERABLE status and closed positions.~~ INSERT 2	~~48 hours~~ Immediately ⑥
3.6.5.3.b	D. Required Action and associated Completion Time of Condition A ~~or C~~ not met. INSERT 3	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours ⑥

④ INSERT 1

DOC L02 2. When an ice condenser intermediate deck or top deck door is inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, entry into associated Conditions and Required Actions is not required.

⑥ INSERT 2

DOC M01

Enter the applicable Conditions and Required Actions of LCO 3.6.12, "Ice Bed," for ice bed temperature > 27°F.

⑥ INSERT 3

OR

Required Action B.2 and associated Completion Time not met.

CTS

Ice Condenser Doors ~~(Ice Condenser)~~
3.6.~~16~~13 ①

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.5.3.1.a	SR 3.6.~~16~~13.1	Verify all inlet doors ~~indicate~~ are closed ~~by the Inlet Door Position Monitoring System~~.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	⑦ ① ⑧ ⑧
4.6.5.3.2.a	SR 3.6.~~16~~13.2	Verify, by visual inspection, each intermediate deck door is closed and not impaired by ice, frost, or debris.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑧ ⑧
4.6.5.3.1.b.2	SR 3.6.~~16~~13.3	Verify, by visual inspection, each inlet door is not impaired by ice, frost, or debris.	~~[3 months during first year after receipt of license]~~ ~~AND~~ ~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑧ ⑧

CTS

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.6.5.3.1.b.1	SR 3.6.~~16~~.4 13	Verify torque required to cause each inlet door to begin to open is ≤ ~~[~~675~~]~~ in-lb.	~~[3 months during first year after receipt of license]~~ ~~AND~~ ~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ⑧ ⑧
4.6.5.3.1.b.3	SR 3.6.~~16~~.5 13	Perform a torque test on ~~[a sampling of ≥ 25% of the]~~ each inlet door~~s~~.	~~[3 months during first year after receipt of license]~~ ~~AND~~ ~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ⑧ ⑧

CTS

Ice Condenser Doors ~~(Ice Condenser)~~
3.6.~~16~~ 13 ①

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY	
4.6.5.3.2.b	SR 3.6.~~16~~.6 13 Verify for each intermediate deck door: a. No visual evidence of structural deterioration~~,~~ ; b. Free movement of the vent assemblies~~,~~ ; and c. Free movement of the door.	~~[3 months during first year after receipt of license]~~ ~~AND~~ ~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑤ ⑧ ⑧
4.6.5.3.3.a 4.6.5.3.3.b	SR 3.6.~~16~~.7 13 Verify, by visual inspection, each top deck ~~[~~door~~]~~: a. Is in place and closed; and b. Has no condensation, frost, or ice formed on the ~~[~~door~~]~~ that would restrict its opening.	~~[92 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ③ ⑧ ⑨ ③ ⑧

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.13, ICE CONDENSER DOORS

1. The heading and title for ISTS 3.6.16 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, many Containment Specifications in NUREG-1431, Rev. 4 are not included in the SQN ITS due to design differences. Therefore, ISTS 3.6.16 is renumbered as ITS 3.6.13.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

4. The ISTS Bases for ACTIONS B.1 and B.2 (last sentence) state that entry into Condition B is not required due to personnel standing on or opening an intermediate deck or top deck door for short durations to perform required Surveillance, minor maintenance such as ice removal, or routine tasks such as system walkdowns. As documented in Part 9900 of the NRC Inspection Manual, Technical Guidance - Licensee Technical Specifications Interpretations, and in the ITS Bases Control Program (ITS 5.5.12), neither the Technical Specifications Bases nor Licensee generated interpretations can be used to change the Technical Specification requirements. Thus, since the ISTS do not provide for this option, the Bases cannot change the Technical Specifications requirement. To preclude this problem, a Note has been added to the ITS (ACTIONS Note 2) to allow an intermediate deck or top deck door to be inoperable (i.e., open or incapable of opening) for short durations during the ISTS Bases specified evolutions. During this time, the ice bed temperature should be continuously monitored to ensure the open door does not result in ice bed temperature greater than the limit. This new Note maintains the intent of the ISTS Bases allowance.

5. Typographical/grammatical error corrected.

6. ISTS LCO 3.6.16 Condition B is entered when one or more ice condenser doors are inoperable for reasons other than Condition A (i.e., door not physically restrained from opening) or is not closed. Continued unit operation is allowed for up to 14 days, provided ice bed temperature is monitored once per 4 hours. ISTS LCO 3.6.16 ACTION C.1 requires the inoperable ice condenser door to be restored to an OPERABLE status and closed position within 48 hours, when the Required Action and associated Completion Time of Condition B is not met. However, this effectively extends the time that an ice condenser door is allowed to be inoperable or open. Therefore, Condition C has been modified to require entry into the applicable Condition and Required Actions of LCO 3.6.12, "Ice Bed," when ice bed temperature exceeds 27°F (i.e., Require Action B.1 and associated Completion Time not met). Additionally, Condition D has been modified to require initiation of a unit shutdown when the inoperable ice condenser door cannot be restored to an OPERABLE status and closed within 14 days (i.e., Require Action B.2 and associated Completion Time not met).

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.13, ICE CONDENSER DOORS

7. The requirement in ISTS SR 3.6.16.1 (ITS SR 3.6.13.1) to use the Inlet Door Position Monitoring System has been deleted. The Bases for this Surveillance has been revised to state that the verification of the inlet doors is normally performed using the Inlet Door Position Monitoring System. This change is made since it may be possible to verify the correct position of the doors, and thus meet the Surveillance Requirement, with an inoperable Inlet Door Position Monitoring System. This is consistent with the analysis documented in WCAP-11618, "Methodically Engineered Restructured and Improved Technical Specifications, MERITS Program - Phase II Task 5, Criteria Application," including Addendum 1, and the NRC Staff Review of NSSS Vendor Owners Groups Application of The Commission's Interim Policy Statement Criteria To Standard Technical Specifications, Wilgus/Murley letter dated May 9, 1988. In addition, this change is consistent with other Surveillance Requirements that require verification of certain parameters, and do not include the specific instrumentation used to perform the verification within the Surveillance Requirement.

8. ISTS SR 3.6.16.1, SR 3.6.16.2, SR 3.6.16.3, SR 3.6.16.4, SR 3.6.16.5, SR 3.6.16.6, and SR 3.6.16.7 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.13.1, SR 3.6.13.2, SR 3.6.13.3, SR 3.6.13.4, SR 3.6.13.5, SR 3.6.13.6, and SR 3.6.13.7 under the Surveillance Frequency Control Program.

9. ISTS LCO 3.6.16 requires the ice condenser inlet doors, intermediate deck doors, and top deck doors to be OPERABLE and closed. ISTS SR 3.6.16.7 requires each top deck door to be visually verified to be in place and have no condensation, frost, or ice formed on the door that would restrict its opening. However, there is no requirement to verify that each top deck door is closed. Therefore, ITS SR 3.6.13.7 has been modified to include verification that each top deck door is closed.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~16~~ Ice Condenser Doors ~~(Ice Condenser)~~

13 ①

BASES

BACKGROUND

The ice condenser doors consist of the inlet doors, the intermediate deck doors, and the top deck doors. The functions of the doors are to:

; ③

a. Seal the ice condenser from air leakage during the lifetime of the unit and

b. Open in the event of a Design Basis Accident (DBA) to direct the hot steam air mixture from the DBA into the ice bed, where the ice would absorb energy and limit containment peak pressure and temperature during the accident transient.

Limiting the pressure and temperature following a DBA reduces the release of fission product radioactivity from containment to the environment.

degrees ⑪

The ice condenser is an annular compartment enclosing approximately 300~~°~~ of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The inlet doors separate the atmosphere of the lower compartment from the ice bed inside the ice condenser. The top deck doors are above the ice bed and exposed to the atmosphere of the upper compartment. The intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. This plenum area is used to facilitate surveillance and maintenance of the ice bed.

The ice baskets held in the ice bed within the ice condenser are arranged to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condensers limits the pressure and temperature buildup in containment. A divider barrier separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

BASES

BACKGROUND (continued)

The ice, together with the containment spray, serves as a containment heat removal system and is adequate to absorb the initial blowdown of steam and water from a DBA as well as the additional heat loads that would enter containment during the several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam from the lower compartment through the ice condenser, where the heat is removed by the remaining ice. ②

The water from the melted ice drains into the lower compartment where it serves as a source of borated water (via the containment sump) for the Emergency Core Cooling System (ECCS) and the Containment Spray System heat removal functions in the recirculation mode. The ice (via the Containment Spray System) and the recirculated ice melt also serve to clean up the containment atmosphere.

The ice condenser doors ensure that the ice stored in the ice bed is preserved during normal operation (doors closed) and that the ice condenser functions as designed if called upon to act as a passive heat sink following a DBA.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment pressure and temperature are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed with respect to Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train ~~each~~ of the Containment Spray System and ~~the~~ one ARS fan being rendered inoperable. ④

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of

BASES

APPLICABLE SAFETY ANALYSES (continued)

the ECCS during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5~~B~~, "Containment Air Temperature." ①

An additional design requirement was imposed on the ice condenser door design for a small break accident in which the flow of heated air and steam is not sufficient to fully open the doors.

For this situation, the doors are designed so that all of the doors would partially open by approximately the same amount. Thus, the partially opened doors would modulate the flow so that each ice bay would receive an approximately equal fraction of the total flow.

This design feature ensures that the heated air and steam will not flow preferentially to some ice bays and deplete the ice there without utilizing the ice in the other bays.

In addition to calculating the overall peak containment pressures, the DBA analyses include the calculation of the transient differential pressures that would occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand the local transient pressure differentials for the limiting DBAs.

The ice condenser doors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum equipment requirements to assure that the ice condenser doors perform their safety function. The ice condenser inlet doors, intermediate deck doors, and top deck doors must be closed to minimize air leakage into and out of the ice condenser, with its attendant leakage of heat into the ice condenser and loss of ice through melting and sublimation. The doors must be OPERABLE to ensure the proper opening of the ice condenser in the event of a DBA. OPERABILITY includes being free of any obstructions that would limit their opening, and for the inlet doors, being adjusted such that the opening and closing torques are within limits. The ice condenser doors function with the ice condenser to limit the pressure and temperature that could be expected following a DBA.

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ice condenser doors. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ice condenser doors are not required to be OPERABLE in these MODES.

ACTIONS

1

~~A~~ Note provides clarification that, for this LCO, separate Condition entry is allowed for each ice condenser door. ⑤

INSERT 1

A.1

If one or more ice condenser inlet doors are inoperable due to being physically restrained from opening, the door(s) must be restored to OPERABLE status within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires containment to be restored to OPERABLE status within 1 hour.

B.1 and B.2

If one or more ice condenser doors are determined to be ~~partially open or otherwise~~ inoperable for reasons other than Condition A or if a door is found that is not closed, it is acceptable to continue unit operation for up to 14 days, provided the ice bed temperature ~~instrumentation~~ is monitored once per 4 hours to ensure that the open or inoperable door is not allowing enough air leakage to cause the maximum ice bed temperature to approach the melting point. The ~~Frequency~~ of 4 hours is based on the fact that temperature changes cannot occur rapidly in the ice bed because of the large mass of ice involved. The 14 day Completion Time is based on long term ice storage tests that indicate that if the temperature is maintained below ~~[~~27~~]~~°F, there would not be a significant loss of ice from sublimation. ~~If the maximum ice bed temperature is > [27]°F at any time, the situation reverts to Condition C and a Completion Time of 48 hours is allowed to restore the inoperable door to OPERABLE status or enter into Required Actions D.1 and D.2. Ice bed temperature must be verified to be within the specified Frequency as augmented by the provisions of SR 3.0.2. If this verification is not made, Required Actions D.1 and D.2, not Required Action C.1, must be taken. Entry into Condition B is not required due to personnel standing on or opening an intermediate deck or upper deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns.~~

Completion Time

once per

at or

⑥

⑥ ⑦

⑧

⑤

⑤ INSERT 1

Note 2 has been added to allow an intermediate deck or top deck door to be inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, and does not require entry into associated Conditions and Required Actions. This is acceptable since the ice bed temperature is normally continuously monitored using an alarm in the control room, which alarms on an increasing ice bed temperature.

BASES

ACTIONS (continued)

C.1

INSERT 2

~~If Required Actions B.1 or B.2 are not met, the doors must be restored to OPERABLE status and closed positions within 48 hours. The 48 hour Completion Time is based on the fact that, with the very large mass of ice involved, it would not be possible for the temperature to decrease to the melting point and a significant amount of ice to melt in a 48 hour period. Condition C is entered from Condition B only when the Completion Time of Required Action B.2 is not met or when the ice bed temperature has not been verified at the required frequency.~~ ⑤

D.1 and D.2

and closed positions ⑤

If the ice condenser doors cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~16~~.1 ①

13

Verifying~~, by means of the Inlet Door Position Monitoring System,~~ that the inlet doors are in their closed positions makes the operator aware of an inadvertent opening of one or more doors. ~~[The Frequency of 12 hours ensures that operators on each shift are aware of the status of the doors.~~

INSERT 3 ⑤ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑩

⑤ INSERT 2

If the maximum ice bed temperature is > 27°F at any time, the applicable Condition and Required Actions of LCO 3.6.12, "Ice Bed," are required to be entered immediately. The actions of this LCO provide the adequate compensatory actions to assure unit safety.

⑤ INSERT 3

The verification is normally performed using the Door Position Monitoring System.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.~~16~~.2 ①
13

Verifying, by visual inspection, that each intermediate deck door is closed and not impaired by ice, frost, or debris provides assurance that the intermediate deck doors (which form the floor of the upper plenum where frequent maintenance on the ice bed is performed) have not been left open or obstructed. ~~[The Frequency of 7 days is based on engineering judgment and takes into consideration such factors as the frequency of entry into the intermediate ice condenser deck, the time required for significant frost buildup, and the probability that a DBA will occur.~~ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑩

SR 3.6.~~16~~.3 ①
13

Verifying, by visual inspection, that the ice condenser inlet doors are not impaired by ice, frost, or debris provides assurance that the doors are free to open in the event of a DBA. ~~[For this unit, the Frequency of [18] months [3 months during the first year after receipt of license] is based on door design, which does not allow water condensation to freeze, and operating experience, which indicates that the inlet doors very rarely fail to meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown.~~ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---~~] ⑩

SR 3.6.~~16~~.4 ①
13

Verifying the opening torque of the inlet doors provides assurance that no doors have become stuck in the closed position. The value of ~~[~~675~~]~~ in-lb is based on the design opening pressure on the doors of 1.0 lb/ft^2. ~~[For this unit, the Frequency of [18] months [3 months during the first year after receipt of license] is based on the passive nature of the closing mechanism (i.e., once adjusted, there are no known factors that would change the setting, except possibly a buildup of ice; ice buildup is not likely, however, because of the door design, which does not allow water condensation to freeze). Operating experience indicates that the inlet doors usually meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown.~~ ⑦ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---~~] ⑩

SR 3.6.~~16~~.5 ①
13

The torque test Surveillance ensures that the inlet doors have not developed excessive friction and that the return springs are producing a door return torque within limits. The torque test consists of the following:

1. Verify that the torque, T(OPEN), required to cause opening motion at the ~~[~~40~~]~~° open position is ~~≤~~ ~~[~~195~~]~~ in-lb, ⑥ ⑦
   <

BASES

SURVEILLANCE REQUIREMENTS (continued)

2. Verify that the torque, T(CLOSE), required to hold the door stationary (i.e., keep it from closing) at the ~~[~~40~~]~~° open position is ~~≥~~ > ~~[~~78~~]~~ in-lb, and ⑥ ⑦

3. Calculate the frictional torque, T(FRICT) = 0.5 {T(OPEN) - T(CLOSE)}, and verify that the T(FRICT) is ≤ ~~[~~40~~]~~ in-lb.

