BASES

ACTIONS (continued)

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

INSERT 1

1

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

vital

DG DC,

boards

instrument

VKG025

This Surveillance verifies that the AC, DC, and AC vital ~~bus~~ electrical power distribution subsystems are functioning properly, with all the ~~buses~~ energized. The verification of proper voltage availability on the ~~buses~~ ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~.

1

~~[The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

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

U

1. FSAR, Chapter ~~[~~6~~]~~.
2. FSAR, Chapter ~~[~~15~~]~~.

1 2

1

INSERT 1

B.1

VKG025

panels

If one or more required DG DC electrical power distribution ~~subsystems~~ are inoperable, the associated DGs may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into the applicable Conditions and Required Actions for inoperable DGs, LCO 3.8.2, "AC Sources – Shutdown."

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems - Shutdown

BASES

BACKGROUND

A description of the AC, DC, and AC vital ~~bus~~ electrical power distribution systems is provided in the Bases for LCO 3.8.9, "Distribution Systems - Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter ~~[~~6~~]~~ (Ref. 1) and Chapter ~~[~~15~~]~~ (Ref. 2), assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC, DC, and AC vital ~~bus~~ electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the AC, DC, and AC vital ~~bus~~ electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC, DC, and AC vital ~~bus~~ electrical power distribution subsystems during MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods,

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident ~~[involving handling recently irradiated fuel. Due to radioactive decay, AC and DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~.

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energization of the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components - all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY.

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents ~~[involving handling recently irradiated fuel]~~). 2

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 5 and 6, and during movement of ~~[recently]~~ irradiated fuel assemblies, provide assurance that: 2

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core,

b. Systems needed to mitigate a fuel handling accident ~~[involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~ are available, 2

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

VKG025

vital, DG DC, instrument

The AC, DC, and AC vital ~~bus~~ electrical power distribution subsystems requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.9. 1

ACTIONS

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

BASES

ACTIONS (continued)

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

Although redundant required features may require redundant trains of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem train may be capable of supporting sufficient required features to allow continuation of ~~[recently]~~ irradiated fuel movement. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend movement of ~~[recently]~~ irradiated fuel assemblies, and operations involving positive reactivity additions that could result in loss of required SDM (MODE 5) or boron concentration (MODE 6). Suspending positive reactivity additions that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

2

2

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal (RHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.~~4~~ do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.~~5~~ is provided to direct declaring RHR inoperable, which results in taking the appropriate RHR actions.

3

3

4

3

and not in operation

BASES

ACTIONS (continued)

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

INSERT 1

1

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

VKG025

instrument

vital

DG DC,

boards

This Surveillance verifies that the AC, DC, and AC vital ~~bus~~ electrical power distribution subsystems are functioning properly, with all the ~~buses~~ energized. The verification of proper voltage availability on the ~~buses~~ ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these ~~buses~~.

1

~~[The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.~~

~~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

U

1. FSAR, Chapter ~~[~~6~~]~~.
2. FSAR, Chapter ~~[~~15~~]~~.

1 2

1

1

INSERT 1

B.1

VKG025

panels

If one or more required DG DC electrical power distribution ~~subsystems~~ are inoperable, the associated DGs may be incapable of performing their intended function and must be immediately declared inoperable. This declaration also requires entry into the applicable Conditions and Required Actions for inoperable DGs, LCO 3.8.2, "AC Sources – Shutdown."

JUSTIFICATION FOR DEVIATIONS
ITS 3.8.10 BASES, DISTRIBUTION SYSTEMS - SHUTDOWN

1. 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.

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 to the Bases to reflect the Specification.

4. ISTS SR 3.8.10.1 (ITS SR 3.8.10.1) provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program. Therefore, the Frequency for ITS SR 3.8.10.1 is "In accordance with 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.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.8.10, DISTRIBUTION SYSTEMS – SHUTDOWN

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

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ENCLOSURE 2

VOLUME 14

SEQUOYAH NUCLEAR PLANT
UNIT 1 AND UNIT 2

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.9
REFUELING OPERATIONS

Revision 0

LIST OF ATTACHMENTS

1. **ITS 3.9.1 – Boron Concentration**
2. **ITS 3.9.2 – Unborated Water Source Isolation Valves**
3. **ITS 3.9.3 – Nuclear Instrumentation**
4. **ITS 3.9.4 – Containment Penetrations**
5. **ITS 3.9.5 – Residual Heat Removal (RHR) and Coolant Circulation – High Water Level**
6. **ITS 3.9.6 – Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level**
7. **ITS 3.9.7 – Refueling Cavity Water Level**
8. ~~**Relocated/Deleted Current Technical Specifications (CTS)**~~

ITS 3.9.8 - Decay Time

KAB066

ATTACHMENT 1

ITS 3.9.1, BORON CONCENTRATION

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

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.1

3.9.1 ~~With the reactor vessel head closure bolts less than fully tensioned or with the head removed,~~ the boron concentration ~~of all filled portions~~ of the Reactor Coolant System and the refueling canal, and the refueling cavity shall be maintained ~~uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met:~~ within the limit specified in the COLR.

~~a. Either a Keff of 0.95 or less, which includes a 1% delta k/k conservative allowance for uncertainties, or~~

~~b. A boron concentration of greater than or equal to 2000 ppm, which includes a 50 ppm conservative allowance for uncertainties.~~

A02 A03 LA01

Applicability

APPLICABILITY: MODE 6~~*~~

A02

ACTION:

Add proposed Applicability Note L01

ACTION A

With the requirements of the above specification not satisfied, immediately suspend ~~all operations involving CORE ALTERATIONS or~~ positive reactivity changes and initiate and continue boration ~~at greater than or equal to 35 gpm of a solution containing greater than or equal to 6120 ppm boron or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 2000 ppm, whichever is the more restrictive~~. ~~The provisions of Specification 3.0.3 are not applicable.~~

L02 L03 A04

SURVEILLANCE REQUIREMENTS

~~4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:~~

~~a. Removing or unbolting the reactor vessel head, and~~

~~b. Withdrawal of any full length control rod in excess of 3 feet from its fully inserted position within the reactor pressure vessel.~~

L04

, A03 , and the refueling cavity

SR 3.9.1.1

4.9.1.2 The boron concentration of the reactor coolant system ~~and~~ the refueling canal shall be determined ~~by chemical analysis at least once per 72 hours~~.

In accordance with the Surveillance Frequency Control Program LA03

LA02

~~* The reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.~~

A02

REFUELING OPERATIONS

3/4.9.5 COMMUNICATIONS

LIMITING CONDITION FOR OPERATION

3.9.5 This specification has been deleted.

REFUELING OPERATIONS

3/4.9.6 MANIPULATOR CRANE

LIMITING CONDITION FOR OPERATION

3.9.6 This specification has been deleted.

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REFUELING OPERATIONS

3/4.9.7 CRANE TRAVEL - SPENT FUEL PIT AREA

LIMITING CONDITION FOR OPERATION

3.9.7 This specification is deleted.

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This page intentionally deleted

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.1

3.9.1 ~~With the reactor vessel head closure bolts less than fully tensioned or with the head removed,~~ the boron concentration ~~of all filled portions~~ of the Reactor Coolant System and the refueling canal, and the refueling cavity shall be maintained ~~uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met:~~ within the limit specified in COLR.