The purpose of the friction and return torque Specifications is to ensure that, in the event of a small break LOCA or SLB, all of the 24 door pairs open uniformly. This assures that, during the initial blowdown phase, the steam and water mixture entering the lower compartment does not pass through part of the ice condenser, depleting the ice there, while bypassing the ice in other bays. ~~[The Frequency of [18] months [3 months during the first year after receipt of license] is based on the passive nature of the closing mechanism (i.e., once adjusted, there are no known factors that would change the setting, except possibly a buildup of ice; ice buildup is not likely, however, because of the door design, which does not allow water condensation to freeze). Operating experience indicates that the inlet doors very rarely fail to meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown.~~ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑩

SR 3.6.~~16~~.6 13 ①

Verifying the OPERABILITY of the intermediate deck doors provides assurance that the intermediate deck doors are free to open in the event of a DBA. The verification consists of visually inspecting the intermediate doors for structural deterioration, verifying free movement of the vent assemblies, and ascertaining free movement of each door when lifted with the applicable force shown below:

BASES

SURVEILLANCE REQUIREMENTS (continued)

	Door	Lifting Force
a.	~~Adjacent to crane wall~~ 0-1, 0-5	≤ ~~<~~ 37.4 lb
b.	~~Paired with door adjacent to crane wall~~ 0-2, 0-6	≤ 33.8 lb
c.	~~Adjacent to containment wall~~ 0-3, 0-7	≤ 31.0 ~~31.8~~ lb
d.	~~Paired with door adjacent to containment wall~~ 0-4, 0-8	≤ 31.8 ~~31.0~~ lb

②

~~[The 18 month Frequency [3 months during the first year after receipt of license] is based on the passive design of the intermediate deck doors, the frequency of personnel entry into the intermediate deck, and the fact that SR 3.6.16.2 confirms on a 7 day Frequency that the doors are not impaired by ice, frost, or debris, which are ways a door would fail the opening force test (i.e., by sticking or from increased door weight).~~

~~OR~~ ⑨

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑩

SR 3.6.~~16~~.7 13 ①

Verifying, by visual inspection, that the top deck doors are in place, closed, and not obstructed provides assurance that the doors are performing their function of keeping warm air out of the ice condenser during normal operation, and would not be obstructed if called upon to open in response to a DBA. ~~[The Frequency of 92 days is based on engineering judgment, which considered such factors as the following:~~ ⑤

~~a. The relative inaccessibility and lack of traffic in the vicinity of the doors make it unlikely that a door would be inadvertently left open,~~

~~b. Excessive air leakage would be detected by temperature monitoring in the ice condenser, and~~ ⑨

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~c. The light construction of the doors would ensure that, in the event of a DBA, air and gases passing through the ice condenser would find a flow path, even if a door were obstructed.~~

~~OR~~

9

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

10

REFERENCES

U

1. FSAR, Chapter ~~[15]~~. 6

2. 10 CFR 50, Appendix K.

2 7

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~16~~ 13 Ice Condenser Doors ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The ice condenser doors consist of the inlet doors, the intermediate deck doors, and the top deck doors. The functions of the doors are to:

a. Seal the ice condenser from air leakage during the lifetime of the unit ; and ③

b. Open in the event of a Design Basis Accident (DBA) to direct the hot steam air mixture from the DBA into the ice bed, where the ice would absorb energy and limit containment peak pressure and temperature during the accident transient.

Limiting the pressure and temperature following a DBA reduces the release of fission product radioactivity from containment to the environment.

The ice condenser is an annular compartment enclosing approximately 300~~°~~ degrees of the perimeter of the upper containment compartment, but penetrating the operating deck so that a portion extends into the lower containment compartment. The inlet doors separate the atmosphere of the lower compartment from the ice bed inside the ice condenser. The top deck doors are above the ice bed and exposed to the atmosphere of the upper compartment. The intermediate deck doors, located below the top deck doors, form the floor of a plenum at the upper part of the ice condenser. This plenum area is used to facilitate surveillance and maintenance of the ice bed. ⑪

The ice baskets held in the ice bed within the ice condenser are arranged to promote heat transfer from steam to ice. This arrangement enhances the ice condenser's primary function of condensing steam and absorbing heat energy released to the containment during a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the top deck doors to open, which allows the air to flow out of the ice condenser into the upper compartment. Steam condensation within the ice condensers limits the pressure and temperature buildup in containment. A divider barrier separates the upper and lower compartments and ensures that the steam is directed into the ice condenser.

BASES

BACKGROUND (continued)

The ice, together with the containment spray, serves as a containment heat removal system and is adequate to absorb the initial blowdown of steam and water from a DBA as well as the additional heat loads that would enter containment during the several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam from the lower compartment through the ice condenser, where the heat is removed by the remaining ice. ②

The water from the melted ice drains into the lower compartment where it serves as a source of borated water (via the containment sump) for the Emergency Core Cooling System (ECCS) and the Containment Spray System heat removal functions in the recirculation mode. The ice (via the Containment Spray System) and the recirculated ice melt also serve to clean up the containment atmosphere.

The ice condenser doors ensure that the ice stored in the ice bed is preserved during normal operation (doors closed) and that the ice condenser functions as designed if called upon to act as a passive heat sink following a DBA.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment pressure and temperature are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed with respect to Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in one train ~~each~~ of the Containment Spray System and one ~~the~~ ARS fan being rendered inoperable. ④

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative. In particular, the cooling effectiveness of

BASES

APPLICABLE SAFETY ANALYSES (continued)

the ECCS during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures, in accordance with 10 CFR 50, Appendix K (Ref. 2).

The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5~~B~~, "Containment Air Temperature." ①

An additional design requirement was imposed on the ice condenser door design for a small break accident in which the flow of heated air and steam is not sufficient to fully open the doors.

For this situation, the doors are designed so that all of the doors would partially open by approximately the same amount. Thus, the partially opened doors would modulate the flow so that each ice bay would receive an approximately equal fraction of the total flow.

This design feature ensures that the heated air and steam will not flow preferentially to some ice bays and deplete the ice there without utilizing the ice in the other bays.

In addition to calculating the overall peak containment pressures, the DBA analyses include the calculation of the transient differential pressures that would occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand the local transient pressure differentials for the limiting DBAs.

The ice condenser doors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum equipment requirements to assure that the ice condenser doors perform their safety function. The ice condenser inlet doors, intermediate deck doors, and top deck doors must be closed to minimize air leakage into and out of the ice condenser, with its attendant leakage of heat into the ice condenser and loss of ice through melting and sublimation. The doors must be OPERABLE to ensure the proper opening of the ice condenser in the event of a DBA. OPERABILITY includes being free of any obstructions that would limit their opening, and for the inlet doors, being adjusted such that the opening and closing torques are within limits. The ice condenser doors function with the ice condenser to limit the pressure and temperature that could be expected following a DBA.

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the operation of the ice condenser doors. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are reduced due to the pressure and temperature limitations of these MODES. Therefore, the ice condenser doors are not required to be OPERABLE in these MODES.

ACTIONS

~~A~~ Note 1 provides clarification that, for this LCO, separate Condition entry is allowed for each ice condenser door. ⑤

INSERT 1

A.1

If one or more ice condenser inlet doors are inoperable due to being physically restrained from opening, the door(s) must be restored to OPERABLE status within 1 hour. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires containment to be restored to OPERABLE status within 1 hour.

B.1 and B.2

If one or more ice condenser doors are determined to be ~~partially open or otherwise~~ inoperable for reasons other than Condition A or if a door is found that is not closed, it is acceptable to continue unit operation for up to 14 days, provided the ice bed temperature ~~instrumentation~~ is monitored once per 4 hours to ensure that the open or inoperable door is not allowing enough air leakage to cause the maximum ice bed temperature to approach the melting point. ⑥ The Completion Time ~~Frequency~~ of once per 4 hours is based on the fact that temperature changes cannot occur rapidly in the ice bed because of the large mass of ice involved. The 14 day Completion Time is based on long term ice storage tests that indicate that if the temperature is maintained at or below ~~[~~27~~]~~°F, there would not be a significant loss of ice from sublimation. ⑥ ⑦ ~~If the maximum ice bed temperature is > [27]°F at any time, the situation reverts to Condition C and a Completion Time of 48 hours is allowed to restore the inoperable door to OPERABLE status or enter into Required Actions D.1 and D.2. Ice bed temperature must be verified to be within the specified Frequency as augmented by the provisions of SR 3.0.2. If this verification is not made, Required Actions D.1 and D.2, not Required Action C.1, must be taken.~~ ⑧ ~~Entry into Condition B is not required due to personnel standing on or opening an intermediate deck or upper deck door for short durations to perform required surveillances, minor maintenance such as ice removal, or routine tasks such as system walkdowns.~~ ⑤

⑤ **INSERT 1**

Note 2 has been added to allow an intermediate deck or top deck door to be inoperable for a short duration solely due to personnel standing on or opening the door to perform required Surveillances, minor preventative maintenance, or system walkdowns, and does not require entry into associated Conditions and Required Actions. This is acceptable since the ice bed temperature is normally continuously monitored using an alarm in the control room, which alarms on an increasing ice bed temperature.

1

BASES

ACTIONS (continued)

C.1

INSERT 2 ~~If Required Actions B.1 or B.2 are not met, the doors must be restored to OPERABLE status and closed positions within 48 hours. The 48 hour Completion Time is based on the fact that, with the very large mass of ice involved, it would not be possible for the temperature to decrease to the melting point and a significant amount of ice to melt in a 48 hour period. Condition C is entered from Condition B only when the Completion Time of Required Action B.2 is not met or when the ice bed temperature has not been verified at the required frequency.~~

5

D.1 and D.2

If the ice condenser doors cannot be restored to OPERABLE status and closed positions within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

5

SURVEILLANCE REQUIREMENTS

SR 3.6.~~16~~.1 13

1

Verifying~~, by means of the Inlet Door Position Monitoring System,~~ that the inlet doors are in their closed positions makes the operator aware of an inadvertent opening of one or more doors. INSERT 3 ~~[The Frequency of 12 hours ensures that operators on each shift are aware of the status of the doors.~~

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

5 9

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

10

⑤ INSERT 2

If the maximum ice bed temperature is > 27°F at any time, the applicable Condition and Required Actions of LCO 3.6.12, "Ice Bed," are required to be entered immediately. The actions of this LCO provide the adequate compensatory actions to assure unit safety.

⑤ INSERT 3

The verification is normally performed using the Door Position Monitoring System.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.~~16~~.2 ①
13

Verifying, by visual inspection, that each intermediate deck door is closed and not impaired by ice, frost, or debris provides assurance that the intermediate deck doors (which form the floor of the upper plenum where frequent maintenance on the ice bed is performed) have not been left open or obstructed. ~~[The Frequency of 7 days is based on engineering judgment and takes into consideration such factors as the frequency of entry into the intermediate ice condenser deck, the time required for significant frost buildup, and the probability that a DBA will occur.~~ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑩

SR 3.6.~~16~~.3 ①
13

Verifying, by visual inspection, that the ice condenser inlet doors are not impaired by ice, frost, or debris provides assurance that the doors are free to open in the event of a DBA. ~~[For this unit, the Frequency of [18] months [3 months during the first year after receipt of license] is based on door design, which does not allow water condensation to freeze, and operating experience, which indicates that the inlet doors very rarely fail to meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown.~~ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~--------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~] ⑩

SR 3.6.~~16~~ 13 .4 ①

Verifying the opening torque of the inlet doors provides assurance that no doors have become stuck in the closed position. The value of ~~[~~675~~]~~ in-lb is based on the design opening pressure on the doors of 1.0 lb/ft^2. ~~[For this unit, the Frequency of [18] months [3 months during the first year after receipt of license] is based on the passive nature of the closing mechanism (i.e., once adjusted, there are no known factors that would change the setting, except possibly a buildup of ice; ice buildup is not likely, however, because of the door design, which does not allow water condensation to freeze). Operating experience indicates that the inlet doors usually meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown.~~ ⑦ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~--------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--~~] ⑩

SR 3.6.~~16~~ 13 .5 ①

The torque test Surveillance ensures that the inlet doors have not developed excessive friction and that the return springs are producing a door return torque within limits. The torque test consists of the following:

1. Verify that the torque, T(OPEN), required to cause opening motion at the ~~[~~40~~]~~° open position is ~~≤~~ < ~~[~~195~~]~~ in-lb, ⑥ ⑦

SURVEILLANCE REQUIREMENTS (continued)

2. Verify that the torque, T(CLOSE), required to hold the door stationary (i.e., keep it from closing) at the ~~[~~40~~]~~° open position is ~~≥~~ ~~[~~78~~]~~ in-lb, and ⑥
   >
3. Calculate the frictional torque, T(FRICT) = 0.5 {T(OPEN) - T(CLOSE)}, and verify that the T(FRICT) is ≤ ~~[~~40~~]~~ in-lb. ⑦

The purpose of the friction and return torque Specifications is to ensure that, in the event of a small break LOCA or SLB, all of the 24 door pairs open uniformly. This assures that, during the initial blowdown phase, the steam and water mixture entering the lower compartment does not pass through part of the ice condenser, depleting the ice there, while bypassing the ice in other bays. ~~[The Frequency of [18] months [3 months during the first year after receipt of license] is based on the passive nature of the closing mechanism (i.e., once adjusted, there are no known factors that would change the setting, except possibly a buildup of ice; ice buildup is not likely, however, because of the door design, which does not allow water condensation to freeze). Operating experience indicates that the inlet doors very rarely fail to meet their SR acceptance criteria. Because of high radiation in the vicinity of the inlet doors during power operation, this Surveillance is normally performed during a shutdown.~~ ⑨

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑩

SR 3.6.~~16~~.6 ①
13

Verifying the OPERABILITY of the intermediate deck doors provides assurance that the intermediate deck doors are free to open in the event of a DBA. The verification consists of visually inspecting the intermediate doors for structural deterioration, verifying free movement of the vent assemblies, and ascertaining free movement of each door when lifted with the applicable force shown below:

BASES

SURVEILLANCE REQUIREMENTS (continued)

	Door		Lifting Force
a.	~~Adjacent to crane wall~~	0-1, 0-5	≤ ~~<~~ 37.4 lb
b.	~~Paired with door adjacent to crane wall~~	0-2, 0-6	≤ 33.8 lb
c.	~~Adjacent to containment wall~~	0-3, 0-7	≤ 31.0 ~~31.8~~ lb
d.	~~Paired with door adjacent to containment wall~~	0-4, 0-8	≤ 31.8 ~~31.0~~ lb

②

~~[The 18 month Frequency [3 months during the first year after receipt of license] is based on the passive design of the intermediate deck doors, the frequency of personnel entry into the intermediate deck, and the fact that SR 3.6.16.2 confirms on a 7 day Frequency that the doors are not impaired by ice, frost, or debris, which are ways a door would fail the opening force test (i.e., by sticking or from increased door weight).~~

~~OR~~

⑨

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~--------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

⑩

SR 3.6.~~16~~.7 13 ①

Verifying, by visual inspection, that the top deck doors are in place, closed, and not obstructed provides assurance that the doors are performing their function of keeping warm air out of the ice condenser during normal operation, and would not be obstructed if called upon to open in response to a DBA. ~~[The Frequency of 92 days is based on engineering judgment, which considered such factors as the following:~~ ⑤

~~a. The relative inaccessibility and lack of traffic in the vicinity of the doors make it unlikely that a door would be inadvertently left open,~~

~~b. Excessive air leakage would be detected by temperature monitoring in the ice condenser, and~~

⑨

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~c. The light construction of the doors would ensure that, in the event of a DBA, air and gases passing through the ice condenser would find a flow path, even if a door were obstructed.~~

~~OR~~

⑨

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

⑩

REFERENCES

U

1. FSAR, Chapter ~~[15]~~. 6 ② ⑦

2. 10 CFR 50, Appendix K.

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.13 BASES, ICE CONDENSER DOORS

1. The heading and title for ISTS 3.6.16 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear Plant (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.16 is renumbered as ITS 3.6.13.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. Typographical/grammatical error corrected.

4. The SQN ARS design consists of two 100% capacity fans (and associated dampers) connected to common hydrogen collection headers servicing the primary containment. The SQN ARS design does not consist of two fully redundant ARS trains. Therefore, it is necessary to define the OPERABILITY requirements of the Air Return System in terms of "fans."

5. Changes have been made to be consistent with changes made to the ITS.

6. Changes have been made to be consistent with the ITS.

7. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

8. The Bases wording is deleted because the Bases places additional restrictions than those specified in the Specification. In accordance with the Specification, if ACTION B is not met for any reason (Required Actions B.1 or B.2 not met), then the default ACTION is ACTION C, while the ISTS Bases requires Required Actions D.1 and D.2 to be applied if the temperature verification is not made. The Required Actions in the Specification are consistent with the current allowances in the CTS, therefore the change is appropriate.

9. ISTS SR 3.6.16.1, SR 3.6.16.2, SR 3.6.16.3, SR 3.6.16.4, SR 3.6.16.5, SR 3.6.16.6, and SR 3.6.16.7 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.13.1, SR 3.6.13.2, SR 3.6.13.3, SR 3.6.13.4, SR 3.6.13.5, SR 3.6.13.6, and SR 3.6.13.7 under the Surveillance Frequency Control Program.

10. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

11. Changes are made to provide clarity concerning the extent of the perimeter of the upper containment that the ice condenser encloses.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.13, ICE CONDENSER DOORS

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 14

ITS 3.6.14, DIVIDER BARRIER INTEGRITY

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

A01

CONTAINMENT SYSTEMS

DIVIDER BARRIER ~~PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES~~ Integrity A02

LIMITING CONDITION FOR OPERATION

Divider barrier integrity shall be maintained. A02

LCO 3.6.14 3.6.5.5 ~~The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be OPERABLE and closed.~~ LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

A03

ACTION: Add proposed Condition A Note

one or more / and / LCO 3.6.14 Note / A04

ACTION A With ~~a~~ personnel access door or equipment hatch inoperable or open except for personnel transit entry, restore the door or hatch to OPERABLE status ~~or to its~~ closed position (as applicable) within 1 hour or be

ACTION C in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

and exit A07

SURVEILLANCE REQUIREMENTS

SR 3.6.14.1
SR 3.6.14.3 4.6.5.5.1 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined closed by a visual inspection prior to increasing the Reactor Coolant System T_{avg} above 200°F and after each personnel transit entry when the Reactor Coolant System T_{avg} is above 200°F.

SR 3.6.14.2 4.6.5.5.2 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined OPERABLE by visually inspecting the seals and sealing surfaces of these penetrations and verifying no detrimental misalignments, cracks or defects in the sealing surfaces, or apparent deterioration of the seal material:

a. Prior to final closure of the penetration each time it has been opened, and

b. ~~At least once per 10 years~~ for penetrations containing seals fabricated from resilient materials.

In accordance with the Surveillance Frequency Control Program LA02

A01

CONTAINMENT SYSTEMS

DIVIDER BARRIER ~~SEAL~~

Integrity

A02

LIMITING CONDITION FOR OPERATION

integrity shall be maintained

A02

LCO 3.6.14 3.6.5.9 The divider barrier ~~seal shall be OPERABLE~~.

LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTIONS B and C

ACTION B
ACTION C ~~With the divider barrier seal inoperable, restore the seal to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.~~

A05

SURVEILLANCE REQUIREMENTS

In accordance with the Surveillance Frequency Control Program

LA02

SR 3.6.14.4.
SR 3.6.14.5.a,
SR 3.6.14.5.b 4.6.5.9 The divider barrier seal shall be determined OPERABLE ~~at least once per 18 months during shutdown~~ by:

L01

SR 3.6.14.4 a. Removing and pressure testing the divider barrier seal test coupons ~~in accordance with Table 3.6-3~~,

A06

SR 3.6.14.5.a,
SR 3.6.14.5.b b. Visually inspecting at least 95 percent of the seal's entire length and:

SR 3.6.14.5.a 1. Verifying that the seal and seal mounting bolts are properly installed, and

SR 3.6.14.5.b 2. Verifying that the seal material shows no visual evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearances.

A01

~~TABLE 3.6-3~~

~~DIVIDER BARRIER SEAL~~
~~ACCEPTABLE PHYSICAL PROPERTIES~~

A06

	Material	Differential Pressure	Elongation	
SR 3.6.14.4	~~Presray Corp. EPDM Compound E603 (2 ply Dacron Coated EPDM)~~	15 psid after LOCA environment simulation*	NA	LA03

SR 3.6.14.4,
SR 3.6.14.4 Note

The test sequence will be as follows: 2 coupons will be tested to 60 psid; with no failures, the results are acceptable. If a failure occurs at 60 psig, 4 coupons will be tested to 30 psid; with no failures, the results are acceptable. If a failure occurs at 30 psid, 5 coupons will be sent to the manufacture for LOCA environment simulation ~~(radiation, humidity, temperature)~~ and testing to 15 psid.

LA04

A01

CONTAINMENT SYSTEMS

DIVIDER BARRIER ~~PERSONNEL ACCESS DOORS AND EQUIPMENT HATCHES~~ Integrity

A02

LIMITING CONDITION FOR OPERATION

Divider barrier integrity shall be maintained.

A02

LCO 3.6.14

3.6.5.5 ~~The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be OPERABLE and closed.~~

LA01

Applicability

APPLICABILITY: MODES 1, 2, 3 and 4.

A03

ACTION: Add proposed Condition A Note

A04

ACTION A

ACTION C

With ~~a~~ one or more personnel access door or equipment hatch inoperable or open and except for personnel transit entry and exit, restore the door or hatch to OPERABLE status ~~or to its~~ and closed position (as applicable) within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

LCO 3.6.14 Note

A07

SURVEILLANCE REQUIREMENTS

SR 3.6.14.1
SR 3.6.14.3

4.6.5.5.1 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined closed by a visual inspection prior to increasing the Reactor Coolant System T_{avg} above 200°F and after each personnel transit entry when the Reactor Coolant System T_{avg} is above 200°F.

SR 3.6.14.2

4.6.5.5.2 The personnel access doors and equipment hatches between the containment's upper and lower compartments shall be determined OPERABLE by visually inspecting the seals and sealing surfaces of these penetrations and verifying no detrimental misalignments, cracks or defects in the sealing surfaces, or apparent deterioration of the seal material:

a. Prior to final closure of the penetration each time it has been opened, and

b. ~~At least once per 10 years~~ In accordance with the Surveillance Frequency Control Program for penetrations containing seals fabricated from resilient materials.

LA02

A01

CONTAINMENT SYSTEMS

DIVIDER BARRIER ~~SEAL~~

Integrity

A02

LIMITING CONDITION FOR OPERATION

integrity shall be maintained

A02

LCO 3.6.14 3.6.5.9 The divider barrier ~~seal shall be OPERABLE~~.

LA01

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTIONS B and C

ACTION B
ACTION C

~~With the divider barrier seal inoperable, restore the seal to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.~~

A05

In accordance with the Surveillance Frequency Control Program

SURVEILLANCE REQUIREMENTS

LA02

SR 3.6.14.4.
SR 3.6.14.5.a,
SR 3.6.14.5.b

4.6.5.9 The divider barrier seal shall be determined OPERABLE ~~at least once per 18 months during shutdown~~ by:

L01

SR 3.6.14.4 a. Removing and pressure testing the divider barrier seal test coupons ~~in accordance with Table 3.6-3~~,

A06

SR 3.6.14.5.a,
SR 3.6.14.5.b

b. Visually inspecting at least 95 percent of the seal's entire length and:

SR 3.6.14.5.a 1. Verifying that the seal and seal mounting bolts are properly installed, and

SR 3.6.14.5.b 2. Verifying that the seal material shows no visual evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearances.

A01

~~TABLE 3.6-3~~

~~DIVIDER BARRIER SEAL~~
~~ACCEPTABLE PHYSICAL PROPERTIES~~

A06

	Material	Differential Pressure	Elongation
SR 3.6.14.4	~~Prespray Corp. EPDM Compound E603 (2 ply dacron coated EPDM)~~	15 psid after LOCA environmental simulation*	N/A

LA03

SR 3.6.14.4,
SR 3.6.14.4 Note

* The test sequence will be as follows: 2 coupons will be tested to 60 psid; with no failures, the results are acceptable. If a failure occurs at 60 psid, 4 coupons will be tested to 30 psid; with no failures, the results are acceptable. If a failure occurs at 30 psid, 5 coupons will be sent to the manufacturer for LOCA environment simulation ~~(radiation, humidity, temperature)~~ and testing to 15 psid.

LA04

DISCUSSION OF CHANGES
ITS 3.6.14, DIVIDER BARRIER INTEGRITY

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.5.5 requires the personnel access doors and equipment hatches between the containment's upper and lower compartments to be OPERABLE and closed. CTS 3.6.5.9 requires the divider barrier seal to be OPERABLE. ITS LCO 3.6.14 requires the divider barrier integrity to be maintained. This changes the CTS by combining the divider barrier requirements of CTS 3.6.5.5 and CTS 3.6.5.9 into one LCO statement within the Divider Barrier Integrity Specification.

The purpose of CTS 3.6.5.5 and CTS 3.6.5.9 is to provide requirements pertaining to containment divider barrier integrity. This change is acceptable because moving these requirements to one LCO, ITS 3.6.14, centralizes the requirements. In addition, the requirement in CTS 3.6.5.5 for the personnel access doors and equipment hatches between the containment's upper and lower compartments to be closed is covered by CTS 4.6.5.5.1 (ITS SR 3.6.14.1). Therefore, it is part of maintaining divider barrier integrity. This change is designated as administrative, because it does not result in technical changes to the CTS.

A03 CTS 3.6.5.5 provides actions to take when a containment divider barrier personnel access door or equipment hatch is open or inoperable, and requires the door or hatch to be restored to an OPERABLE status or to its closed position (as applicable) within one hour. ITS 3.6.14 ACTION A requires one or more open or inoperable personnel access doors or equipment hatches to be restored and closed within one hour. This modifies the CTS by providing a specific requirement for an inoperable personnel access door or equipment hatch to be closed, in addition to being restored, within one hour.

The purpose of the CTS 3.6.5.5 Actions are to minimize the time the unit is operating with open or inoperable containment divider barrier personnel access doors or equipment hatches. This change is acceptable because it clearly states the current requirement to restore compliance with the LCO. The intent of the CTS Actions are to restore divider barrier integrity, including restoring inoperable personnel access doors or equipment hatches to an OPERABLE status, and closing personnel access doors or equipment hatches that are open. The CTS words "as applicable" imply that, if a door or hatch is both inoperable and open, then the actions to take would include both restoring to OPERABLE status and closing the door or hatch. This change is designated as administrative, because it does not result in technical changes to the CTS.

A04 CTS 3.6.5.5 Action provides the actions to take when a containment divider barrier personnel access door or equipment hatch is open or inoperable. ITS 3.6.14 ACTION A provides an action for one or more personnel access doors or equipment hatches open or inoperable. In addition, ITS 3.6.14 Condition A includes a Note that allows separate Condition entry for each personnel access door or equipment hatch. This modifies the CTS by providing a specific allowance to enter the Action for each inoperable personnel access door or equipment hatch.

The purpose of CTS 3.6.5.5 is to minimize the time the unit is operating with inoperable containment divider barrier personnel access doors or equipment hatches. This change is acceptable because it clearly states the current requirement. The CTS considers each personnel access door or equipment hatch to be separate and independent from the others. This change is designated as administrative, because it does not result in technical changes to the CTS.

A05 CTS 3.6.5.9 Action does not state what action to take if the divider barrier seal is inoperable while in MODE 1, 2, 3, or 4; it only includes a requirement that the divider barrier seal be restored to OPERABLE status prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). Therefore, entry into CTS 3.0.3 is required if CTS 3.6.5.9 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for a shutdown and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. ITS 3.6.14 ACTION B requires that if the divider barrier seal is inoperable, it must be restored to OPERABLE status within 1 hour. ITS 3.6.14 ACTION C requires that if the Required Action and associated Completion Time are not met (i.e., the divider barrier seal is not restored to OPERABLE status in 1 hour), the unit must be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by stating the ACTIONS within the Specification rather than deferring to CTS 3.0.3. In addition, it deletes the Action to restore the LCO prior to entering MODE 4.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.5.9 is silent on these actions, deferring to CTS 3.0.3 for the actions. This change is acceptable because the ACTIONS specified in ITS 3.6.14 adopt ISTS structure for placing the unit outside the MODE of Applicability without changing the time specified to enter MODE 3 and MODE 5. In addition, deletion of the current Action of CTS 3.6.5.9 is acceptable because CTS 3.0.4 (ITS LCO 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met. Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.14. This change is designated as administrative, because it does not result in technical changes to the CTS.

A06 CTS 4.6.5.9.a requires the divider barrier seal test coupons to be removed and tested in accordance with Table 3.6-3. CTS Table 3.6-3 provides the divider barrier seal acceptable physical properties and testing sequence for the test coupons. ITS SR 3.6.14.4 requires the divider barrier seal test coupons to be removed and tested and provides the divider barrier seal acceptable physical properties and testing sequence for the test coupons. This changes the CTS by moving the divider barrier seal acceptable physical properties and test coupon test sequence from a table and placing the information within the Surveillance Requirement.

The purpose of CTS 4.6.5.9.a and Table 3.6-3 is to conduct a physical property test of the divider barrier seal test coupon to provide assurance that the seal material has not degraded in the containment environment. This change is acceptable because moving the acceptable physical properties and test sequence from a table to within the Surveillance Requirement, ITS SR 3.6.14.4, centralizes the requirements. This change is designated as administrative, because it does not result in technical changes to the CTS.

A07 CTS 3.6.5.5 Action provides actions to take when a containment divider barrier personnel access door or equipment hatch is open or inoperable, and provides an exception for personnel transit entry. ITS LCO 3.6.14 requires divider barrier integrity to be maintained, and is modified by a Note that allows personnel access doors or equipment hatches to be opened for personnel transit entry and exit. This modifies the CTS by specifying the allowance to open personnel access doors and equipment hatches for personnel transit entry also applies to personnel transit for exit through the divider barrier.

The purpose of CTS 3.6.5.5 is to minimize the time the unit is operating with inoperable containment divider barrier personnel access doors or equipment hatches. This change is acceptable because it clarifies the current requirement that allows personnel transit through a containment divider barrier personnel access door or equipment hatch to include exit transit through the divider barrier. This change is designated as administrative, because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.6.5.5 requires the personnel access doors and equipment hatches between the containment's upper and lower compartments shall be OPERABLE and closed. CTS 3.6.5.9 requires the divider barrier seal shall be OPERABLE. ITS LCO 3.6.14 requires divider barrier integrity to be maintained. This changes the CTS by moving the detail of what constitutes divider barrier integrity to the Bases.

DISCUSSION OF CHANGES
ITS 3.6.14, DIVIDER BARRIER INTEGRITY

The removal of these details, that are related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirements that the divider barrier integrity shall be maintained. Also, this changes is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.5.5.2 requires, in part, that the personnel access doors and equipment hatches between the upper and lower containment compartments be determined OPERABLE by visually inspecting the seals and sealing surfaces at least once per 10 years for penetrations containing seals fabricated from resilient materials. ITS SR 3.6.14.2 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." CTS 4.6.5.9 requires verification that each divider barrier seal is OPERABLE every 18 months during shutdown. CTS 4.6.5.9.a requires removal of divider barrier seal test coupons and verifying that the physical properties of the test coupons are within acceptable limits. CTS 4.6.5.9.b requires a visual inspection of at least 95% of the seal's entire length, verification that the seal and seal mounting bolts are properly installed, and verification that the seal material shows no visual evidence of deterioration. ITS SR 3.6.14.4 and SR 3.6.14.5 require the same testing and specify the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program. (The change of the requirement to perform the Surveillances during shutdown is discussed in DOC L01).

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LA03 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS Table 3.6-3 specifies the divider barrier seal acceptable physical properties. The table includes the differential pressure property, the divider seal material type, and a note that clarifies the test sequence. The material must be Presray Corp. EPDM Compound E603 (2 ply Dacron Coated EPDM). ITS SR 3.6.14.4 only includes the differential pressure property requirements and test sequence information. This changes the CTS by moving the divider barrier seal material type to the UFSAR.

The removal of this detail, which is related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to test for differential pressure. Also, this change is acceptable because the removed information will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change, because information relating to system design is being removed from the Technical Specifications.

LA04 *(Type 4 – Removal of LCO, SR, or other TS Requirements to the TRM, UFSAR, ODCM, NQAP, CLRT Program, IST Program, or ISI Program)* CTS Table 3.6-3 specifies the acceptable physical properties for testing the divider barrier seal test coupons. The table includes a note that clarifies the test sequence and defines the loss of coolant accident (LOCA) environment simulation as "radiation, humidity, temperature". ITS SR 3.6.14.4 includes the divider barrier seal physical property test acceptance criteria and test sequence information. ITS SR 3.6.14.4 also specifies that the manufacturer's divider barrier seal coupon test will include LOCA environment simulation, but does not include the definition of the LOCA environment simulation. This changes the CTS by moving the definition of the LOCA environment simulation to the TS Bases.