~~a. Either a K_{eff} of 0.95 or less, which includes a 1% delta k/k conservative allowance for uncertainties, or~~

~~b. A boron concentration of greater than or equal to 2000 ppm, which includes a 50 ppm conservative allowance for uncertainties.~~

Applicability

APPLICABILITY: MODE 6~~*~~

ACTION:

Add proposed Applicability Note

ACTION A

With the requirements of the above specification not satisfied, immediately suspend ~~all operations involving CORE ALTERATIONS~~ or positive reactivity changes and initiate and continue boration ~~at greater than or equal to 35 gpm of a solution containing greater than or equal to 6120 ppm boron or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 2000 ppm, whichever is the more restrictive~~. ~~The provisions of Specification 3.0.3 are not applicable.~~

SURVEILLANCE REQUIREMENTS

~~4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:~~

~~a. Removing or unbolting the reactor vessel head, and~~

~~b. Withdrawal of any full length control rod in excess of 3 feet from its fully inserted position within the reactor pressure vessel.~~

~~* The reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.~~

ITS

A01

ITS 3.9.1

REFUELING OPERATIONS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.9.1.1

4.9.1.2 The boron concentration of the reactor coolant system ~~and~~ , the refueling canal, and the refueling cavity shall be determined ~~by chemical analysis at least once per 72 hours~~ In accordance with the Surveillance Frequency Control Program.

A03

LA02

LA03

4.9.1.3 One of the following valve combinations shall be verified closed under administrative control at least once per 72 hours:

Combination A	Combination B	Combination C	Combination D
a. 2-81-536	a. 2-81-536	a. 2-81-536	a. 2-81-536
b. 2-62-922	b. 2-62-922	b. 2-62-907	b. 2-62-907
c. 2-62-916	c. 2-62-916	c. 2-62-914	c. 2-62-914
d. 2-62-933	d. 2-62-940	d. 2-62-921	d. 2-62-921
	e. 2-62-696	e. 2-62-933	e. 2-62-940
	f. 2-62-929		f. 2-62-929
	g. 2-62-932		g. 2-62-932
	h. 2-FCV-62-128		h. 2-62-696
			i. 2-FCV-62-128

See ITS 3.9.2

REFUELING OPERATIONS

3/4.9.5 COMMUNICATIONS

LIMITING CONDITION FOR OPERATION

3.9.5 This specification has been deleted.

REFUELING OPERATIONS

3/4.9.6 MANIPULATOR CRANE

LIMITING CONDITION FOR OPERATION

3.9.6 This specification has been deleted.

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REFUELING OPERATIONS

3/4.9.7 CRANE TRAVEL - SPENT FUEL PIT AREA

LIMITING CONDITION FOR OPERATION

3.9.7 This specification is deleted.

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

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 3.9.1 requires, in part, that with the reactor vessel head closure bolts less than fully tensioned or with the head removed, that the boron concentration of the Reactor Coolant System (RCS) and the refueling canal shall be maintained. Additionally, CTS 3.9.1 Applicability is MODE 6 and contains a Note (Note *) which states that the reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed. ITS LCO 3.9.1 requires, in part, that the boron concentration of the Reactor Coolant System (RCS) and the refueling canal shall be maintained. Furthermore, ITS LCO 3.9.1 Applicability is MODE 6. This changes the CTS by not including wording about the reactor vessel head closure bolts less than fully tensioned or the head removed.

This change is acceptable because the technical requirements have not changed. ITS Chapter 1.0, Table 1.1-1 defines MODE 6 as when one or more of the reactor vessel head bolts are less than fully tensioned. Therefore, there is no need to repeat the MODE 6 requirements in the LCO and the Applicability. This change has been designated as administrative because the technical requirements of the specification have not changed.

A03 CTS 3.9.1 provides requirements on the boron concentration of all filled portions of the RCS and the refueling canal. Additionally, CTS 4.9.1.2 requires a determination of the boron concentration of the RCS and the refueling canal. ITS 3.9.1 provides requirements on the boron concentration of the RCS, the refueling canal, and the refueling cavity. This changes the CTS by explicitly including the refueling cavity in the volumes required to have boron concentration maintained.

This change is acceptable because the technical requirements have not changed. The refueling cavity is considered to be governed by the CTS requirements because the refueling cavity is typically connected to the RCS, the refueling canal, or both. This change is designated as administrative because the technical requirements of the specification have not changed.

A04 CTS 3.9.1 ACTION states that the provisions of Specification 3.0.3 are not applicable. ITS 3.9.1 does not contain this statement. This changes the CTS by not stating an exception to Specification 3.0.3.

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS Specification 3.0.3 exception is not needed. This change is considered administrative and acceptable because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 6 – Removal of Cycle – Specific Limits from the Technical Specifications to the Core Operating Limits Report)* CTS 3.9.1 requires that the boron concentration in MODE 6 be maintained uniform and sufficient to ensure that the more restrictive reactivity condition of a k_{eff} of 0.95 or less, which includes a 1% delta k/k conservative allowance for uncertainties; or a boron concentration of greater than or equal to 2000 ppm, which includes a 50 ppm conservative allowance for uncertainties, is met. ITS LCO 3.9.1 requires the boron concentration of the RCS, the refueling canal, and the refueling cavity to be maintained within limit specified in the COLR. This changes the CTS by moving the MODE 6 boron concentration limits, which must be confirmed on a cycle-specified basis, to the CORE OPERATING LIMITS REPORT (COLR).

The removal of this cycle-specific parameter limit from the Technical Specifications and the placement into the COLR is acceptable because this limit is developed or utilized under NRC-approved methodologies. The NRC documented in Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specifications," that this type of information is not necessary to be included in the Technical Specifications to provide adequate [placement protection of public health and safety. The ITS still retains requirements and Surveillances that verify that the cycle-specific parameter limit is being met. ITS 3.9.1 continues to require that the boron concentration limit is met. ITS SR 3.9.1.1 requires periodic verification that boron concentration is within the limits provided in the COLR. The method of determining or utilizing the boron concentration limit has not changed. Also, this change is acceptable because the removed information will be adequately controlled in the COLR under requirements provided in ITS 5.6.3, "Core Operating Limits Report." ITS 5.6.3 ensures that the applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems limits, core limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met. This change is designated as a less restrictive removal of detail change because information relating to a cycle-specific parameter limit is being removed from the Technical Specifications.

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.9.1.2 requires that the boron concentration of the RCS and the refueling canal be determined "by chemical analysis" at least once per 72 hours. ITS SR 3.9.1.1 does not specify that the boron concentration be determined by chemical analysis. This changes the CTS by moving the detail that the boron concentration is determined by "chemical analysis" 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 that the boron concentration be verified within its limit. Also, this change is acceptable because these types of procedural 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 procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA03 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.9.1.2 requires a determination of the boron concentration of the RCS and the refueling canal at least once per 72 hours. ITS 3.9.1.1 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 Frequency 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.

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.1 provides a limit on the boron concentration of all filled portions of the RCS and the refueling canal when in MODE 6. ITS 3.9.1 modifies the Applicability with a Note which states "Only applicable to the refueling canal and refueling cavity when connected to the RCS." This changes the CTS by eliminating the applicability of the boron concentration limit on the refueling canal and refueling cavity when those volumes are not connected to the RCS.

The purpose of CTS 3.9.1 is to ensure the boron concentration of the water surrounding the reactor fuel is sufficient to maintain the required SHUTDOWN MARGIN. This change is acceptable because the requirements continue to ensure that process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. If the refueling canal and refueling cavity are not connected to the RCS (such as when the reactor vessel head is on the reactor vessel), the boron concentration of those volumes cannot affect the SHUTDOWN MARGIN. In addition, prior to connecting the refueling canal and refueling cavity to the RCS, a verification of boron concentration will be performed to ensure the newly connected portions cannot decrease the boron concentration below the limit. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.9.1 ACTION specifies the compensatory actions for when the boron concentration requirement is not met. One of the compensatory actions is to suspend CORE ALTERATIONS. Under similar conditions, ITS 3.9.1 does not require suspension of CORE ALTERATIONS. This changes the CTS by deleting the requirement to suspend CORE ALTERATIONS when the boron concentration requirement is not met.