The removal of these details, which are related to methods of surveillance test performance, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirements for verifying OPERABILITY of the divider barrier seal. Also, this changes is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specifications Bases Control Program in Chapter 5. This program provides for the evaluation of changes to the Bases to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to methods of surveillance test performance is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 8 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.6.5.9 requires verification that each divider barrier seal is OPERABLE every 18 months during shutdown. CTS 4.6.5.9.a requires the removal of divider barrier seal test coupons and verifying that the physical properties of the test coupons are within the acceptable range. CTS 4.6.5.9.b requires a visual inspection of at least 95% of the seal's entire length, verification that the seal and seal mounting bolts are properly installed, and verification that the seal material shows no visual evidence of deterioration. ITS SR 3.6.14.4 and SR 3.6.14.5 require the same testing at a Frequency of "In accordance with the Surveillance Frequency Control Program," with no restriction as to when (i.e., during shutdown) the test can be performed. This changes the CTS by deleting the requirement to perform the Surveillances during shutdown. (The change to relocate the Surveillance Frequency to the Surveillance Frequency Control Program is discussed in DOC LA02.)

The purpose of CTS 4.6.5.9 is to ensure the divider barrier seals are OPERABLE. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The proposed Surveillance does not include the restriction on unit conditions. Portions of the divider barrier seal Surveillance Requirements could be performed in other than shutdown conditions, without jeopardizing safe plant operations. The control of the unit conditions appropriate to perform the test is an issue for procedures and scheduling, and has been determined by the NRC Staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specification Surveillances that do not dictate unit conditions for the Surveillance. This change is designated as less restrictive, because the Surveillance may be performed at plant conditions other than shutdown.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

Divider Barrier Integrity ~~(Ice Condenser)~~
3.6.~~17~~
14 ①

3.6 CONTAINMENT SYSTEMS

3.6.~~17~~ Divider Barrier Integrity ~~(Ice Condenser)~~
14 ①

3.6.5.5
3.6.5.9 LCO 3.6.~~17~~ Divider barrier integrity shall be maintained.
14 INSERT 1 ③

Applicability APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC A04 3.6.5.5 Action	A. ------------NOTE------------ ~~For this action,~~ separate Condition entry is allowed for each personnel access door or equipment hatch. -------------------------------- One or more personnel access doors or equipment hatches open or inoperable~~, other than for personnel transit entry~~.	A.1 Restore personnel access doors and equipment hatches to OPERABLE status and closed positions.	1 hour	④ ③
3.6.5.9 Action	B. Divider barrier seal inoperable.	B.1 Restore seal to OPERABLE status.	1 hour	
3.6.5.5 Action 3.6.5.9 Action	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours	

③ **INSERT 1**

3.6.5.5 Action

--NOTE--
The personnel access doors and equipment hatches may be opened for personnel transit entry and exit.

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.6.5.5.1	SR 3.6.~~17~~.1 14 Verify, by visual inspection, all personnel access doors and equipment hatches between upper and lower containment compartments are closed.	Prior to entering MODE 4 from MODE 5	①
4.6.5.5.2	SR 3.6.~~17~~.2 14 Verify, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch have: a. No detrimental misalignments~~,~~ ; b. No cracks or defects in the sealing surfaces~~,~~ ; and c. No apparent deterioration of the seal material.	Prior to final closure after each opening AND --------NOTE-------- Only required for seals made of resilient materials ------------------------ ~~[10 years~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑤ ⑥ ⑥
4.6.5.5.1	SR 3.6.~~17~~.3 14 Verify, by visual inspection, each personnel access door or equipment hatch that has been opened for personnel transit entry is closed.	After each opening	①
4.6.5.9.a	SR 3.6.~~17~~.4 14 ~~Remove two divider barrier seal test coupons and verify:~~ ~~a. Both test coupons' tensile strength is ≥ [120] psi and~~ ~~[b. Both test coupons' elongation is ≥ [100]%.]~~ INSERT 2	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑥ ⑦ ⑥

⑥ **INSERT 2**

-------------------------------NOTE------------------------------
SR 3.6.14.4.a shall be performed. If SR 3.6.14.4.a is not met, then perform SR 3.6.14.4.b. If SR 3.6.14.4.b is not met, then perform SR 3.6.14.4.c.

Remove and pressure test the divider barrier seal test coupons as follows:

a. Two test coupons tested to 60 psid;

b. Four test coupons tested to 30 psid; or

c. Five test coupons sent to the manufacturer for loss of coolant accident (LOCA) environment simulation and testing to 15 psid.

CTS

Divider Barrier Integrity ~~(Ice Condenser)~~
3.6.~~17~~ 14 ①

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.~~17~~ 14 .5	Visually inspect ≥ ~~[~~95~~]~~% of the divider barrier seal length, and verify: 4.6.5.9.b.1 a. Seal and seal mounting bolts are properly installed ; and 4.6.5.9.b.2 b. Seal material shows no evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearance.	~~[[18] months~~ ① ⑧ ⑥ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ⑤ ⑥

3.6 CONTAINMENT SYSTEMS

3.6.~~17~~ Divider Barrier Integrity ~~(Ice Condenser)~~

14

①

3.6.5.5
3.6.9

LCO 3.6.~~17~~ Divider barrier integrity shall be maintained.

14

INSERT 1

③

Applicability

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC A04 3.6.5.5 Action	A. ------------NOTE------------ ~~For this action,~~ separate Condition entry is allowed for each personnel access door or equipment hatch. -------------------------------- One or more personnel access doors or equipment hatches open or inoperable~~, other than for personnel transit entry~~.	A.1 Restore personnel access doors and equipment hatches to OPERABLE status and closed positions.	1 hour	④ ③
3.6.5.9 Action	B. Divider barrier seal inoperable.	B.1 Restore seal to OPERABLE status.	1 hour	
3.6.5.5 Action 3.6.5.9 Action	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 5.	6 hours 36 hours	

③ **INSERT 1**

3.6.5.5 Action

---NOTE---
The personnel access doors and equipment hatches may be opened for personnel transit entry and exit.

CTS

Divider Barrier Integrity ~~(Ice Condenser)~~
3.6.~~17~~ 14 ①

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.6.5.5.1	SR 3.6.~~17~~.1 14	Verify, by visual inspection, all personnel access doors and equipment hatches between upper and lower containment compartments are closed.	Prior to entering MODE 4 from MODE 5	①
4.6.5.5.2	SR 3.6.~~17~~.2 14	Verify, by visual inspection, that the seals and sealing surfaces of each personnel access door and equipment hatch have: a. No detrimental misalignments~~,~~ ; b. No cracks or defects in the sealing surfaces~~,~~ ; and c. No apparent deterioration of the seal material.	Prior to final closure after each opening AND --------NOTE-------- Only required for seals made of resilient materials ------------------------ ~~[10 years~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑤ ⑥ ⑥
4.6.5.5.1	SR 3.6.~~17~~.3 14	Verify, by visual inspection, each personnel access door or equipment hatch that has been opened for personnel transit entry is closed.	After each opening	①
4.6.5.9.a	SR 3.6.~~17~~.4 14	~~Remove two divider barrier seal test coupons and verify:~~ ~~a. Both test coupons' tensile strength is ≥ [120] psi and~~ ~~[b. Both test coupons' elongation is ≥ [100]%.]~~ INSERT 2	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ⑥ ⑦ ⑥

⑥ **INSERT 2**

-------------------------------NOTE------------------------------
SR 3.6.14.4.a shall be performed. If SR 3.6.14.4.a is not met, then perform SR 3.6.14.4.b. If SR 3.6.14.4.b is not met, then perform SR 3.6.14.4.c.

Remove and pressure test the divider barrier seal test coupons as follows:

a. Two test coupons tested to 60 psid;

b. Four test coupons tested to 30 psid; or

c. Five test coupons sent to the manufacturer for loss of coolant accident (LOCA) environment simulation and testing to 15 psid.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.~~17~~.5 14	Visually inspect ≥ ~~[~~95~~]~~% of the divider barrier seal length, and verify: 4.6.5.9.b.1 a. Seal and seal mounting bolts are properly installed ; ~~and~~ 4.6.5.9.b.2 b. Seal material shows no evidence of deterioration due to holes, ruptures, chemical attack, abrasion, radiation damage, or changes in physical appearance.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

① ⑧ ⑥ ⑤ ⑥

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.14, DIVIDER BARRIER INTEGRITY

1. The heading and title for ISTS 3.6.17 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7), Hydrogen Mixing System (ISTS 3.6.9), or the Iodine Cleanup System (ISTS 3.6.11). Therefore, ISTS 3.6.7, ISTS 3.6.9, and ISTS 3.6.11 are not included in the SQN ITS and ISTS 3.6.17 is renumbered as ITS 3.6.14.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS 3.6.17 Condition A covers one or more personnel access doors or equipment hatches open or inoperable, other than for personnel transit entry. There is no ACTION in ISTS 3.6.17 for when a door or hatch is open for personnel transit entry; therefore, LCO 3.0.3 is required to be entered if this occurs. This is not the intent of the Specification. Therefore, a Note has been added to the LCO to identify that the personnel access doors and equipment hatches may be opened for personnel transit entry and exit. In addition, the phrase "other than for personnel transit entry" has been deleted from Condition A, since it is not needed with the addition of the Note.

4. Changes have been made to be consistent with other similar Notes in the Specifications.

5. Typographical/grammatical error corrected.

6. ISTS SR 3.6.17.2, SR 3.6.17.4, and SR 3.6.17.5 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for SR 3.6.14.2, SR 3.6.14.4, and SR 3.6.14.5 under the Surveillance Frequency Control Program.

7. ISTS SR 3.6.17.4 requires two divider barrier seal test coupons to be removed and tested for tensile strength and elongation. This test has been replaced in ITS SR 3.6.14.4 with the current Surveillance Requirement to perform a differential pressure test on the divider barrier seal test coupons as provided in CTS 4.6.5.9.a and CTS Table 3.6-3.

8. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~17~~ Divider Barrier Integrity ~~(Ice Condenser)~~

14

1

BASES

BACKGROUND

The divider barrier consists of the operating deck and associated seals, personnel access doors, and equipment hatches that separate the upper and lower containment compartments. Divider barrier integrity is necessary to minimize bypassing of the ice condenser by the hot steam and air mixture released into the lower compartment during a Design Basis Accident (DBA). This ensures that most of the gases pass through the ice bed, which condenses the steam and limits pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the door panels at the top of the condenser to open, which allows the air to flow out of the ice condenser into the upper compartment. The ice condenses the steam as it enters, thus limiting the pressure and temperature buildup in containment. The divider barrier separates the upper and lower compartments and ensures that the steam is directed into the ice condenser. The ice, together with the containment spray, is adequate to absorb the initial blowdown of steam and water from a DBA as well as the additional heat loads that would enter containment over several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam from the lower compartment through the ice condenser, where the heat is removed by the remaining ice. 2

Divider barrier integrity ensures that the high energy fluids released during a DBA would be directed through the ice condenser and that the ice condenser would function as designed if called upon to act as a passive heat sink following a DBA.

BASES

APPLICABLE SAFETY ANALYSES

Divider barrier integrity ensures the functioning of the ice condenser to the limiting containment pressure and temperature that could be experienced following a DBA. The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed, with respect to containment Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in the inoperability of one train in ~~both~~ the Containment Spray System and one ~~the~~ ARS fan. ③

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. The maximum peak containment temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5~~B~~, "Containment Air Temperature." ②

In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

The divider barrier satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum equipment requirements to ensure that the divider barrier performs its safety function of ensuring that bypass leakage, in the event of a DBA, does not exceed the bypass leakage assumed in the accident analysis. Included are the requirements that the personnel access doors and equipment hatches in the divider barrier are OPERABLE and closed and that the divider barrier seal is properly installed and has not degraded with time. An exception to the requirement that the doors be closed is made to allow personnel transit ~~entry~~ through the divider barrier. The basis of this exception is the assumption that, for personnel transit, the time during which a door is open will be short (i.e., shorter than the Completion Time of 1 hour for Condition A). The divider barrier functions with the ice condenser to limit the pressure and temperature that could be expected following a DBA. ④

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the integrity of the divider barrier. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are low due to the pressure and temperature limitations of these MODES. As such, divider barrier integrity is not required in these MODES.

ACTIONS

A.1

If one or more personnel access doors or equipment hatches are inoperable or open, ~~except for personnel transit entry,~~ 1 hour is allowed to restore the door(s) and equipment hatches to OPERABLE status and the closed position. The 1 hour Completion Time is consistent with LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour. ④

Condition A has been modified by a Note to provide clarification that~~, for this LCO,~~ separate Condition entry is allowed for each personnel access door or equipment hatch. ④

B.1

If the divider barrier seal is inoperable, 1 hour is allowed to restore the seal to OPERABLE status. The 1 hour Completion Time is consistent with LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

C.1 and C.2

If divider barrier integrity cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.~~17~~.1 14 ①

Verification, by visual inspection, that all personnel access doors and equipment hatches between the upper and lower containment compartments are closed provides assurance that divider barrier integrity is maintained prior to the reactor being taken from MODE 5 to MODE 4. This SR is necessary because many of the doors and hatches may have been opened for maintenance during the shutdown.

SR 3.6.~~17~~.2 14 ①

Verification, by visual inspection, that the personnel access door and equipment hatch seals, sealing surfaces, and alignments are acceptable provides assurance that divider barrier integrity is maintained. This inspection cannot be made when the door or hatch is closed. Therefore, SR 3.6.~~17~~.2 14 is required for each door or hatch that has been opened, prior to the final closure. Some doors and hatches may not be opened for long periods of time. ~~[~~ Those that use resilient materials in the seals must be opened and inspected periodically ~~at least once every 10 years~~ to provide assurance that the seal material has not aged to the point of degraded performance. ~~The Frequency of 10 years is based on the known resiliency of the materials used for seals, the fact that the openings have not been opened (to cause wear), and operating experience that confirms that the seals inspected at this Frequency have been found to be acceptable.~~ ①

~~OR~~ ⑤

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑥

SR 3.6.~~17~~.3 14 ①

Verification, by visual inspection, after each opening of a personnel access door or equipment hatch that it has been closed makes the operator aware of the importance of closing it and thereby provides additional assurance that divider barrier integrity is maintained while in applicable MODES.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.~~17~~ 14 .4 ①

Conducting periodic physical property tests on divider barrier seal test coupons provides assurance that the seal material has not degraded in the containment environment, including the effects of irradiation with the reactor at power. The required test~~s include a tensile strength test [and a test for elongation]~~ INSERT 1. ~~[The Frequency of [18] months was developed considering such factors as the known resiliency of the seal material used, the inaccessibility of the seals and absence of traffic in their vicinity, and the unit conditions needed to perform the SR. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ④ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

SR 3.6.~~17~~ 14 .5 ①

Visual inspection of the seal around the perimeter provides assurance that the seal is properly secured in place. ~~[The Frequency of [18] months was developed considering such factors as the inaccessibility of the seals and absence of traffic in their vicinity, the strength of the bolts and mechanisms used to secure the seal, and the unit conditions needed to perform the SR. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ⑤

~~OR~~

③ **INSERT 1**

consists of a differential pressure test. The test sequence will be as follows: two coupons will be tested to 60 psid; with no failures, the results are acceptable. If a failure occurs at 60 psid, four coupons will be tested to 30 psid; with no failures, the results are acceptable. If a failure occurs at 30 psid, five coupons will be sent to the manufacturer for LOCA environment simulation (radiation, humidity, temperature) and testing to 15 psid.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑥

REFERENCES U 1. FSAR, Section ~~[~~6.2~~]~~. ② ⑦

U

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~17~~ 14 Divider Barrier Integrity ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The divider barrier consists of the operating deck and associated seals, personnel access doors, and equipment hatches that separate the upper and lower containment compartments. Divider barrier integrity is necessary to minimize bypassing of the ice condenser by the hot steam and air mixture released into the lower compartment during a Design Basis Accident (DBA). This ensures that most of the gases pass through the ice bed, which condenses the steam and limits pressure and temperature during the accident transient. Limiting the pressure and temperature reduces the release of fission product radioactivity from containment to the environment in the event of a DBA.

In the event of a DBA, the ice condenser inlet doors (located below the operating deck) open due to the pressure rise in the lower compartment. This allows air and steam to flow from the lower compartment into the ice condenser. The resulting pressure increase within the ice condenser causes the intermediate deck doors and the door panels at the top of the condenser to open, which allows the air to flow out of the ice condenser into the upper compartment. The ice condenses the steam as it enters, thus limiting the pressure and temperature buildup in containment. The divider barrier separates the upper and lower compartments and ensures that the steam is directed into the ice condenser. The ice, together with the containment spray, is adequate to absorb the initial blowdown of steam and water from a DBA as well as the additional heat loads that would enter containment over several hours following the initial blowdown. The additional heat loads would come from the residual heat in the reactor core, the hot piping and components, and the secondary system, including the steam generators. During the post blowdown period, the Air Return System (ARS) returns upper compartment air through the divider barrier to the lower compartment. This serves to ~~equalize pressures in containment and to~~ continue circulating heated air and steam from the lower compartment through the ice condenser, where the heat is removed by the remaining ice. ②

Divider barrier integrity ensures that the high energy fluids released during a DBA would be directed through the ice condenser and that the ice condenser would function as designed if called upon to act as a passive heat sink following a DBA.

BASES

APPLICABLE SAFETY ANALYSES

Divider barrier integrity ensures the functioning of the ice condenser to the limiting containment pressure and temperature that could be experienced following a DBA. The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively.

Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the ARS also function to assist the ice bed in limiting pressures and temperatures. Therefore, the postulated DBAs are analyzed, with respect to containment Engineered Safety Feature (ESF) systems, assuming the loss of one ESF bus, which is the worst case single active failure and results in the inoperability of one train in ~~both~~ the Containment Spray System and one ~~the~~ ARS fan. ③

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. The maximum peak containment temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5~~B~~, "Containment Air Temperature." ②

In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

The divider barrier satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum equipment requirements to ensure that the divider barrier performs its safety function of ensuring that bypass leakage, in the event of a DBA, does not exceed the bypass leakage assumed in the accident analysis. Included are the requirements that the personnel access doors and equipment hatches in the divider barrier are OPERABLE and closed and that the divider barrier seal is properly installed and has not degraded with time. An exception to the requirement that the doors be closed is made to allow personnel transit ~~entry~~ through the divider barrier. The basis of this exception is the assumption that, for personnel transit, the time during which a door is open will be short (i.e., shorter than the Completion Time of 1 hour for Condition A). The divider barrier functions with the ice condenser to limit the pressure and temperature that could be expected following a DBA. ④

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature requiring the integrity of the divider barrier. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are low due to the pressure and temperature limitations of these MODES. As such, divider barrier integrity is not required in these MODES.

ACTIONS

A.1

If one or more personnel access doors or equipment hatches are inoperable or open, ~~except for personnel transit entry,~~ 1 hour is allowed to restore the door(s) and equipment hatches to OPERABLE status and the closed position. The 1 hour Completion Time is consistent with LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour. ④

Condition A has been modified by a Note to provide clarification that~~, for this LCO,~~ separate Condition entry is allowed for each personnel access door or equipment hatch. ④

B.1

If the divider barrier seal is inoperable, 1 hour is allowed to restore the seal to OPERABLE status. The 1 hour Completion Time is consistent with LCO 3.6.1, which requires that containment be restored to OPERABLE status within 1 hour.

C.1 and C.2

If divider barrier integrity cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.~~17~~ 14 .1 ①

Verification, by visual inspection, that all personnel access doors and equipment hatches between the upper and lower containment compartments are closed provides assurance that divider barrier integrity is maintained prior to the reactor being taken from MODE 5 to MODE 4. This SR is necessary because many of the doors and hatches may have been opened for maintenance during the shutdown.

SR 3.6.~~17~~ 14 .2 ①

Verification, by visual inspection, that the personnel access door and equipment hatch seals, sealing surfaces, and alignments are acceptable provides assurance that divider barrier integrity is maintained. This inspection cannot be made when the door or hatch is closed. Therefore, SR 3.6.~~17~~ 14 .2 is required for each door or hatch that has been opened, prior to the final closure. Some doors and hatches may not be opened for long periods of time. ~~[~~Those that use resilient materials in the seals must be opened and inspected periodically ~~at least once every 10 years~~ to provide assurance that the seal material has not aged to the point of degraded performance. ~~The Frequency of 10 years is based on the known resiliency of the materials used for seals, the fact that the openings have not been opened (to cause wear), and operating experience that confirms that the seals inspected at this Frequency have been found to be acceptable.~~ ①

~~OR~~ ⑤

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

SR 3.6.~~17~~ 14 .3 ①

Verification, by visual inspection, after each opening of a personnel access door or equipment hatch that it has been closed makes the operator aware of the importance of closing it and thereby provides additional assurance that divider barrier integrity is maintained while in applicable MODES.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.~~17~~.4 ①
14

Conducting periodic physical property tests on divider barrier seal test coupons provides assurance that the seal material has not degraded in the containment environment, including the effects of irradiation with the reactor at power. The required test INSERT 1 ~~s include a tensile strength test [and a test for elongation]~~. ~~[The Frequency of [18] months was developed considering such factors as the known resiliency of the seal material used, the inaccessibility of the seals and absence of traffic in their vicinity, and the unit conditions needed to perform the SR. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ④ ⑤

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ⑥
~~--]~~

SR 3.6.~~17~~.5 ①
14

Visual inspection of the seal around the perimeter provides assurance that the seal is properly secured in place. ~~[The Frequency of [18] months was developed considering such factors as the inaccessibility of the seals and absence of traffic in their vicinity, the strength of the bolts and mechanisms used to secure the seal, and the unit conditions needed to perform the SR. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~ ⑤

~~OR~~

③ **INSERT 1**

consists of a differential pressure test. The test sequence will be as follows: two coupons will be tested to 60 psid; with no failures, the results are acceptable. If a failure occurs at 60 psid, four coupons will be tested to 30 psid; with no failures, the results are acceptable. If a failure occurs at 30 psid, five coupons will be sent to the manufacturer for LOCA environment simulation (radiation, humidity, temperature) and testing to 15 psid.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑥

REFERENCES U 1. FSAR, Section ~~[~~6.2~~]~~. ② ⑦

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.14 BASES, DIVIDER BARRIER INTEGRITY

1. The heading and title for ISTS 3.6.17 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear Plant (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.17 is renumbered as ITS 3.6.14.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The SQN ARS design consists of two 100% capacity fans (and associated dampers) connected to common hydrogen collection headers servicing the primary containment. The SQN ARS design does not consist of two fully redundant ARS trains. Therefore, it is necessary to define the OPERABILITY requirements of the Air Return System in terms of "fans."

4. Changes have been made to be consistent with changes made to the Specification.

5. ISTS SR 3.6.17.2, SR 3.6.17.4, and SR 3.6.17.5 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.14.2, SR 3.6.14.4, and SR 3.6.14.5 under the Surveillance Frequency Control Program.

6. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

7. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.14, DIVIDER BARRIER INTEGRITY

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 15

ITS 3.6.15, CONTAINMENT RECIRCULATION DRAINS

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

ITS

A01

CONTAINMENT SYSTEMS

FLOOR DRAINS

LIMITING CONDITION FOR OPERATION

LCO 3.6.15 3.6.5.7 The ice condenser floor drains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Add proposed ACTIONS A and C

ACTION A
ACTION C
~~With the ice condenser floor drain inoperable, restore the floor drain to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.~~

A02

SURVEILLANCE REQUIREMENTS

In accordance with the Surveillance Frequency Control Program

LA01

SR 3.6.15.2 4.6.5.7 Each ice condenser floor drain shall be demonstrated OPERABLE ~~at least once per 18 months during shutdown~~ by:

L01

a. Verifying that valve gate opening is not impaired by ice, frost or debris,

b. Verifying that the valve seat is not damaged,

c. Verifying that the valve gate opens when a force of less than or equal to 48 lbs is applied, and

d. Verifying that the drain line from the ice condenser floor to the containment lower compartment is unrestricted.

ITS A01 3.6.15

CONTAINMENT SYSTEMS

REFUELING CANAL DRAINS

LIMITING CONDITION FOR OPERATION

LCO 3.6.15 3.6.5.8 The refueling canal drains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION B With a refueling canal drain inoperable, restore the drain to OPERABLE status within one hour

ACTION C or be in at least HOT STANDBY within the next 6 hours and in at least COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.15.1.a
SR 3.6.15.1.b

4.6.5.8 Each refueling canal drain shall be demonstrated OPERABLE:

a. Prior to increasing the Reactor Coolant System temperature above 200°F after each partial or complete filling of the canal with water by verifying that the plug is removed from the drain line and that the drain is not obstructed by debris, and

b. ~~At least once per 92 days~~ by verifying, through a visual inspection, that the plug is removed and there is no debris that could obstruct the drain.

In accordance with the Surveillance Frequency Control Program

LA01

SR 3.6.15.1.c Add proposed SR 3.6.15.1.c at a Frequency of ~~92 days~~ AND prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal.

M01

ITS A01 3.6.15

CONTAINMENT SYSTEMS

FLOOR DRAINS

LIMITING CONDITION FOR OPERATION

LCO 3.6.15 3.6.5.7 The ice condenser floor drains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION. Add proposed ACTIONS A and C

ACTION A
ACTION C ~~With the ice condenser floor drain inoperable, restore the floor drain to OPERABLE status prior to increasing the Reactor Coolant System temperature above 200°F.~~ A02

SURVEILLANCE REQUIREMENTS

In accordance with the Surveillance Frequency Control Program LA01

SR 3.6.15.2 4.6.5.7 Each ice condenser floor drain shall be demonstrated OPERABLE ~~at least once per 18 months during shutdown~~ by: L01

a. Verifying that valve gate opening is not impaired by ice, frost or debris,

b. Verifying that the valve seat is not damaged,

c. Verifying that the valve gate opens when a force of less than or equal to 48 lbs is applied, and

d. Verifying that the drain line from the ice condenser floor to the containment lower compartment is unrestricted.

A01

CONTAINMENT SYSTEMS

REFUELING CANAL DRAINS

LIMITING CONDITION FOR OPERATION

LCO 3.6.15 3.6.5.8 The refueling canal drains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION B
ACTION C

With a refueling canal drain inoperable, restore the drain to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in at least COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

SR 3.6.15.1.a
SR 3.6.15.1.b

4.6.5.8 Each refueling canal drain shall be demonstrated OPERABLE.

a. Prior to increasing the Reactor Coolant System temperature above 200°F after each partial or complete filling of the canal with water by verifying that the plug is removed from the drain line and that the drain is not obstructed by debris, and

b. ~~At least once per 92 days~~ by verifying, through a visual inspection, that the plug is removed and there is no debris that could obstruct the drain.

In accordance with the Surveillance Frequency Control Program

LA01

SR 3.6.15.1.c

Add proposed SR 3.6.15.1.c at a Frequency of ~~92 days~~ AND prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal.

M01

DISCUSSION OF CHANGES
ITS 3.6.15, CONTAINMENT RECIRCULATION DRAINS

ADMINISTRATIVE CHANGES

A01 In the conversion of the Sequoyah Nuclear Plant (SQN) Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS), certain changes (wording preferences, editorial changes, reformatting, revised numbering, etc.) are made to obtain consistency with NUREG-1431, Rev. 4.0, "Standard Technical Specifications- Westinghouse Plants" (ISTS) and additional Technical Specification Task Force (TSTF) travelers included in this submittal.

These changes are designated as administrative changes and are acceptable because they do not result in technical changes to the CTS.

A02 CTS 3.6.5.7 Action does not state what action to take if the ice condenser floor drains are inoperable while in MODE 1, 2, 3, or 4; it only includes a requirement that the ice condenser floor drains be restored to OPERABLE status prior to increasing Reactor Coolant System temperature above 200°F (i.e., MODE 4). Therefore, entry into CTS 3.0.3 is required if CTS 3.6.5.7 is not met while in MODE 1, 2, 3, or 4. CTS 3.0.3 allows 1 hour to prepare for a shutdown and requires the unit to be in MODE 3 within 7 hours and MODE 5 within 37 hours. ITS 3.6.15 ACTION A requires that if one ice condenser floor drain is inoperable, it must be restored to OPERABLE status within 1 hour. ITS 3.6.15 ACTION C requires that if the Required Action and associated Completion Time are not met (i.e., the ice condenser floor drain is not restored to OPERABLE status in 1 hour), the unit must be in MODE 3 within 6 hours and MODE 5 within 36 hours. This changes the CTS by stating the ACTIONS within the Specification rather than deferring to CTS 3.0.3. In addition, it deletes the Actions to restore the limits prior to entering MODE 4.

The purpose of CTS 3.0.3 is to place the unit outside the MODE of Applicability within a reasonable amount of time in a controlled manner. CTS 3.6.5.7 is silent on these actions, deferring to CTS 3.0.3 for the actions to accomplish this. This change is acceptable because the ACTIONS specified in ITS 3.6.15 adopt ISTS structure for placing the unit outside the MODE of Applicability without changing the time specified to enter MODE 3 and MODE 5. In addition, deletion of the current Actions of CTS 3.6.5.7 is acceptable because CTS 3.0.4 (ITS LCO 3.0.4) already precludes entering the MODE of Applicability when the LCO is not met. Therefore, it is not necessary to include these requirements as specific actions in ITS 3.6.15. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.6.5.8.a requires each refueling canal drain be demonstrated OPERABLE prior to increasing the Reactor Coolant System temperature above 200°F after each partial or complete filling of the canal with water. CTS 4.6.5.8.b requires each refueling canal drain to be demonstrated OPERABLE at least once per 92 days. ITS SR 3.6.15.1 adds a new Surveillance to verify by visual inspection every 92 days AND prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal, that there is no debris present in the upper compartment or refueling canal that could obstruct the refueling canal drain. This changes the CTS by adding the additional Surveillance verification. (The change to relocate the specified Frequency of 92 days to the Surveillance Frequency Control Program is discussed in DOC LA01).

The purpose of the additional Surveillance of ITS SR 3.6.15.1 is to provide additional assurance the required refueling canal drains are OPERABLE. Prior to and during operation, the debris could be present in the upper containment compartment or refueling canal that eventually may obstruct the refueling canal drain. This change is acceptable, because it provides additional assurance that the refueling canal drain will be capable of performing its function. This change is designated as more restrictive, because it adds a Surveillance verification to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.6.5.7 requires each ice condenser floor drain to be demonstrated OPERABLE at least once per 18 months during shutdown. ITS SR 3.6.15.2 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." (The change of the requirement to perform the ice condenser floor drain Surveillance during shutdown is discussed in DOC L01). CTS 4.6.5.8.b requires each refueling canal drain be demonstrated OPERABLE by verifying through a visual inspection that the plug is removed and that there is no debris that could obstruct the drain at least once per 92 days. ITS SR 3.6.15.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for these SRs and associated Bases to the Surveillance Frequency Control Program. An additional Surveillance Requirement has been added to ITS SR 3.6.15.1 to verify that no debris is present in the upper compartment or refueling canal that could obstruct the refueling canal drain every 92 days and prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal. (See DOC M01 for the discussion on adding the SR.) The 92 day Frequency for this Surveillance has been relocated to the Surveillance Frequency Control Program.

The removal of these details related to Surveillance Requirement Frequencies from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The existing Surveillance Frequencies are removed from Technical Specifications and placed under licensee control pursuant to the methodology described in NEI 04-10. A new program (Surveillance Frequency Control Program) is being added to the Administrative Controls section of the Technical Specifications describing the control of Surveillance Frequencies. The surveillance test requirements remain in the Technical Specifications. The control of changes to the Surveillance Frequencies will be in accordance with the Surveillance Frequency Control Program. The Program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. This change is designated as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 8 – Deletion of Surveillance Requirement Shutdown Performance Requirements)* CTS 4.6.5.7 requires verification that each ice condenser floor drain is OPERABLE every 18 months during shutdown. ITS SR 3.6.15.2 requires the same testing at a Frequency of "In accordance with the Surveillance Frequency Control Program," with no restriction as to when (i.e., during shutdown) the test can be performed. This changes the CTS by deleting the requirement to perform the Surveillances during shutdown. (The change to relocate the specified Frequency to the Surveillance Frequency Control Program is discussed in DOC LA01.)

The purpose of CTS 4.6.5.7 is to ensure the ice condenser floor drain is OPERABLE. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure that it provides an acceptable level of equipment reliability. The proposed Surveillance does not include the restriction on unit conditions. Portions of the ice condenser floor drain Surveillance Requirement could be performed in other than shutdown conditions, without jeopardizing safe plant operations. The control of the unit conditions appropriate to perform the test is an issue for procedures and scheduling, and has been determined by the NRC Staff to be unnecessary as a Technical Specification restriction. As indicated in Generic Letter 91-04, allowing this control is consistent with the vast majority of other Technical Specification Surveillances that do not dictate unit conditions for the Surveillance. This change is designated as less restrictive, because the Surveillance may be performed at plant conditions other than shutdown.