The purpose of CTS 3.9.1 is to ensure the boron concentration of the water surrounding the reactor fuel is sufficient to maintain the required SHUTDOWN MARGIN. Thus, when the limit is not met, the CTS 3.9.1 ACTION suspends CORE ALTERATIONS to preclude an event that could result in not meeting the SHUTDOWN MARGIN limit. CORE ALTERATIONS is defined in CTS 1.1, in part, as "the movement of any fuel, sources, reactivity control components, or other components affecting reactivity within the reactor vessel with the vessel head removed and fuel in the vessel. There are two evolutions encompassed under the term CORE ALTERATIONS that could affect the SHUTDOWN MARGIN, the addition of fuel and the withdrawal of control rods. However, ITS 3.9.1 Required Action A.1, requires immediate suspension of positive reactivity changes. The immediate suspension of positive reactivity changes would include both the addition of fuel to the reactor vessel and the withdrawal of control rods. Another accident considered in MODE 6 that could affect SHUTDOWN MARGIN is a dilution event. A boron dilution accident is mitigated by stopping the dilution. Therefore, since the only CORE ALTERATIONS that could affect the SHUTDOWN MARGIN are suspended by ITS 3.9.1 Required Action A.1, deletion of the requirement to suspend CORE ALTERATIONS is acceptable. This change is designated as less restrictive because less stringent Required Actions are being applied to the ITS than were applied in the CTS.

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

L03 *(Category 4 – Relaxation of Required Action)* CTS 3.9.1 ACTION states that when the boron concentration is not met to initiate and continue boration at greater than or equal to 35 gpm of a solution containing greater than or equal to 6120 ppm boron or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 2000 ppm, whichever is the more restrictive. ITS 3.9.1 Required Action A.2 requires the initiation of an action to restore boron concentration to within limit. This changes the CTS by eliminating the specific requirements for the boric acid solution to be used to restore compliance with the LCO.

The purpose of CTS 3.9.1 ACTION is to restore the required SHUTDOWN MARGIN in a timely manner. This change is acceptable because the Required Actions are 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 features. Specifying the boric acid solutions requirements in the ACTION is not necessary, since ITS 3.9.1 Required Action A.2 requires that action be taken immediately to restore the boron concentration. This prompt action will result in the boron concentration being restored as quickly, or more quickly, than the CTS requirement. This change has been designated as a less restrictive change because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.9.1.1 requires the LCO reactivity condition to be determined prior to removing or unbolting the reactor vessel head, and prior to withdrawal of any full length control rod in excess of three feet from its fully inserted position. ITS 3.9.1 does not contain this Surveillance Requirement. This changes the CTS by deleting a Surveillance Requirement to determine reactivity conditions prior to removing or unbolting the reactor vessel head, and prior to withdrawal of any full length control rod in excess of three feet from its fully inserted position.

The purpose of CTS 4.9.1.1 is to ensure that the LCO requirements are met prior to entering MODE 6 and that the reactor has sufficient SHUTDOWN MARGIN prior to withdrawing any control rods. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the values used to meet the LCO are consistent with the safety analyses. Thus, appropriate values continue to be tested in a manner and at a frequency necessary to give confidence that the assumptions in the safety analyses are protected. ITS 3.9.1 requires that the boron concentration be met in MODE 6 or that an action is immediately initiated to restore the boron concentration and that all positive reactivity additions are suspended. Therefore, verification that the boron concentration requirement is met must be performed prior to entering MODE 6 in order to avoid immediately entering into the ITS ACTION (which prohibits withdrawal of control rods when the boron concentration requirement is not met). This change is designated as less restrictive because a Surveillance required in the CTS will not be required in the ITS.

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

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

3.9.1

LCO 3.9.1 Boron concentrations of the Reactor Coolant System (RCS), the refueling canal, and the refueling cavity shall be maintained within the limit specified in the COLR. (1)

Applicability

APPLICABILITY: MODE 6.

DOC L01

----------NOTE----------
Only applicable to the refueling canal and refueling cavity when connected to the RCS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A. Boron concentration not within limit.	A.1 Suspend positive reactivity additions. AND A.2 Initiate action to restore boron concentration to within limit.	Immediately Immediately

CTS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 4.9.1.2 SR 3.9.1.1	Verify boron concentration is within the limit specified in the COLR.	~~[~~ 72 hours ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

3

3

2

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3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

3.9.1

LCO 3.9.1 Boron concentrations of the Reactor Coolant System (RCS), the refueling canal, and the refueling cavity shall be maintained within the limit specified in the COLR. (1)

Applicability

APPLICABILITY: MODE 6.

DOC L01

----------NOTE----------
Only applicable to the refueling canal and refueling cavity when connected to the RCS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A. Boron concentration not within limit.	A.1 Suspend positive reactivity additions. AND A.2 Initiate action to restore boron concentration to within limit.	Immediately Immediately

CTS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 4.9.1.2 SR 3.9.1.1	Verify boron concentration is within the limit specified in the COLR.	~~[72 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

3

3

2

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.1, BORON DILUTION

1. Typographical/grammatical error corrected.

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. ISTS SR 3.9.1.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequency under the Surveillance Frequency Control Program.

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

B 3.9 REFUELING OPERATIONS

B 3.9.1 Boron Concentration

BASES

BACKGROUND

The limit on the boron concentrations of the Reactor Coolant System (RCS), the refueling canal, and the refueling cavity during refueling ensures that the reactor remains subcritical during MODE 6. Refueling boron concentration is the soluble boron concentration in the coolant in each of these volumes having direct access to the reactor core during refueling.

The soluble boron concentration offsets the core reactivity and is measured by chemical analysis of a representative sample of the coolant in each of the volumes. The refueling boron concentration limit is specified in the COLR. Plant procedures ~~ensure~~ the specified boron concentration in order to maintain an overall core reactivity of $k_{eff} \leq 0.95$ during fuel handling, with control rods and fuel assemblies assumed to be in the most adverse configuration (least negative reactivity) allowed ~~by plant procedures~~.

check

1

1

GDC 26 of 10 CFR 50, Appendix A, requires that two independent reactivity control systems of different design principles be provided (Ref. 1). One of these systems must be capable of holding the reactor core subcritical under cold conditions. The Chemical and Volume Control System (CVCS) is the system capable of maintaining the reactor subcritical in cold conditions by maintaining the boron concentration.

The reactor is brought to shutdown conditions before beginning operations to open the reactor vessel for refueling. After the RCS is cooled and depressurized and the vessel head is unbolted, the head is slowly removed to form the refueling cavity. The refueling canal and the refueling cavity are then flooded with borated water from the refueling water storage tank through the open reactor vessel by gravity feeding or by the use of the Residual Heat Removal (RHR) System pumps.

The pumping action of the RHR System in the RCS and the natural circulation due to thermal driving heads in the reactor vessel and refueling cavity mix the added concentrated boric acid with the water in the refueling canal. The RHR System is in operation during refueling (see LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level") to provide forced circulation in the RCS and assist in maintaining the boron concentrations in the RCS, the refueling canal, and the refueling cavity above the COLR limit.

BASES

INSERT 1

APPLICABLE SAFETY ANALYSES

~~During refueling operations, the reactivity condition of the core is consistent with the initial conditions assumed for the boron dilution accident in the accident analysis and is conservative for MODE 6.~~ The boron concentration limit specified in the COLR is based on the core reactivity at the beginning of each fuel cycle (the end of refueling) and includes an uncertainty allowance.

2

The required boron concentration and the plant refueling procedures that verify the correct fuel loading plan (including full core mapping) ensure that the k_{eff} of the core will remain ≤ 0.95 during the refueling operation. Hence, at least a 5% Δk/k margin of safety is established during refueling.

During refueling, the water volume in the spent fuel pool, the transfer canal, the refueling canal, the refueling cavity, and the reactor vessel form a single mass. As a result, the soluble boron concentration is relatively the same in each of these volumes.

~~during startup~~

The limiting boron dilution accident analyzed occurs ~~in MODE 5~~ (Ref. 2). A detailed discussion of this event is provided in Bases B 3.1.1, "SHUTDOWN MARGIN (SDM)."

~~2~~

stet

RPG-010

The RCS boron concentration satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requires that a minimum boron concentration be maintained in the RCS, the refueling canal, and the refueling cavity while in MODE 6. The boron concentration limit specified in the COLR ensures that a core k_{eff} of ≤ 0.95 is maintained during fuel handling operations. Violation of the LCO could lead to an inadvertent criticality during MODE 6.

APPLICABILITY

This LCO is applicable in MODE 6 to ensure that the fuel in the reactor vessel will remain subcritical. The required boron concentration ensures a k_{eff} ≤ 0.95. Above MODE 6, LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," ensures that an adequate amount of negative reactivity is available to shut down the reactor and maintain it subcritical.

The Applicability is modified by a Note. The Note states that the limits on boron concentration are only applicable to the refueling canal and the refueling cavity when those volumes are connected to the RCS. When the refueling canal and the refueling cavity are isolated from the RCS, no potential path for boron dilution exists.

ACTIONS

A.1

Continuation of positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant

2

INSERT 1

An uncontrolled boron dilution accident is not credible during refueling. This accident is prevented by administrative controls which isolate the RCS from significant sources of unborated water.

BASES

ACTIONS (continued)

volume in the RCS, the refueling canal, or the refueling cavity is less than its limit, all operations involving positive reactivity additions must be suspended immediately.

Suspension of positive reactivity additions shall not preclude moving a component to a safe position. Operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

A.2

In addition to immediately suspending positive reactivity additions, boration to restore the concentration must be initiated immediately.

In determining the required combination of boration flow rate and concentration, no unique Design Basis Event must be satisfied. The only requirement is to restore the boron concentration to its required value as soon as possible. In order to raise the boron concentration as soon as possible, the operator should begin boration with the best source available for unit conditions.

Once actions have been initiated, they must be continued until the boron concentration is restored. The restoration time depends on the amount of boron that must be injected to reach the required concentration.

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

This SR ensures that the coolant boron concentration in the RCS, and connected portions of the refueling canal and the refueling cavity, is within the COLR limits. The boron concentration of the coolant in each required volume is determined periodically by chemical analysis. Prior to re-connecting portions of the refueling canal or the refueling cavity to the RCS, this SR must be met per SR 3.0.4. If any dilution activity has occurred while the cavity or canal were disconnected from the RCS, this SR ensures the correct boron concentration prior to communication with the RCS.

~~[A minimum Frequency of once every 72 hours is a reasonable amount of time to verify the boron concentration of representative samples. The Frequency is based on operating experience, which has shown 72 hours to be adequate.~~ 3

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ (3)

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.~~ (4)
~~]~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. FSAR, Chapter ~~[~~15~~]~~. (U) (2) (5)

B 3.9 REFUELING OPERATIONS

B 3.9.1 Boron Concentration

BASES

BACKGROUND

The limit on the boron concentrations of the Reactor Coolant System (RCS), the refueling canal, and the refueling cavity during refueling ensures that the reactor remains subcritical during MODE 6. Refueling boron concentration is the soluble boron concentration in the coolant in each of these volumes having direct access to the reactor core during refueling.

The soluble boron concentration offsets the core reactivity and is measured by chemical analysis of a representative sample of the coolant in each of the volumes. The refueling boron concentration limit is specified in the COLR. Plant procedures ~~ensure~~ the specified boron concentration in order to maintain an overall core reactivity of $k_{eff} \leq 0.95$ during fuel handling, with control rods and fuel assemblies assumed to be in the most adverse configuration (least negative reactivity) allowed ~~by plant procedures~~.

check

1

1

GDC 26 of 10 CFR 50, Appendix A, requires that two independent reactivity control systems of different design principles be provided (Ref. 1). One of these systems must be capable of holding the reactor core subcritical under cold conditions. The Chemical and Volume Control System (CVCS) is the system capable of maintaining the reactor subcritical in cold conditions by maintaining the boron concentration.

The reactor is brought to shutdown conditions before beginning operations to open the reactor vessel for refueling. After the RCS is cooled and depressurized and the vessel head is unbolted, the head is slowly removed to form the refueling cavity. The refueling canal and the refueling cavity are then flooded with borated water from the refueling water storage tank through the open reactor vessel by gravity feeding or by the use of the Residual Heat Removal (RHR) System pumps.

The pumping action of the RHR System in the RCS and the natural circulation due to thermal driving heads in the reactor vessel and refueling cavity mix the added concentrated boric acid with the water in the refueling canal. The RHR System is in operation during refueling (see LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level") to provide forced circulation in the RCS and assist in maintaining the boron concentrations in the RCS, the refueling canal, and the refueling cavity above the COLR limit.

BASES

INSERT 1

APPLICABLE SAFETY ANALYSES

~~During refueling operations, the reactivity condition of the core is consistent with the initial conditions assumed for the boron dilution accident in the accident analysis and is conservative for MODE 6.~~ The boron concentration limit specified in the COLR is based on the core reactivity at the beginning of each fuel cycle (the end of refueling) and includes an uncertainty allowance.

2

The required boron concentration and the plant refueling procedures that verify the correct fuel loading plan (including full core mapping) ensure that the k_{eff} of the core will remain ≤ 0.95 during the refueling operation. Hence, at least a 5% Δk/k margin of safety is established during refueling.

During refueling, the water volume in the spent fuel pool, the transfer canal, the refueling canal, the refueling cavity, and the reactor vessel form a single mass. As a result, the soluble boron concentration is relatively the same in each of these volumes.

~~during startup~~

The limiting boron dilution accident analyzed occurs ~~in MODE 5~~ (Ref. 2). A detailed discussion of this event is provided in Bases B 3.1.1, "SHUTDOWN MARGIN (SDM)."

2

stet

RPG-010

The RCS boron concentration satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requires that a minimum boron concentration be maintained in the RCS, the refueling canal, and the refueling cavity while in MODE 6. The boron concentration limit specified in the COLR ensures that a core k_{eff} of ≤ 0.95 is maintained during fuel handling operations. Violation of the LCO could lead to an inadvertent criticality during MODE 6.

APPLICABILITY

This LCO is applicable in MODE 6 to ensure that the fuel in the reactor vessel will remain subcritical. The required boron concentration ensures a k_{eff} ≤ 0.95. Above MODE 6, LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," ensures that an adequate amount of negative reactivity is available to shut down the reactor and maintain it subcritical.

The Applicability is modified by a Note. The Note states that the limits on boron concentration are only applicable to the refueling canal and the refueling cavity when those volumes are connected to the RCS. When the refueling canal and the refueling cavity are isolated from the RCS, no potential path for boron dilution exists.

ACTIONS

A.1

Continuation of positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant

2

INSERT 1

An uncontrolled boron dilution accident is not credible during refueling. This accident is prevented by administrative controls which isolate the RCS from significant sources of unborated water.

BASES

ACTIONS (continued)

volume in the RCS, the refueling canal, or the refueling cavity is less than its limit, all operations involving positive reactivity additions must be suspended immediately.