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

CTS

3.6 CONTAINMENT SYSTEMS

3.6.~~18~~ 15 Containment Recirculation Drains ~~(Ice Condenser)~~

①

3.6.5.7
3.6.5.8

LCO 3.6.~~18~~ 15 The ice condenser floor drains and the refueling canal drains shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
3.6.5.7 Actions	A. One ice condenser floor drain inoperable.	A.1	Restore ice condenser floor drain to OPERABLE status.	1 hour
3.6.5.8 Actions	B. One refueling canal drain inoperable.	B.1	Restore refueling canal drain to OPERABLE status.	1 hour
3.6.5.7 Actions 3.6.5.8 Actions	C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
		AND		
		C.2	Be in MODE 5.	36 hours

CTS

Containment Recirculation Drains ~~(Ice Condenser)~~
3.6.~~18~~ 15 ①

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.6.5.8 DOC M01	SR 3.6.~~18~~ 15.1 Verify, by visual inspection, that: a. Each refueling canal drain plug is removed~~.~~ ; b. Each refueling canal drain is not obstructed by debris~~,~~ ; and c. No debris is present in the upper compartment or refueling canal that could obstruct the refueling canal drain.	~~[92 days~~ ① ③ ~~OR~~ ④ In accordance with the Surveillance Frequency Control Program ~~]~~ ④ ③ AND Prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal
4.6.5.7	SR 3.6.~~18~~ 15.2 Verify for each ice condenser floor drain that the: a. Valve gate opening is not impaired by ice, frost, or debris~~.~~ ; b. Valve seat shows no evidence of damage~~.~~ ; c. Valve gate opening force is ≤ ~~[66]~~ 48 lb~~,~~ ; and d. Drain line from the ice condenser floor to the lower compartment is unrestricted.	~~[[18] months~~ ① ③ ② ~~OR~~ ④ In accordance with the Surveillance Frequency Control Program ~~]~~ ④ ② ⑤ ④ ③

3.6 CONTAINMENT SYSTEMS

3.6.~~18~~ 15 Containment Recirculation Drains ~~(Ice Condenser)~~ ①

3.6.5.7
3.6.5.8

LCO 3.6.~~18~~ 15 The ice condenser floor drains and the refueling canal drains shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
3.6.5.7 Actions	A. One ice condenser floor drain inoperable.	A.1	Restore ice condenser floor drain to OPERABLE status.	1 hour
3.6.5.8 Actions	B. One refueling canal drain inoperable.	B.1	Restore refueling canal drain to OPERABLE status.	1 hour
3.6.5.7 Actions 3.6.5.8 Actions	C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
		<u>AND</u>		
		C.2	Be in MODE 5.	36 hours

CTS

Containment Recirculation Drains ~~(Ice Condenser)~~
3.6.~~18~~ 15 ①

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.6.5.8 DOC M01	SR 3.6.~~18~~ 15.1	Verify, by visual inspection, that: a. Each refueling canal drain plug is removed~~.~~ ; b. Each refueling canal drain is not obstructed by debris~~,~~ ; and c. No debris is present in the upper compartment or refueling canal that could obstruct the refueling canal drain.	~~[92 days~~ ① ③ ~~OR~~ ④ In accordance with the Surveillance Frequency Control Program ~~]~~ ④ ③ AND Prior to entering MODE 4 from MODE 5 after each partial or complete fill of the canal
4.6.5.7	SR 3.6.~~18~~ 15.2	Verify for each ice condenser floor drain that the: a. Valve gate opening is not impaired by ice, frost, or debris~~.~~ ; b. Valve seat shows no evidence of damage~~.~~ ; c. Valve gate opening force is ≤ ~~[66]~~ 48 lb~~.~~ ; and d. Drain line from the ice condenser floor to the lower compartment is unrestricted.	~~[[18] months~~ ① ③ ② ~~OR~~ ④ In accordance with the Surveillance Frequency Control Program ~~]~~ ④ ② ⑤ ④ ③

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.15, CONTAINMENT RECIRCULATION DRAINS

1. The heading and title for ISTS 3.6.18 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear Plant (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.18 is renumbered as ITS 3.6.15.

2. Changes are made (additions, deletions, and/or changes) to the ISTS which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. ISTS SR 3.6.18.1 and SR 3.6.18.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.15.1 and SR 3.6.15.2 under the Surveillance Frequency Control Program.

4. Typographical/grammatical error corrected.

5. The ISTS contains bracketed information and/or values that are generic to all Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~18~~ Containment Recirculation Drains ~~(Ice Condenser)~~

15

1

BASES

BACKGROUND

The containment recirculation drains consist of the ice condenser drains and the refueling canal drains. The ice condenser is partitioned into 24 bays, each having a pair of inlet doors that open from the bottom plenum to allow the hot steam-air mixture from a Design Basis Accident (DBA) to enter the ice condenser. ~~Twenty of the 24 bays have an ice condenser floor drain at the bottom to drain the melted ice into the lower compartment~~ INSERT 1 ~~(in the 4 bays that do not have drains, the water drains through the floor drains in the adjacent bays).~~ Each drain leads to a drain pipe that drops down several feet, then makes one or more 90° bends and exits into the lower compartment. A check (flapper) valve at the end of each pipe keeps warm air from entering during normal operation, but when the water exerts pressure, it opens to allow the water to spill into the lower compartment. This prevents water from backing up and interfering with the ice condenser inlet doors. The water delivered to the lower containment serves to cool the atmosphere as it falls through to the floor and provides a source of borated water at the containment sump for long term use by the Emergency Core Cooling System (ECCS) and the Containment Spray System during the recirculation mode of operation.

2

The two refueling canal drains are at low points in the refueling canal. During a refueling, plugs are installed in the drains and the canal is flooded to facilitate the refueling process. The water acts to shield and cool the spent fuel as it is transferred from the reactor vessel to storage. After refueling, the canal is drained and the plugs removed. In the event of a DBA, the refueling canal drains are the main return path to the lower compartment for Containment Spray System water sprayed into the upper compartment.

The ice condenser drains and the refueling canal drains function with the ice bed, the Containment Spray System, and the ECCS to limit the pressure and temperature that could be expected following a DBA.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively. Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the Air Return System (ARS) also function to assist the ice bed in limiting pressures and temperatures. Therefore, the

② **INSERT 1**

The drains shall provide a flow area out of the ice condenser of at least 15 square feet. No more than two adjacent bays shall be without drains.

BASES

APPLICABLE SAFETY ANALYSES (continued)

analysis of the postulated DBAs, with respect to Engineered Safety Feature (ESF) systems, assumes the loss of one ESF bus, which is the worst case single active failure and results in one train of the Containment Spray System and one ~~train of the~~ ARS fan being rendered inoperable. ③

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature." In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

The containment recirculation drains satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum requirements to ensure that the containment recirculation drains perform their safety functions. The ice condenser floor drain valve disks must be closed to minimize air leakage into and out of the ice condenser during normal operation and must open in the event of a DBA when water begins to drain out. The refueling canal drains must have their plugs removed and remain clear to ensure the return of Containment Spray System water to the lower containment in the event of a DBA. The containment recirculation drains function with the ice condenser, ECCS, and Containment Spray System to limit the pressure and temperature that could be expected following a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature, which would require the operation of the containment recirculation drains. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are low due to the pressure and temperature limitations of these MODES. As such, the containment recirculation drains are not required to be OPERABLE in these MODES.

BASES

ACTIONS

A.1

If one ice condenser floor drain is inoperable, 1 hour is allowed to restore the drain to OPERABLE status. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1

If one refueling canal drain is inoperable, 1 hour is allowed to restore the drain to OPERABLE status. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status in 1 hour.

C.1 and C.2

If the affected drain(s) cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~18~~.1 15 ①

Verifying the OPERABILITY of the refueling canal drains ensures that they will be able to perform their functions in the event of a DBA. This Surveillance confirms that the refueling canal drain plugs have been removed and that the drains are clear of any obstructions that could impair their functioning. In addition to debris near the drains, attention must be given to any debris that is located where it could be moved to the drains in the event that the Containment Spray System is in operation and water is flowing to the drains. SR 3.6.~~18~~.1 must be performed before entering MODE 4 from MODE 5 after every filling of the canal to ensure that the plugs have been removed and that no debris that could impair the drains was deposited during the time the canal was filled. ~~[The 92 day Frequency was developed considering such factors as the inaccessibility of the drains, the absence of traffic in the vicinity of the drains, and the redundancy of the drains.~~

15 ① ④

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ④

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑤

15

SR 3.6.~~18~~.2 ①

Verifying the OPERABILITY of the ice condenser floor drains ensures that they will be able to perform their functions in the event of a DBA. Inspecting the drain valve disk ensures that the valve is performing its function of sealing the drain line from warm air leakage into the ice condenser during normal operation, yet will open if melted ice fills the line following a DBA. Verifying that the drain lines are not obstructed ensures their readiness to drain water from the ice condenser. ~~[The [18] month Frequency was developed considering such factors as the inaccessibility of the drains during power operation; the design of the ice condenser, which precludes melting and refreezing of the ice; and operating experience that has confirmed that the drains are found to be acceptable when the Surveillance is performed at an [18] month Frequency. Because of high radiation in the vicinity of the drains during power operation, this Surveillance is normally done during a shutdown.~~

~~OR~~ ④

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ⑤

REFERENCES 1. U FSAR, Section s ~~[~~6.2~~]~~ and 6.5. ① ⑥

B 3.6 CONTAINMENT SYSTEMS

B 3.6.~~18~~ 15 Containment Recirculation Drains ~~(Ice Condenser)~~ ①

BASES

BACKGROUND

The containment recirculation drains consist of the ice condenser drains and the refueling canal drains. The ice condenser is partitioned into 24 bays, each having a pair of inlet doors that open from the bottom plenum to allow the hot steam-air mixture from a Design Basis Accident (DBA) to enter the ice condenser. ~~Twenty of the 24 bays have an ice condenser floor drain at the bottom to drain the melted ice into the lower compartment~~ INSERT 1 ~~(in the 4 bays that do not have drains, the water drains through the floor drains in the adjacent bays).~~ ② Each drain leads to a drain pipe that drops down several feet, then makes one or more 90° bends and exits into the lower compartment. A check (flapper) valve at the end of each pipe keeps warm air from entering during normal operation, but when the water exerts pressure, it opens to allow the water to spill into the lower compartment. This prevents water from backing up and interfering with the ice condenser inlet doors. The water delivered to the lower containment serves to cool the atmosphere as it falls through to the floor and provides a source of borated water at the containment sump for long term use by the Emergency Core Cooling System (ECCS) and the Containment Spray System during the recirculation mode of operation.

The two refueling canal drains are at low points in the refueling canal. During a refueling, plugs are installed in the drains and the canal is flooded to facilitate the refueling process. The water acts to shield and cool the spent fuel as it is transferred from the reactor vessel to storage. After refueling, the canal is drained and the plugs removed. In the event of a DBA, the refueling canal drains are the main return path to the lower compartment for Containment Spray System water sprayed into the upper compartment.

The ice condenser drains and the refueling canal drains function with the ice bed, the Containment Spray System, and the ECCS to limit the pressure and temperature that could be expected following a DBA.

APPLICABLE SAFETY ANALYSES

The limiting DBAs considered relative to containment temperature and pressure are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. DBAs are assumed not to occur simultaneously or consecutively. Although the ice condenser is a passive system that requires no electrical power to perform its function, the Containment Spray System and the Air Return System (ARS) also function to assist the ice bed in limiting pressures and temperatures. Therefore, the

② INSERT 1

The drains shall provide a flow area out of the ice condenser of at least 15 square feet. No more than two adjacent bays shall be without drains.

BASES

APPLICABLE SAFETY ANALYSES (continued)

analysis of the postulated DBAs, with respect to Engineered Safety Feature (ESF) systems, assumes the loss of one ESF bus, which is the worst case single active failure and results in one train of the Containment Spray System and one ~~train of the~~ ARS fan being rendered inoperable. ③

The limiting DBA analyses (Ref. 1) show that the maximum peak containment pressure results from the LOCA analysis and is calculated to be less than the containment design pressure. The maximum peak containment atmosphere temperature results from the SLB analysis and is discussed in the Bases for LCO 3.6.5, "Containment Air Temperature." In addition to calculating the overall peak containment pressures, the DBA analyses include calculation of the transient differential pressures that occur across subcompartment walls during the initial blowdown phase of the accident transient. The internal containment walls and structures are designed to withstand these local transient pressure differentials for the limiting DBAs.

The containment recirculation drains satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO establishes the minimum requirements to ensure that the containment recirculation drains perform their safety functions. The ice condenser floor drain valve disks must be closed to minimize air leakage into and out of the ice condenser during normal operation and must open in the event of a DBA when water begins to drain out. The refueling canal drains must have their plugs removed and remain clear to ensure the return of Containment Spray System water to the lower containment in the event of a DBA. The containment recirculation drains function with the ice condenser, ECCS, and Containment Spray System to limit the pressure and temperature that could be expected following a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause an increase in containment pressure and temperature, which would require the operation of the containment recirculation drains. Therefore, the LCO is applicable in MODES 1, 2, 3, and 4.

The probability and consequences of these events in MODES 5 and 6 are low due to the pressure and temperature limitations of these MODES. As such, the containment recirculation drains are not required to be OPERABLE in these MODES.

BASES

ACTIONS

A.1

If one ice condenser floor drain is inoperable, 1 hour is allowed to restore the drain to OPERABLE status. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, "Containment," which requires that containment be restored to OPERABLE status within 1 hour.

B.1

If one refueling canal drain is inoperable, 1 hour is allowed to restore the drain to OPERABLE status. The Required Action is necessary to return operation to within the bounds of the containment analysis. The 1 hour Completion Time is consistent with the ACTIONS of LCO 3.6.1, which requires that containment be restored to OPERABLE status in 1 hour.

C.1 and C.2

If the affected drain(s) cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.6.~~18~~.1 15 ①

Verifying the OPERABILITY of the refueling canal drains ensures that they will be able to perform their functions in the event of a DBA. This Surveillance confirms that the refueling canal drain plugs have been removed and that the drains are clear of any obstructions that could impair their functioning. In addition to debris near the drains, attention must be given to any debris that is located where it could be moved to the drains in the event that the Containment Spray System is in operation and water is flowing to the drains. 15 SR 3.6.~~18~~.1 must be performed before entering MODE 4 from MODE 5 after every filling of the canal to ensure that the plugs have been removed and that no debris that could impair the drains was deposited during the time the canal was filled. ① ~~[The 92 day Frequency was developed considering such factors as the inaccessibility of the drains, the absence of traffic in the vicinity of the drains, and the redundancy of the drains.~~ ④

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ ④

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑤

15

SR 3.6.~~18~~.2 ①

Verifying the OPERABILITY of the ice condenser floor drains ensures that they will be able to perform their functions in the event of a DBA. Inspecting the drain valve disk ensures that the valve is performing its function of sealing the drain line from warm air leakage into the ice condenser during normal operation, yet will open if melted ice fills the line following a DBA. Verifying that the drain lines are not obstructed ensures their readiness to drain water from the ice condenser. ~~[The [18] month Frequency was developed considering such factors as the inaccessibility of the drains during power operation; the design of the ice condenser, which precludes melting and refreezing of the ice; and operating experience that has confirmed that the drains are found to be acceptable when the Surveillance is performed at an [18] month Frequency. Because of high radiation in the vicinity of the drains during power operation, this Surveillance is normally done during a shutdown.~~ ④

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ⑤

REFERENCES 1. U FSAR, Section s ~~[~~6.2~~]~~ and 6.5. ① ⑥

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.15, CONTAINMENT RECIRCULATION DRAINS

1. The heading and title for ISTS 3.6.18 include the parenthetical expression (Ice Condenser). This identifying information is not included in the Sequoyah Nuclear Plant (SQN) ITS. This information is provided in the NUREG to assist in identifying the appropriate Specifications to be used as a model for a plant-specific ITS conversion, but serves no purpose in a plant-specific implementation. Therefore, necessary editorial changes were made. In addition, SQN design does not include the Spray Additive System (ISTS 3.6.7) or the Hydrogen Mixing System (ISTS 3.6.9). Therefore, ISTS 3.6.7 and ISTS 3.6.9 are not included in the SQN ITS and ISTS 3.6.18 is renumbered as ITS 3.6.15.

2. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant-specific nomenclature, number, reference, system description, analysis, or licensing basis description.

3. The SQN ARS design consists of two 100% capacity fans (and associated dampers) connected to common hydrogen collection headers servicing the primary containment. The SQN ARS design does not consist of two fully redundant ARS trains. Therefore, it is necessary to define the OPERABILITY requirements of the Air Return System in terms of "fans."

4. ISTS SR 3.6.18.1 and SR 3.6.18.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies for ITS SR 3.6.15.1 and SR 3.6.15.2 under the Surveillance Frequency Control Program.

5. The Reviewer's Note has been deleted. This information is for the NRC reviewer to be keyed into what is needed to meet this requirement. This Note is not meant to be retained in the final version of the plant specific submittal.