Suspension of positive reactivity additions shall not preclude moving a component to a safe position. Operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

A.2

In addition to immediately suspending positive reactivity additions, boration to restore the concentration must be initiated immediately.

In determining the required combination of boration flow rate and concentration, no unique Design Basis Event must be satisfied. The only requirement is to restore the boron concentration to its required value as soon as possible. In order to raise the boron concentration as soon as possible, the operator should begin boration with the best source available for unit conditions.

Once actions have been initiated, they must be continued until the boron concentration is restored. The restoration time depends on the amount of boron that must be injected to reach the required concentration.

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

This SR ensures that the coolant boron concentration in the RCS, and connected portions of the refueling canal and the refueling cavity, is within the COLR limits. The boron concentration of the coolant in each required volume is determined periodically by chemical analysis. Prior to re-connecting portions of the refueling canal or the refueling cavity to the RCS, this SR must be met per SR 3.0.4. If any dilution activity has occurred while the cavity or canal were disconnected from the RCS, this SR ensures the correct boron concentration prior to communication with the RCS.

~~[A minimum Frequency of once every 72 hours is a reasonable amount of time to verify the boron concentration of representative samples. The Frequency is based on operating experience, which has shown 72 hours to be adequate.~~

3

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ 3

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.~~ 4
~~]~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.

U
2. FSAR, Chapter ~~[~~15~~]~~. 2 5

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.1 BASES, BORON CONCENTRATION

1. Editorial changes made for enhanced clarity.

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 SR 3.9.1.1 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.

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. 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.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.1, BORON CONCENTRATION

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

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ATTACHMENT 2

ITS 3.9.2, UNBORATED WATER SOURCE ISOLATION VALVES

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

ITS A01 ITS 3.9.2

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1 With the reactor vessel head closure bolts less than fully tensioned or with the head removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met:

a. Either a Keff of 0.95 or less, which includes a 1% delta k/k conservative allowance for uncertainties, or
b. A boron concentration of greater than or equal to 2000 ppm, which includes a 50 ppm conservative allowance for uncertainties.

See ITS 3.9.1

Add proposed LCO 3.9.2 — A02

Applicability

APPLICABILITY: MODE 6* — A03

ACTION:

Add proposed ACTIONS Note and ACTION A — L01

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and initiate and continue boration at greater than or equal to 35 gpm of a solution containing greater than or equal to 6120 ppm boron or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 2000 ppm, whichever is the more restrictive. The provisions of Specification 3.0.3 are not applicable.

See ITS 3.9.1

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and
b. Withdrawal of any full length control rod in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

See ITS 3.9.1

4.9.1.2 The boron concentration of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

~~* The reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.~~ — A03

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ITS

A01

ITS 3.9.2

3/4.9 REFUELING OPERATIONS

SURVEILLANCE REQUIREMENTS (Continued)

LA01

SR 3.9.2.1

4.9.1.3 One of the following valve combinations shall be verified closed ~~under administrative control~~ ~~at least once per 72 hours~~:

In accordance with the Surveillance Frequency Control Program

LA02

~~Combination A~~	~~Combination B~~	~~Combination C~~	~~Combination D~~
~~a. 1-81-536~~	~~a. 1-81-536~~	~~a. 1-81-536~~	~~a. 1-81-536~~
~~b. 1-62-922~~	~~b. 1-62-922~~	~~b. 1-62-907~~	~~b. 1-62-907~~
~~c. 1-62-916~~	~~c. 1-62-916~~	~~c. 1-62-914~~	~~c. 1-62-914~~
~~d. 1-62-933~~	~~d. 1-62-940~~	~~d. 1-62-921~~	~~d. 1-62-921~~
	~~e. 1-62-696~~	~~e. 1-62-933~~	~~e. 1-62-940~~
	~~f. 1-62-929~~		~~f. 1-62-929~~
	~~g. 1-62-932~~		~~g. 1-62-932~~
	~~h. 1-FCV-62-128~~		~~h. 1-62-696~~
			~~i. 1-FCV-62-128~~

LA01

ITS

A01

ITS 3.9.2

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1 With the reactor vessel head closure bolts less than fully tensioned or with the head removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met:

a. Either a K_{eff} of 0.95 or less, which includes a 1% delta k/k conservative allowance for uncertainties, or

b. A boron concentration of greater than or equal to 2000 ppm, which includes a 50 ppm conservative allowance for uncertainties.

See ITS 3.9.1

Add proposed LCO 3.9.2

A02

Applicability

APPLICABILITY: MODE 6~~*~~

A03

ACTION:

Add proposed ACTIONS Note and ACTION A

L01

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and initiate and continue boration at greater than or equal to 35 gpm of a solution containing greater than or equal to 6120 ppm boron or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 2000 ppm, whichever is the more restrictive. The provisions of Specification 3.0.3 are not applicable.

See ITS 3.9.1

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full length control rod in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

See ITS 3.9.1

~~* The reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.~~

A03

ITS A01 ITS 3.9.2

REFUELING OPERATIONS

SURVEILLANCE REQUIREMENTS (Continued)

4.9.1.2 The boron concentration of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

See ITS 3.9.1

LA01

SR 3.9.2.1

4.9.1.3 One of the following valve combinations shall be verified closed ~~under administrative control~~ ~~at least once per 72 hours~~:

In accordance with the Surveillance Frequency Control Program

LA02

~~Combination A~~	~~Combination B~~	~~Combination C~~	~~Combination D~~
~~a. 2-81-536~~	~~a. 2-81-536~~	~~a. 2-81-536~~	~~a. 2-81-536~~
~~b. 2-62-922~~	~~b. 2-62-922~~	~~b. 2-62-907~~	~~b. 2-62-907~~
~~c. 2-62-916~~	~~c. 2-62-916~~	~~c. 2-62-914~~	~~c. 2-62-914~~
~~d. 2-62-933~~	~~d. 2-62-940~~	~~d. 2-62-921~~	~~d. 2-62-921~~
	~~e. 2-62-696~~	~~e. 2-62-933~~	~~e. 2-62-940~~
	~~f. 2-62-929~~		~~f. 2-62-929~~
	~~g. 2-62-932~~		~~g. 2-62-932~~
	~~h. 2-FCV-62-128~~		~~h. 2-62-696~~
			~~i. 2-FCV-62-128~~

LA01

DISCUSSION OF CHANGES
ITS 3.9.2, UNBORATED WATER SOURCE 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 4.9.1.3 requires one of four different valve combinations to be verified closed. However, this Surveillance is part of the Boron Concentration Specification. Additionally, CTS 3.9.1 is titled Boron Concentration. A new LCO, ITS LCO 3.9.2, requires one of the four valve combinations used to isolate unborated water sources to be in the closed position. Furthermore, ITS 3.9.2 is titled Unborated Water Source Isolation Valves. This changes the CTS by having a separate Specification for the unborated water source isolation valves requirement and changing the title.

This change is acceptable because the requirements have not changed. Converting the requirements from a Surveillance to an LCO is consistent with the ITS format and content guidance. Any technical changes resulting from this change are discussed in other DOCs. This change is designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 3.9.1 Applicability is MODE 6 and contains a Note (Note *) which states that the reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed. ITS LCO 3.9.2 Applicability is MODE 6. This changes the CTS by not including wording about the reactor vessel head closure bolts less than fully tensioned or the head removed.