6. The ISTS contains bracketed information and/or values that are generic to Westinghouse vintage plants. The brackets are removed and the proper plant specific information/value is changed to reflect the current licensing basis.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.6.15, CONTAINMENT RECIRCULATION DRAINS

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 16

RELOCATED/DELETED CURRENT TECHNICAL SPECIFICATIONS

CTS 3.6.2.2, LOWER CONTAINMENT VENT COOLERS

Current Technical Specification (CTS) Markup and Discussion of Changes (DOCs)

R01

~~CONTAINMENT SYSTEMS~~

~~3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS~~

~~LOWER CONTAINMENT VENT COOLERS~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.6.2.2 Two independent trains of lower containment vent coolers shall be OPERABLE with two coolers to each train.~~

~~APPLICABILITY: MODES 1, 2, 3 and 4.~~

~~ACTION:~~

~~a. With one of the above required lower containment vent coolers inoperable, restore to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

~~b. With two lower containment vent coolers of the same train inoperable, restore to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.6.2.2 Each lower containment vent cooler shall be demonstrated OPERABLE:~~

~~a. At least once per 31 days by verifying that each fan operates for at least 15 minutes.~~

~~b. At least once per 18 months by:~~

~~1. Verifying from the control room that each fan starts.~~

~~2. Verifying a cooling water flow rate of greater than or equal to 200 gpm to each cooler.~~

CTS 3.6.2.2

R01

~~CONTAINMENT SYSTEMS~~

~~3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS~~

~~LOWER CONTAINMENT VENT COOLERS~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.6.2.2 Two independent trains of lower containment vent coolers shall be OPERABLE with two coolers to each train.~~

~~APPLICABILITY: MODES 1, 2, 3 and 4.~~

~~ACTION:~~

~~a. With one of the above required lower containment vent coolers inoperable, restore to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

~~b. With two lower containment vent coolers of the same train inoperable, restore to OPERABLE status with 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.6.2.2 Each lower containment vent cooler shall be demonstrated OPERABLE:~~

~~a. At least once per 31 days by verifying that each fan operates for at least 15 minutes.~~

~~b. At least once per 18 months by:~~

  ~~1. Verifying from the control room that each fan starts.~~

  ~~2. Verifying a cooling water flow rate of greater than or equal to 200 gpm to each cooler.~~

DISCUSSION OF CHANGES
CTS 3.6.2.2, LOWER CONTAINMENT VENT COOLERS

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R01 CTS 3.6.2.2 provides requirements on the Lower Containment Vent Coolers. The Lower Containment Vent Coolers are designed to maintain an acceptable temperature within the lower containment compartments for the protection of equipment and controls during normal reactor operation and normal shutdown. Although two of the four lower compartment coolers operate to maintain the assumed equipment environmental qualification conditions during non-LOCA post-HELBs inside containment when the RCS is maintained at hot standby conditions, the Lower Containment Vent Coolers are not credited in any accident analyses in the UFSAR. Therefore, the ITS does not include this Specification. This changes the CTS relocating the Lower Containment Vent Coolers to the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3.6.2.2 does not meet the 10 CFR 50.36(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The Lower Containment Vent Coolers are not installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary prior to a DBA. The Lower Containment Vent Cooler Specification does not satisfy criterion 1.

2. The Lower Containment Vent Coolers are not a process variable, design feature, or operating restriction that is in an initial condition of a DBA or Transient Analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Lower Containment Vent Cooler Specification does not satisfy criterion 2.

3. The Lower Containment Vent Coolers are not a structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a DBA or Transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. The Lower Containment Vent Cooler Specification does not satisfy criterion 3.

4. The Lower Containment Vent Coolers were found to be non-significant risk contributor to core damage frequency and offsite releases. Tennessee Valley Authority (TVA) has performed a plant-specific analysis to ensure that the Lower Containment Vent Coolers do not contain

> constraints of prime importance in limiting the likelihood or severity of the accident sequences that are commonly found to be important to public health and safety.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the Lower Containment Vent Coolers may be relocated out of the Technical Specifications. The Lower Containment Vent Cooler Specification will be relocated to the TRM. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. This change is designated as relocation because the specification did not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3.6.2.2, LOWER CONTAINMENT VENT COOLERS

There are no specific No Significant Hazards Considerations for this Specification.

ATTACHMENT 17

Improved Standard Technical Specifications (ISTS) Not Adopted in the Sequoyah ITS

ISTS 3.6.7, SPRAY ADDITIVE SYSTEM (ATMOSPHERIC, SUBATMOSPHERIC, ICE CONDENSER, AND DUAL)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

~~3.6 CONTAINMENT SYSTEMS~~

~~3.6.7 Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~

~~LCO 3.6.7 The Spray Additive System shall be OPERABLE.~~

~~APPLICABILITY: MODES 1, 2, 3, and 4.~~

~~ACTIONS~~

~~CONDITION~~	~~REQUIRED ACTION~~	~~COMPLETION TIME~~
~~A. Spray Additive System inoperable.~~	~~A.1 Restore Spray Additive System to OPERABLE status.~~	~~72 hours~~
~~B. Required Action and associated Completion Time not met.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 5.~~	~~6 hours~~ ~~84 hours~~

~~SURVEILLANCE REQUIREMENTS~~

~~SURVEILLANCE~~	~~FREQUENCY~~
~~SR 3.6.7.1 Verify each spray additive manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position is in the correct position.~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~

①

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SR 3.6.7.2~~	~~Verify spray additive tank solution volume is ≥ [2568] gal and ≤ [4000] gal.~~	~~[184 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.6.7.3~~	~~Verify spray additive tank [NaOH] solution concentration is ≥ [30]% and ≤ [32]% by weight.~~	~~[184 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.6.7.4~~	~~Verify each spray additive automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.6.7.5~~	~~Verify spray additive flow [rate] from each solution's flow path.~~	~~[5 years~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~

①

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.7, SPRAY ADDITIVE SYSTEM (ATMOSPHERIC, SUBATMOSPHERIC, ICE CONDENSER, AND DUAL)

1. ISTS 3.6.7, "Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual)" is not being adopted because Sequoyah Nuclear Plant (SQN) design does not include the Spray Additive System. ISTS 3.6.7 Bases Background Section states that the Spray Additive System is a subsystem of the Containment Spray System that assists in reducing the iodine fission product inventory in the containment atmosphere resulting from a Design Basis Accident (DBA). ISTS 3.6.7 Bases Applicable Safety Analyses Section further states that the Spray Additive System is essential to the removal of airborne iodine within containment following a DBA. At SQN, the ice beds perform the function of removing iodine from the containment following a DBA. The major benefit of if the ice bed is its capacity to absorb molecular iodine from the containment atmosphere. The ice solution is adjusted to an alkaline pH which promotes iodine hydrolysis. Since the ice beds perform this function, there is no need for the Spray Additive System. Therefore, ISTS 3.6.7 is not included in the ITS.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

~~B 3.6 CONTAINMENT SYSTEMS~~

~~B 3.6.7 Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual)~~

~~BASES~~

~~BACKGROUND~~

~~The Spray Additive System is a subsystem of the Containment Spray System that assists in reducing the iodine fission product inventory in the containment atmosphere resulting from a Design Basis Accident (DBA).~~

~~Radioiodine in its various forms is the fission product of primary concern in the evaluation of a DBA. It is absorbed by the spray from the containment atmosphere. To enhance the iodine absorption capacity of the spray, the spray solution is adjusted to an alkaline pH that promotes iodine hydrolysis, in which iodine is converted to nonvolatile forms. Because of its stability when exposed to radiation and elevated temperature, sodium hydroxide (NaOH) is the preferred spray additive. The NaOH added to the spray also ensures a pH value of between 8.5 and 11.0 of the solution recirculated from the containment sump. This pH band minimizes the evolution of iodine as well as the occurrence of chloride and caustic stress corrosion on mechanical systems and components.~~

①

~~Eductor Feed Systems Only~~

~~The Spray Additive System consists of one spray additive tank that is shared by the two trains of spray additive equipment. Each train of equipment provides a flow path from the spray additive tank to a containment spray pump and consists of an eductor for each containment spray pump, valves, instrumentation, and connecting piping. Each eductor draws the NaOH spray solution from the common tank using a portion of the borated water discharged by the containment spray pump as the motive flow. The eductor mixes the NaOH solution and the borated water and discharges the mixture into the spray pump suction line. The eductors are designed to ensure that the pH of the spray mixture is between 8.5 and 11.0.~~

~~Gravity Feed Systems Only~~

~~The Spray Additive System consists of one spray additive tank, two parallel redundant motor operated valves in the line between the additive tank and the refueling water storage tank (RWST), instrumentation, and recirculation pumps. The NaOH solution is added to the spray water by a balanced gravity feed from the additive tank through the connecting piping into a weir within the RWST. There, it mixes with the borated water flowing to the spray pump suction. Because of the hydrostatic balance between the two tanks, the flow rate of the NaOH is controlled by the volume per foot of height ratio of the two tanks. This ensures a spray mixture pH that is ≥ 8.5 and ≤ 11.0.~~

~~BASES~~

~~BACKGROUND (continued)~~

~~The Containment Spray System actuation signal opens the valves from the spray additive tank to the spray pump suctions or the containment spray pump start signal opens the valves from the spray additive tank after a 5 minute delay. The 28% to 31% NaOH solution is drawn into the spray pump suctions. The spray additive tank capacity provides for the addition of NaOH solution to all of the water sprayed from the RWST into containment. The percent solution and volume of solution sprayed into containment ensures a long term containment sump pH of ≥ 9.0 and ≤ 9.5. This ensures the continued iodine retention effectiveness of the sump water during the recirculation phase of spray operation and also minimizes the occurrence of chloride induced stress corrosion cracking of the stainless steel recirculation piping.~~

~~APPLICABLE SAFETY ANALYSES~~

~~The Spray Additive System is essential to the removal of airborne iodine within containment following a DBA.~~

~~Following the assumed release of radioactive materials into containment, the containment is assumed to leak at its design value volume following the accident. The analysis assumes that 100% of containment is covered by the spray (Ref. 1).~~

~~The DBA response time assumed for the Spray Additive System is the same as for the Containment Spray System and is discussed in the Bases for LCO 3.6.6, "Containment Spray and Cooling Systems."~~

~~The DBA analyses assume that one train of the Containment Spray System/Spray Additive System is inoperable and that the entire spray additive tank volume is added to the remaining Containment Spray System flow path.~~

~~The Spray Additive System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

~~LCO~~

~~The Spray Additive System is necessary to reduce the release of radioactive material to the environment in the event of a DBA. To be considered OPERABLE, the volume and concentration of the spray additive solution must be sufficient to provide NaOH injection into the spray flow until the Containment Spray System suction path is switched from the RWST to the containment sump, and to raise the average spray solution pH to a level conducive to iodine removal, namely, to between [7.2 and 11.0]. This pH range maximizes the effectiveness of the iodine removal mechanism without introducing conditions that may induce caustic stress corrosion cracking of mechanical system components. In addition, it is essential that valves in the Spray Additive System flow paths are properly positioned and that automatic valves are capable of activating to their correct positions.~~

①

~~BASES~~

~~APPLICABILITY~~

~~In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment requiring the operation of the Spray Additive System. The Spray Additive System assists in reducing the iodine fission product inventory prior to release to the environment.~~

~~In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations in these MODES. Thus, the Spray Additive System is not required to be OPERABLE in MODE 5 or 6.~~

~~ACTIONS~~

~~A.1~~

~~If the Spray Additive System is inoperable, it must be restored to OPERABLE within 72 hours. The pH adjustment of the Containment Spray System flow for corrosion protection and iodine removal enhancement is reduced in this condition. The Containment Spray System would still be available and would remove some iodine from the containment atmosphere in the event of a DBA. The 72 hour Completion Time takes into account the redundant flow path capabilities and the low probability of the worst case DBA occurring during this period.~~

①

~~B.1 and B.2~~

~~If the Spray Additive System cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows 48 hours for restoration of the Spray Additive System in MODE 3 and 36 hours to reach MODE 5. This is reasonable when considering the reduced pressure and temperature conditions in MODE 3 for the release of radioactive material from the Reactor Coolant System.~~

~~SURVEILLANCE REQUIREMENTS~~

~~SR 3.6.7.1~~

~~Verifying the correct alignment of Spray Additive System manual, power operated, and automatic valves in the spray additive flow path provides assurance that the system is able to provide additive to the Containment Spray System in the event of a DBA. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking, sealing, or securing. This SR does not require any testing or valve manipulation. Rather, it involves verification that those valves outside containment and capable of potentially being mispositioned are in the correct position.~~

~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

~~SR 3.6.7.2~~

~~To provide effective iodine removal, the containment spray must be an alkaline solution. Since the RWST contents are normally acidic, the volume of the spray additive tank must provide a sufficient volume of spray additive to adjust pH for all water injected. This SR is performed to verify the availability of sufficient NaOH solution in the Spray Additive System. [The 184 day Frequency was developed based on the low probability of an undetected change in tank volume occurring during the SR interval (the tank is isolated during normal unit operations). Tank level is also indicated and alarmed in the control room, so that there is high confidence that a substantial change in level would be detected.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

①

~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SR 3.6.7.3~~

~~This SR provides verification of the NaOH concentration in the spray additive tank and is sufficient to ensure that the spray solution being injected into containment is at the correct pH level. [The 184 day Frequency is sufficient to ensure that the concentration level of NaOH in the spray additive tank remains within the established limits. This is based on the low likelihood of an uncontrolled change in concentration (the tank is normally isolated) and the probability that any substantial variance in tank volume will be detected.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

①

~~SR 3.6.7.4~~

~~This SR provides verification that each automatic valve in the Spray Additive System flow path actuates to its correct position. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. [The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

~~SR 3.6.7.5~~

~~To ensure that the correct pH level is established in the borated water solution provided by the Containment Spray System, the flow rate in the Spray Additive System is verified once every 5 years. This SR provides assurance that the correct amount of NaOH will be metered into the flow path upon Containment Spray System initiation. [Due to the passive nature of the spray additive flow controls, the 5 year Frequency is sufficient to identify component degradation that may affect flow rate.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

~~REFERENCES 1. FSAR, Chapter [15].~~

①

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.7 BASES, SPRAY ADDITIVE SYSTEM (ATMOSPHERIC, SUBATMOSPHERIC, ICE CONDENSER, AND DUAL)

1. ISTS 3.6.7 Bases, "Spray Additive System (Atmospheric, Subatmospheric, Ice Condenser, and Dual)" are not included in the Sequoyah Nuclear Plant (SQN) ITS since the Specification, ISTS 3.6.7, has not been included in the SQN ITS.