This change is acceptable because the technical requirements have not changed. ITS Chapter 1.0, Table 1.1-1 defines MODE 6 as when one or more of the reactor vessel head bolts are less than fully tensioned. Therefore, there is no need to repeat the MODE 6 requirements in the LCO and the Applicability. This change has been designated as administrative because the technical requirements of the specification have not changed.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

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DISCUSSION OF CHANGES
ITS 3.9.2, UNBORATED WATER SOURCE ISOLATION VALVES

REMOVED DETAIL CHANGES

LA01 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.9.1.3 requires at least one valve combination to be verified closed, under administrative control. Additionally, CTS 4.9.1.3 lists the valve numbers for each of the valve combinations. ITS SR 3.9.2.1 requires the same verification without specifying that it is to be under administrative control. Furthermore, ITS SR 3.9.2.1 does not contain a list of the valves in each valve combination. This changes the CTS by moving the requirement to verify under administrative control and the list of valves in each valve combination 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 to verify that at least one combination of valves are in the closed position. 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.

LA02 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.9.1.3 requires, in part, at least one valve combination to be verified closed, at least once per 72 hours. ITS 3.9.2.1 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 Frequency 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.

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DISCUSSION OF CHANGES
ITS 3.9.2, UNBORATED WATER SOURCE ISOLATION VALVES

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.9.1 does not contain an ACTION for when a combination of valves used to secure unborated water sources is not secured in the closed position. ITS 3.9.2 ACTION A requires that when one or more valves in the required valve combination are not secured in the closed position, to immediately initiate actions to secure the valve in the closed position and to perform SR 3.9.1.1 within 4 hours. ITS 3.9.2 Condition A contains a Note which requires that Required Action A.2 be completed whenever Condition A is entered. Additionally, ITS 3.9.2 ACTIONS contains a Note that allows a separate Condition entry for each valve in the required valve combination. This changes the CTS by adding a specific ACTION for when one or more of the valves in the required valve combination are not secured in the closed position and allowing a separate Condition entry for each valve in the required valve combination that is not secured in the closed position.

The purpose of CTS 4.9.1.3 is to verify that each valve in one of the valve combinations is closed. 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. The immediate Completion Time of Required Action A.1 allows the operator time to initiate an action to close an open valve and secure the isolation valve in the closed position. The 4 hour Completion Time of Required Action A.2, which must be performed any time Condition A is entered, is provided so that a reactor coolant sample can be obtained and analyzed for boron concentration. These Required Actions will help in the prevention and identification of an inadvertent boron dilution event. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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

1

3.9 REFUELING OPERATIONS

3.9.2 [Unborated Water Source Isolation Valves]

1

---REVIEWER'S NOTE---

This Technical Specification is not required for units that have analyzed a boron dilution event in MODE 6. It is required for those units that have not analyzed a boron dilution event in MODE 6. For units which have not analyzed a boron dilution event in MODE 6, the isolation of all unborated water sources is required to preclude this event from occurring.

2

DOC A02

LCO 3.9.2 Each valve in the required valve combination used to isolate unborated water sources shall be secured in the closed position.

3

Applicability

APPLICABILITY: MODE 6.

ACTIONS

---NOTE---

DOC L01

Separate Condition entry is allowed for each unborated water source isolation valve in the required valve combination.

3

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01 A. ----------NOTE---------- Required Action A.2 must be completed whenever Condition A is entered. ---------- One or more valves in the required valve combination not secured in closed position.	A.1 Initiate actions to secure valve in closed position. AND A.2 Perform SR 3.9.1.1.	Immediately 4 hours

3

3

CTS

[Unborated Water Source Isolation Valves] 1
3.9.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.1.3 SR 3.9.2.1	Verify each valve in the required valve combination that isolates unborated water sources is secured in the closed position.	[31 days OR In accordance with the Surveillance Frequency Control Program] 4 4

1

3.9 REFUELING OPERATIONS

3.9.2 [Unborated Water Source Isolation Valves]

1

---REVIEWER'S NOTE---

This Technical Specification is not required for units that have analyzed a boron dilution event in MODE 6. It is required for those units that have not analyzed a boron dilution event in MODE 6. For units which have not analyzed a boron dilution event in MODE 6, the isolation of all unborated water sources is required to preclude this event from occurring.

2

DOC A02

LCO 3.9.2 Each valve in the required valve combination used to isolate unborated water sources shall be secured in the closed position.

3

Applicability

APPLICABILITY: MODE 6.

ACTIONS

---NOTE---

DOC L01

Separate Condition entry is allowed for each unborated water source isolation valve in the required valve combination.

3

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01 A. ----------NOTE---------- Required Action A.2 must be completed whenever Condition A is entered. ---------- One or more valves in the required valve combination not secured in closed position.	A.1 Initiate actions to secure valve in closed position. AND A.2 Perform SR 3.9.1.1.	Immediately 4 hours

3

3

CTS

[Unborated Water Source Isolation Valves] 1
3.9.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.1.3 SR 3.9.2.1	Verify each valve in the required valve combination that isolates unborated water sources is secured in the closed position.	[31 days OR In accordance with the Surveillance Frequency Control Program] 4 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.2, UNBORATED WATER SOURCE ISOLATION VALVES

1. 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.

2. 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.

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.

4. ISTS SR 3.9.2.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

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

1

B 3.9 REFUELING OPERATIONS

B 3.9.2 [Unborated Water Source Isolation Valves]

1

BASES

in a specified combination

BACKGROUND	During MODE 6 operations, all isolation valves for reactor makeup water sources containing unborated water that are connected to the Reactor Coolant System (RCS) must be closed to prevent unplanned boron dilution of the reactor coolant. The isolation valves must be secured in the closed position. The Chemical and Volume Control System is capable of supplying borated and unborated water to the RCS through various flow paths. Since a positive reactivity addition made by reducing the boron concentration is inappropriate during MODE 6, isolation of all unborated water sources prevents an unplanned boron dilution.
APPLICABLE SAFETY ANALYSES	The possibility of an inadvertent boron dilution event (Ref. 1) occurring during MODE 6 refueling operations is precluded by adherence to this LCO, which requires that potential dilution sources be isolated. Closing the required valves during refueling operations prevents the flow of unborated water to the filled portion of the RCS. The valves are used to isolate unborated water sources. These valves have the potential to indirectly allow dilution of the RCS boron concentration in MODE 6. By isolating unborated water sources, a safety analysis for an uncontrolled boron dilution accident in accordance with the Standard Review Plan (Ref. 2) is not required for MODE 6. The RCS boron concentration satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).
LCO	This LCO requires that flow paths to the RCS from unborated water sources be isolated to prevent unplanned boron dilution during MODE 6 and thus avoid a reduction in SDM. INSERT 1
APPLICABILITY	In MODE 6, this LCO is applicable to prevent an inadvertent boron dilution event by ensuring isolation of all sources of unborated water to the RCS. For all other MODES, the boron dilution accident was analyzed and was found to be capable of being mitigated.

2

3

3

3

INSERT 1

These flow paths are isolated by securing, in the closed position, each valve in one of the valve combinations listed in Table B 3.9.2-1.

BASES

ACTIONS

The ACTIONS Table has been modified by a Note that allows separate Condition entry for each unborated water source isolation valve in the required valve combination

A.1

Preventing inadvertent dilution of the reactor coolant boron concentration is dependent on maintaining the unborated water isolation valves secured closed. Securing the valves in the closed position ensures that the valves cannot be inadvertently opened. The Completion Time of "immediately" requires an operator to initiate actions to close an open valve and secure the isolation valve in the closed position immediately. Once actions are initiated, they must be continued until the valves are secured in the closed position.

The intent of this Required Action is that

A.2

Due to the potential of having diluted the boron concentration of the reactor coolant, SR 3.9.1.1 (verification of boron concentration) must be performed whenever Condition A is entered to demonstrate that the required boron concentration exists. The Completion Time of 4 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration.

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

At least one combination of valves, listed in Table B 3.9.2-1, is

~~These valves are~~ to be secured closed to isolate possible dilution paths. The likelihood of a significant reduction in the boron concentration during MODE 6 operations is remote due to the large mass of borated water in the refueling cavity and the fact that all unborated water sources are isolated, precluding a dilution. The boron concentration is checked ~~every 72 hours~~ during MODE 6 under SR 3.9.1.1. This Surveillance demonstrates that the valves are closed ~~through a system walkdown~~.

~~[The 31 day Frequency is based on engineering judgment and is considered reasonable in view of other administrative controls that will ensure that the valve opening is an unlikely possibility.~~

~~OR~~

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

,

,

by administrative means

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.~~

~~]~~

REFERENCES

1. FSAR, Section [15.2.4].
2. NUREG-0800, Section 15.4.6.

INSERT 2

3 **INSERT 2**

Table B 3.9.2-1
Unborated Water Source Isolation Valves

Isolation Valve Combination	Valve Numbers
Combination A	1-81-536 1-62-922 1-62-916 1-62-933
Combination B	1-81-536 1-62-922 1-62-916 1-62-940 1-62-696 1-62-929 1-62-932 1-FCV-62-128
Combination C	1-81-536 1-62-907 1-62-914 1-62-921 1-62-933
Combination D	1-81-536 1-62-907 1-62-914 1-62-921 1-62-940 1-62-929 1-62-932 1-62-696 1-FCV-62-128

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1

B 3.9 REFUELING OPERATIONS

B 3.9.2 [Unborated Water Source Isolation Valves]

1

BASES

in a specified combination

BACKGROUND	During MODE 6 operations, all isolation valves for reactor makeup water sources containing unborated water that are connected to the Reactor Coolant System (RCS) must be closed to prevent unplanned boron dilution of the reactor coolant. The isolation valves must be secured in the closed position. The Chemical and Volume Control System is capable of supplying borated and unborated water to the RCS through various flow paths. Since a positive reactivity addition made by reducing the boron concentration is inappropriate during MODE 6, isolation of all unborated water sources prevents an unplanned boron dilution.
APPLICABLE SAFETY ANALYSES	The possibility of an inadvertent boron dilution event (Ref. 1) occurring during MODE 6 refueling operations is precluded by adherence to this LCO, which requires that potential dilution sources be isolated. Closing the required valves during refueling operations prevents the flow of unborated water to the filled portion of the RCS. The valves are used to isolate unborated water sources. These valves have the potential to indirectly allow dilution of the RCS boron concentration in MODE 6. By isolating unborated water sources, a safety analysis for an uncontrolled boron dilution accident in accordance with the Standard Review Plan (Ref. 2) is not required for MODE 6. The RCS boron concentration satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).
LCO	This LCO requires that flow paths to the RCS from unborated water sources be isolated to prevent unplanned boron dilution during MODE 6 and thus avoid a reduction in SDM. INSERT 1
APPLICABILITY	In MODE 6, this LCO is applicable to prevent an inadvertent boron dilution event by ensuring isolation of all sources of unborated water to the RCS. For all other MODES, the boron dilution accident was analyzed and was found to be capable of being mitigated.

2

3

3

3 **INSERT 1**

These flow paths are isolated by securing, in the closed position, each valve in one of the valve combinations listed in Table B 3.9.2-1.

BASES

ACTIONS

The ACTIONS Table has been modified by a Note that allows separate Condition entry for each unborated water source isolation valve in the required valve combination.

A.1

Preventing inadvertent dilution of the reactor coolant boron concentration is dependent on maintaining the unborated water isolation valves secured closed. Securing the valves in the closed position ensures that the valves cannot be inadvertently opened. The Completion Time of "immediately" requires an operator to initiate actions to close an open valve and secure the isolation valve in the closed position immediately. Once actions are initiated, they must be continued until the valves are secured in the closed position.

The intent of this Required Action is that

A.2

Due to the potential of having diluted the boron concentration of the reactor coolant, SR 3.9.1.1 (verification of boron concentration) must be performed whenever Condition A is entered to demonstrate that the required boron concentration exists. The Completion Time of 4 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration.

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

At least one combination of valves, listed in Table B 3.9.2-1, is

~~These valves are~~ to be secured closed to isolate possible dilution paths. The likelihood of a significant reduction in the boron concentration during MODE 6 operations is remote due to the large mass of borated water in the refueling cavity and the fact that all unborated water sources are isolated, precluding a dilution. The boron concentration is checked ~~every 72 hours~~ during MODE 6 under SR 3.9.1.1. This Surveillance demonstrates that the valves are closed ~~through a system walkdown~~.

~~[The 31 day Frequency is based on engineering judgment and is considered reasonable in view of other administrative controls that will ensure that the valve opening is an unlikely possibility.~~

~~OR~~

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

,

,

by administrative means

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.~~

~~]~~

REFERENCES

1. FSAR, Section [15.2.4].

2. NUREG-0800, Section 15.4.6.

INSERT 2

3 **INSERT 2**

Table B 3.9.2-1
Unborated Water Source Isolation Valves

Isolation Valve Combination	Valve Numbers
Combination A	2-81-536 2-62-922 2-62-916 2-62-933
Combination B	2-81-536 2-62-922 2-62-916 2-62-940 2-62-696 2-62-929 2-62-932 2-FCV-62-128
Combination C	2-81-536 2-62-907 2-62-914 2-62-921 2-62-933
Combination D	2-81-536 2-62-907 2-62-914 2-62-921 2-62-940 2-62-929 2-62-932 2-62-696 2-FCV-62-128

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.2 BASES, UNBORATED WATER SOURCE ISOLATION VALVES

1. 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.

2. Changes are made to be consistent with changes made to Specification 3.9.1.

3. 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.

4. Changes made for enhanced clarity.

5. ISTS SR 3.9.2.1 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.

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.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.2, UNBORATED WATER SOURCE ISOLATION VALVES

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

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ATTACHMENT 3

ITS 3.9.3, NUCLEAR INSTRUMENTATION

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

ITS A01 ITS 3.9.3

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.3 3.9.2 As a minimum, two source range neutron flux monitors shall be OPERABLE ~~and operating~~, ~~each with continuous visual indication in the control room and one with audible indication in the containment and control room~~.

Applicability APPLICABILITY: MODE 6.

ACTION:

ACTION A

a. With one of the above required monitors inoperable ~~or not operating~~, immediately suspend ~~all operations involving~~ ~~CORE ALTERATIONS~~ and suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet LCO 3.9.1.

MHC001

stet

Add proposed Required Action B.1

ACTION B

b. With both of the above required monitors inoperable ~~or not operating~~, ~~determine the boron concentration of the reactor coolant system~~ at least once per 12 hours.

c. ~~The provisions of Specification 3.0.3 are not applicable.~~

positive reactivity additions

A02 A02 LA01 L01 L02 M01 A02 A03

SURVEILLANCE REQUIREMENTS

4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

SR 3.9.3.1

a. A CHANNEL CHECK ~~at least once per 12 hours~~, and

b. ~~A CHANNEL FUNCTIONAL TEST at least once per 7 days.~~

In accordance with the Surveillance Frequency Control Program

Add proposed SR 3.9.3.2 ~~at a Frequency of 18 months~~

In accordance with the Surveillance Frequency Control Program

LA02 L03 M02 LA02

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ITS A01 ITS 3.9.3

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.3 3.9.2 As a minimum, two source range neutron flux monitors shall be OPERABLE ~~and operating~~, ~~each with continuous visual indication in the control room and one with audible indication in the containment and control room.~~

Applicability APPLICABILITY: MODE 6.