ISTS 3.6.9, HYDROGEN MIXING SYSTEM (ATMOSPHERIC, ICE CONDENSER, AND DUAL)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

~~3.6 CONTAINMENT SYSTEMS~~

~~3.6.9 Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)~~

~~LCO 3.6.9 [Two] HMS trains shall be OPERABLE.~~

~~APPLICABILITY: MODES 1 and 2.~~

~~ACTIONS~~

~~CONDITION~~	~~REQUIRED ACTION~~	~~COMPLETION TIME~~
~~A. One HMS train inoperable.~~	~~A.1 Restore HMS train to OPERABLE status.~~	~~30 days~~
~~B. Two HMS trains inoperable.~~	~~B.1 Verify by administrative means that the hydrogen control function is maintained.~~ ~~AND~~ ~~B.2 Restore one HMS train to OPERABLE status.~~	~~1 hour~~ ~~AND~~ ~~Once per 12 hours thereafter~~ ~~7 days~~
~~C. Required Action and associated Completion Time not met.~~	~~C.1 Be in MODE 3.~~	~~6 hours~~

①

~~SURVEILLANCE REQUIREMENTS~~

~~SURVEILLANCE~~		~~FREQUENCY~~
~~SR 3.6.9.1~~	~~Operate each HMS train for ≥ 15 minutes.~~	~~[92 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.6.9.2~~	~~Verify each HMS train flow rate on slow speed is ≥ [4000] cfm.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.6.9.3~~	~~Verify each HMS train starts on an actual or simulated actuation signal.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~

①

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.9, HYDROGEN MIXING SYSTEM (HMS) (ATMOSPHERIC, ICE CONDENSER, AND DUAL)

1. ISTS 3.6.9, Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual) is not being adopted because Sequoyah Nuclear Plant (SQN) design does not include the HMS. The hydrogen mixing function is performed by the ITS 3.6.11, "Air Return System." Therefore, ISTS 3.6.9 is not included in the ITS.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

~~B 3.6 CONTAINMENT SYSTEMS~~

~~B 3.6.9 Hydrogen Mixing System (HMS) (Atmospheric, Ice Condenser, and Dual)~~

~~BASES~~

~~BACKGROUND~~ ~~The HMS reduces the potential for breach of containment due to a hydrogen oxygen reaction by providing a uniformly mixed post accident containment atmosphere, thereby minimizing the potential for local hydrogen burns due to a pocket of hydrogen above the flammable concentration. Maintaining a uniformly mixed containment atmosphere also ensures that the hydrogen monitors will give an accurate measure of the bulk hydrogen concentration and give the operator the capability of preventing the occurrence of a bulk hydrogen burn inside containment per 10 CFR 50.44, "Standards for Combustible Gas Control Systems in Light-Water-Cooled Reactors" (Ref. 1), and 10 CFR 50, GDC 41, "Containment Atmosphere Cleanup" (Ref. 2).~~

~~The post accident HMS is an Engineered Safety Feature (ESF) and is designed to withstand a loss of coolant accident (LOCA) without loss of function. The System has two independent trains, each consisting of two fans with their own motors and controls. Each train is sized for [4000] cfm. The two trains are initiated automatically on a Phase A containment isolation signal. The automatic action is to start the nonoperating hydrogen mixing fans on slow speed and shift the operating hydrogen mixing fans (if any) to slow speed. Each train is powered from a separate emergency power supply. Since each train fan can provide 100% of the mixing requirements, the System will provide its design function with a limiting single active failure.~~

~~Air is drawn from the steam generator compartments by the locally mounted mixing fans and is discharged toward the upper regions of the containment. This complements the air patterns established by the containment air coolers, which take suction from the operating floor level and discharge to the lower regions of the containment, and the containment spray, which cools the air and causes it to drop to lower elevations. The systems work together such that potentially stagnant areas where hydrogen pockets could develop are eliminated.~~

~~When performing their post accident hydrogen mixing function, the hydrogen mixing fans operate on slow speed to prevent motor overload in a post accident high pressure environment. The design flow rate on slow speed is based on the minimum air distribution requirements to eliminate stagnant hydrogen pockets. Each train is redundant (full capacity) and is powered from an independent ESF bus. The hydrogen mixing fans may~~

①

~~BASES~~

~~BACKGROUND (continued)~~

~~be operated on fast speed during normal operation when a containment air cooler is taken out of service. As such, the design flow rate of the hydrogen mixing fans for high speed operation is based on air distribution requirements during such normal operation.~~

~~APPLICABLE SAFETY ANALYSES~~

~~The HMS provides the capability for reducing the local hydrogen concentration to approximately the bulk average concentration. The limiting DBA relative to hydrogen concentration is a LOCA.~~

~~Hydrogen may accumulate in containment following a LOCA as a result of:~~

~~a. A metal steam reaction between the zirconium fuel rod cladding and the reactor coolant,~~

~~b. Radiolytic decomposition of water in the Reactor Coolant System (RCS) and the containment sump,~~

~~c. Hydrogen in the RCS at the time of the LOCA (i.e., hydrogen dissolved in the reactor coolant and hydrogen gas in the pressurizer vapor space), or~~

~~d. Corrosion of metals exposed to containment spray and Emergency Core Cooling System solutions.~~

~~To evaluate the potential for hydrogen accumulation in containment following a LOCA, the hydrogen generation as a function of time following the initiation of the accident is calculated. Conservative assumptions recommended by Reference 3 are used to maximize the amount of hydrogen calculated.~~

~~The HMS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

~~LCO~~

~~Two HMS trains must be OPERABLE, with power to each from an independent, safety related power supply. Each train typically consists of two fans with their own motors and controls and is automatically initiated by a Phase A containment isolation signal.~~

~~Operation with at least one HMS train provides the mixing necessary to ensure uniform hydrogen concentration throughout containment.~~

①

~~BASES~~

~~APPLICABILITY~~

~~In MODES 1 and 2, the two HMS trains ensure the capability to prevent localized hydrogen concentrations above the flammability limit of 4.1 volume percent in containment assuming a worst case single active failure.~~

~~In MODE 3 or 4, both the hydrogen production rate and the total hydrogen produced after a LOCA would be less than that calculated for the DBA LOCA. Also, because of the limited time in these MODES, the probability of an accident requiring the HMS is low. Therefore, the HMS is not required in MODE 3 or 4.~~

~~In MODES 5 and 6, the probability and consequences of a LOCA or steam line break (SLB) are reduced due to the pressure and temperature limitations in these MODES. Therefore, the HMS is not required in these MODES.~~

~~ACTIONS~~

~~A.1~~

~~With one HMS train inoperable, the inoperable train must be restored to OPERABLE status within 30 days. In this Condition, the remaining OPERABLE HMS train is adequate to perform the hydrogen mixing function. However, the overall reliability is reduced because a single failure in the OPERABLE train could result in reduced hydrogen mixing capability. The 30 day Completion Time is based on the availability of the other HMS train, the small probability of a LOCA or SLB occurring (that would generate an amount of hydrogen that exceeds the flammability limit), the amount of time available after a LOCA or SLB (should one occur) for operator action to prevent hydrogen accumulation from exceeding the flammability limit, and the availability of the Containment Spray System and Hydrogen Purge System.~~

~~B.1 and B.2~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~This Condition is only allowed for units with an alternate hydrogen control system acceptable to the technical staff.~~
~~---~~

~~With two HMS trains inoperable, the ability to perform the hydrogen control function via alternate capabilities must be verified by administrative means within 1 hour. The alternate hydrogen control capabilities are provided by [the containment Hydrogen Purge System/ Hydrogen Ignitor System/ HMS/ Containment Air Dilution System/ Containment Inerting System]. The 1 hour Completion Time allows a reasonable period of time to verify that a loss of hydrogen control function does not exist.~~

①

~~BASES~~

~~ACTIONS (continued)~~

~~------------------------------------REVIEWER'S NOTE------------------------------------~~
~~The following is to be used if a non-Technical Specification alternate hydrogen control function is used to justify this Condition: In addition, the alternate hydrogen control system capability must be verified once per 12 hours thereafter to ensure its continued availability.~~
~~---~~

~~[Both] the [initial] verification [and all subsequent verifications] may be performed as an administrative check, by examining logs or other information to determine the availability of the alternate hydrogen control system. It does not mean to perform the Surveillances needed to demonstrate OPERABILITY of the alternate hydrogen control system. If the ability to perform the hydrogen control function is maintained, continued operation is permitted with two HMS trains inoperable for up to 7 days. Seven days is a reasonable time to allow two HMS trains to be inoperable because the hydrogen control function is maintained and because of the low probability of the occurrence of a LOCA that would generate hydrogen in the amounts capable of exceeding the flammability limit.~~

①

~~C.1~~

~~If an inoperable HMS train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.~~

~~SURVEILLANCE REQUIREMENTS~~

~~SR 3.6.9.1~~

~~Operating each HMS train for ≥ 15 minutes ensures that each train is OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan and/or motor failure, or excessive vibration can be detected for corrective action. [The 92 day Frequency is consistent with Inservice Testing Program Surveillance Frequencies, operating experience, the known reliability of the fan motors and controls, and the two train redundancy available.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~-------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

~~SR 3.6.9.2~~

~~Verifying that each HMS train flow rate on slow speed is ≥ [4000] cfm ensures that each train is capable of maintaining localized hydrogen concentrations below the flammability limit. [The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~

~~SR 3.6.9.3~~

~~This SR ensures that each HMS train responds properly to a containment cooling actuation signal. The Surveillance verifies that each fan starts on slow speed from the nonoperating condition and that each fan shifts to slow speed from fast operating condition. [The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if~~

①

~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

~~REFERENCES~~

1. ~~10 CFR 50.44.~~
2. ~~10 CFR 50, Appendix A, GDC 41.~~
3. ~~Regulatory Guide 1.7, Revision [1].~~

①

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.9 BASES, HYDROGEN MIXING SYSTEM (ATMOSPHERIC, ICE CONDENSER, AND DUAL)

1. ISTS 3.6.9 Bases, "Hydrogen Mixing System (Atmospheric, Ice Condenser, and Dual)" are not included in the Sequoyah Nuclear Plant (SQN) ITS since the Specification, ISTS 3.6.9, has not been included in the SQN ITS.

ISTS 3.6.11, IODINE CLEANUP SYSTEM (ICS) (ATMOSPHERIC AND SUBATMOSPHERIC)

Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

~~3.6 CONTAINMENT SYSTEMS~~

~~3.6.11 Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)~~

~~LCO 3.6.11 Two ICS trains shall be OPERABLE.~~

~~APPLICABILITY: MODES 1, 2, 3, and 4.~~

①

~~ACTIONS~~

~~CONDITION~~	~~REQUIRED ACTION~~	~~COMPLETION TIME~~
~~A. One ICS train inoperable.~~	~~A.1 Restore ICS train to OPERABLE status.~~	~~7 days~~
~~B. Required Action and associated Completion Time not met.~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~

~~SURVEILLANCE REQUIREMENTS~~

~~SURVEILLANCE~~	~~FREQUENCY~~
~~SR 3.6.11.1 Operate each ICS train for [≥ 10 continuous hours with heaters operating or (for systems without heaters) ≥ 15 minutes].~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.6.11.2 Perform required ICS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).~~	~~In accordance with the VFTP~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SR 3.6.11.3~~	~~Verify each ICS train actuates on an actual or simulated actuation signal.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]~~
~~SR 3.6.11.4~~	~~[Verify each ICS filter bypass damper can be opened.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~

①

JUSTIFICATION FOR DEVIATIONS
ISTS 3.6.11, IODINE CLEANUP SYSTEM (ICS) (ATMOSPHERIC AND SUBATMOSPHERIC)

1. ISTS 3.6.11, "Iodine Cleanup System (Atmospheric and Subatmospheric)" is not being adopted because Sequoyah Nuclear Plant (SQN) is an Ice Condenser Plant. Therefore, ISTS 3.6.11, which is an atmospheric and subatmospheric specification is not included in the ITS.

Improved Standard Technical Specifications (ISTS) Bases Markup and Bases Justification for Deviations (JFDs)

~~B 3.6 CONTAINMENT SYSTEMS~~

~~B 3.6.11 Iodine Cleanup System (ICS) (Atmospheric and Subatmospheric)~~

~~BASES~~

~~BACKGROUND~~

~~The ICS is provided per GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems" (Ref. 1), to reduce the concentration of fission products released to the containment atmosphere following a postulated accident. The ICS would function together with the Containment Spray and Cooling systems following a Design Basis Accident (DBA) to reduce the potential release of radioactive material, principally iodine, from the containment to the environment.~~

~~The ICS consists of two 100% capacity, separate, independent, and redundant trains. Each train includes a heater, [cooling coils,] a prefilter, a demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of radioiodines, and a fan. Ductwork, valves and/or dampers, and instrumentation also form part of the system. The demisters function to reduce the moisture content of the airstream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure in sections of the main HEPA filter bank. The upstream HEPA filter and the charcoal adsorber section are credited in the analysis. The system initiates filtered recirculation of the containment atmosphere following receipt of a safety injection signal. The system design is described in Reference 2.~~

~~The demister is included for moisture (free water) removal from the gas stream. Heaters are used to heat the gas stream, which lowers the relative humidity. Continuous operation of each train for at least 10 hours per month with the heaters on reduces moisture buildup on the HEPA filters and adsorbers. Both the demister and heater are important to the effectiveness of the charcoal adsorbers.~~

~~The primary purpose of the heaters is to ensure that the relative humidity of the airstream entering the charcoal adsorbers is maintained below 70%, which is consistent with the assigned iodine and iodide removal efficiencies as per Regulatory Guide 1.52 (Ref. 3).~~

~~Two ICS trains are provided to meet the requirement for separation, independence, and redundancy. Each ICS train is powered from a separate Engineered Safety Features bus and is provided with a separate power panel and control panel. [Essential service water is required to supply cooling water to the cooling coils.]~~

~~BASES~~

~~BACKGROUND (continued)~~

~~During normal operation, the Containment Cooling System is aligned to bypass the ICS HEPA filters and charcoal adsorbers. For ICS operation following a DBA, however, the bypass dampers automatically reposition to draw the air through the filters and adsorbers.~~

~~APPLICABLE SAFETY ANALYSES~~

~~The DBAs that result in a release of radioactive iodine within containment are a loss of coolant accident (LOCA) or a rod ejection accident (REA). In the analysis for each of these accidents, it is assumed that adequate containment leak tightness is intact at event initiation to limit potential leakage to the environment. Additionally, it is assumed that the amount of radioactive iodine released is limited by reducing the iodine concentration present in the containment atmosphere.~~

~~The ICS design basis is established by the consequences of the limiting DBA, which is a LOCA. The accident analysis (Ref. 4) assume that only one train of the ICS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive iodine provided by the remaining one train of this filtration system.~~

~~The ICS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

~~LCO~~

~~Two separate, independent, and redundant trains of the ICS are required to ensure that at least one is available, assuming a single failure coincident with a loss of offsite power.~~

~~APPLICABILITY~~

~~In MODES 1, 2, 3, and 4, iodine is a fission product that can be released from the fuel to the reactor coolant as a result of a DBA. The DBAs that can cause a failure of the fuel cladding are a LOCA, SLB, and REA. Because these accidents are considered credible accidents in MODES 1, 2, 3, and 4, the ICS must be operable to ensure the reduction in iodine concentration assumed in the accident analyses.~~

~~In MODES 5 and 6, the probability and consequences of a LOCA are low due to the pressure and temperature limitations of these MODES. The ICS is not required in these MODES to remove iodine from the containment atmosphere.~~

~~ACTIONS~~

~~A.1~~

~~With one ICS train inoperable, the inoperable train must be restored to OPERABLE status within 7 days. The components in this degraded condition are capable of providing 100% of the iodine removal needs after a DBA. The 7 day Completion Time is based on consideration of such factors as:~~

~~BASES~~

~~ACTIONS (continued)~~

~~a. The availability of the OPERABLE redundant ICS train,~~

~~b. The fact that, even with no ICS train in operation, almost the same amount of iodine would be removed from the containment atmosphere through absorption by the Containment Spray System, and~~

~~c. The fact that the Completion Time is adequate to make most repairs.~~

~~B.1 and B.2~~

~~If the ICS train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner without challenging plant systems.~~

~~SURVEILLANCE REQUIREMENTS~~

~~SR 3.6.11.1~~

~~Operating each ICS train for ≥ 15 minutes ensures that all trains are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. For systems with heaters, operation with the heaters on (automatic heater cycling to maintain temperature) for ≥ 10 continuous hours eliminates moisture on the adsorbers and HEPA filters. Experience from filter testing at operating units indicates that the 10 hour period is adequate for moisture elimination on the adsorbers and HEPA filters. [The 31 day Frequency was developed considering the known reliability of fan motors and controls, the two train redundancy available, and the iodine removal capability of the Containment Spray System independent of the ICS.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

~~SR 3.6.11.2~~

~~This SR verifies that the required ICS filter testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.~~

~~SR 3.6.11.3~~

~~The automatic startup test verifies that both trains of equipment start upon receipt of an actual or simulated test signal. [The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint. Furthermore, the Frequency was developed considering that the system equipment OPERABILITY is demonstrated at a 31 day Frequency by SR 3.6.11.1.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~

~~BASES~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~[SR 3.6.11.4~~

~~The ICS filter bypass dampers are tested to verify OPERABILITY. The dampers are in the bypass position during normal operation and must reposition for accident operation to draw air through the filters. [The [18] month Frequency is considered to be acceptable based on the damper reliability and design, the mild environmental conditions in the vicinity of the dampers, and the fact that operating experience has shown that the dampers usually pass the Surveillance when performed at the [18] month Frequency.~~

~~OR~~

~~The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~

~~REFERENCES~~

1. ~~10 CFR 50, Appendix A, GDC 41, GDC 42, and GDC 43.~~
2. ~~FSAR, Section [6.5].~~
3. ~~Regulatory Guide 1.52, Revision [2].~~
4. ~~FSAR, Chapter [15].~~

JUSTIFICATION FOR DEVIATIONS
ITS 3.6.11 BASES, IODINE CLEANUP SYSTEM (ICS) (ATMOSPHERIC, AND SUBATMOSPHERIC)

1. ISTS 3.6.11 Bases, "Iodine Cleanup System (ICS) (Atmospheric, and Subatmospheric)" are not included in the Sequoyah Nuclear Plant (SQN) ITS since the Specification, ISTS 3.6.11, has not been included in the SQN ITS.