ACTION:

ACTION A a. With one of the above required monitors inoperable ~~or not operating~~, immediately suspend ~~all operations involving CORE ALTERATIONS~~ and suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet LCO 3.9.1.

MHC001

stet

Add proposed Required Action B.1

ACTION B b. With both of the above required monitors inoperable ~~or not operating~~, determine the boron concentration of the reactor coolant system at least once per 12 hours.

c. ~~The provisions of Specification 3.0.3 are not applicable~~.

SURVEILLANCE REQUIREMENTS

4.9.2 Each source range neutron flux monitor shall be demonstrated OPERABLE by performance of:

SR 3.9.3.1 a. A CHANNEL CHECK ~~at least once per 12 hours~~, and

In accordance with the Surveillance Frequency Control Program

b. ~~A CHANNEL FUNCTIONAL TEST at least once per 7 days.~~

Add proposed SR 3.9.3.2 ~~at a Frequency of 18 months~~

In accordance with the Surveillance Frequency Control Program

DISCUSSION OF CHANGES
ITS 3.9.3, NUCLEAR INSTRUMENTATION

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 3.9.2 requires, in part, that two source range neutron flux monitors are to be OPERABLE and operating. Additionally, CTS 3.9.2 ACTIONS a and b contain compensatory actions to take when one or more source range neutron flux monitors are not operating. ITS LCO 3.9.3 requires, in part, two source range neutron flux monitors to be OPERABLE, but does not require the source range monitors to be operating. Furthermore, ITS 3.9.3 ACTIONS A and B do not contain compensatory actions to take when one or more of the source range neutron monitors are not operating. This changes the CTS by removing the statement that the source range neutron flux monitors are required to be operating.

The purpose of the source range neutron flux monitors is to monitor core reactivity during refueling operations and provide a signal to the operators if an unexpected reactivity change occurs. This change is acceptable because the requirements have not changed. In accordance with the ITS definition of OPERABLE, to be OPERABLE a device must be capable of performing its specified safety function. For the source range neutron flux monitors, this also requires them to be operating in order to perform their safety function. This change is considered administrative and acceptable because it does not result in a technical change to the CTS.

A03 CTS 3.9.2 ACTION c states that the provisions of Specification 3.0.3 are not applicable. ITS 3.9.3 does not contain this statement. This changes the CTS by not stating an exception to Specification 3.0.3.

This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS Specification 3.0.3 exception is not needed. This change is designated as administrative since it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.9.2 ACTION b requires that when both of the source range neutron flux monitors are inoperable, to determine the boron concentration of the reactor coolant system at least once per 12 hours. ITS 3.9.3 ACTION B requires the determination of the boron concentration every 12 hours (performance of SR 3.9.1.1), but also requires the immediate initiation of an action to restore one

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of the source range neutron flux monitors to OPERABLE status. This changes the CTS requirements by requiring an action to immediately initiate action to restore one source range neutron flux monitor to OPERABLE status.

The purpose of this change is to provide the necessary Required Actions that are appropriate for a loss of both source range neutron flux monitors. This change is acceptable because the proposed Required Action is reasonable and necessary to maintain the reactor in a safe condition. This change is designated as more restrictive because it provides an additional action that is not provided in the CTS.

M02 CTS 4.9.2 requires the performance of a CHANNEL CHECK of the source range neutron flux monitors but does not require the performance of a CHANNEL CALIBRATION. ITS SR 3.9.3.2 requires performance of CHANNEL CALIBRATION of the source range neutron flux monitors on an 18 month interval. This Surveillance is modified by a Note which states that the Neutron detectors are excluded from the CHANNEL CALIBRATION. This changes the CTS by adding a new Surveillance Requirement to periodically verify the calibration of the source range neutron flux monitors. See DOC LA02 for discussion of relocation of the Surveillance Frequency to the Surveillance Frequency Control Program.

The purpose of ITS SR 3.9.3.2 is to provide additional assurance that the source range neutron flux monitors are capable of providing a reliable and accurate indication of core subcritical neutron flux. This change is acceptable because the CHANNEL CALIBRATION will ensure that that source range neutron flux monitors are capable of providing a reliable and accurate indication of core subcritical neutron flux while in MODE 6. This change is more restrictive because it provides an additional Surveillance Requirement that was not required in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.9.2 requires two source range neutron flux monitors to be OPERABLE and operating, stating in part, "each with continuous visual indication in the control room." ITS LCO 3.9.3 requires the two source range neutron flux monitors to be OPERABLE. This changes the CTS by moving the requirement that each channel has a continuous visual indication in the control room 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 retains the requirements for two

source range neutron flux monitors to be OPERABLE, and continues to require the verification of OPERABILITY. This change is acceptable because the removed information will be adequately 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 4.9.2.a requires that each source range neutron flux monitor be demonstrated OPERABLE by performance of a CHANNEL CHECK at least once per 12 hours. ITS SR 3.9.3.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." Additionally, a new Surveillance Requirement (SR 3.9.3.2) is being added to perform a CHANNEL CALIBRATION of the source range neutron flux monitors on an 18 month Frequency. The 18 month Frequency for ITS SR 3.9.3.2 will also be changed to "In accordance with the Surveillance Frequency Control Program." (See DOC M02 for the discussion on the addition of SR 3.9.3.2.) 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 1 – Relaxation of LCO Requirements)* CTS 3.9.2 requires, in part, two source range neutron flux monitors to be OPERABLE with one having audible indication in the containment and control room. ITS LCO 3.9.3 requires two source range neutron flux monitors to be OPERABLE but does not require an audible indication. This changes the CTS by not requiring one of the two source range neutron flux monitors to have audible indication in the control room or containment.

The purpose of the audible indication in the containment and control room is to alert the operator of a possible dilution accident. There are two methods used to

DISCUSSION OF CHANGES
ITS 3.9.3, NUCLEAR INSTRUMENTATION

address a boron dilution event for Westinghouse plants. One method relies on precluding a boron dilution event by requiring all unborated water source isolation valves to be closed. Plants using this method contain a Technical Specification requirement to isolate all potential sources of unborated water. The other method is an analysis which assumes a maximum unborated water flow and determines that there is adequate time for operator action to mitigate the event. The operator action uses the audible indicator (count rate) to alert the operator of a possible dilution accident. This change is acceptable because SQN does not analyze a boron dilution accident during MODE 6 and isolates the boron dilution paths. Therefore, the possibility of an inadvertent boron dilution event occurring during MODE 6 refueling operations is precluded by adherence to ITS LCO 3.9.2, "Unborated Water Source Isolation Valves" which requires that potential dilution sources be isolated. This is accomplished by closing unborated water source isolation valves during refueling operations. Thus, the flow of unborated water to the filled portion of the RCS is prevented. This change has been designated as less restrictive because a less stringent LCO requirement is being applied in the ITS than was applied in the CTS.

L02 ~~*(Category 4 – Relaxation of Required Action)* CTS 3.9.2 ACTION a requires, in part, with one source range neutron flux monitor inoperable to immediately suspend all operations involving CORE ALTERATIONS. Under similar conditions, ITS 3.9.3 Required Action A.1 requires suspension of positive reactivity additions. This changes the CTS by requiring suspension of positive reactivity additions instead of suspending CORE ALTERATIONS.~~

MHC001

Not Used

~~The purpose of the source range neutron flux monitors is to monitor core reactivity during refueling operations and provide a signal to the operators if an unexpected reactivity change occurs. Thus, when a source range monitor is inoperable, CORE ALTERATIONS are suspended to preclude an unmonitored reactivity change. CORE ALTERATIONS is defined in CTS 1.9, in part, as "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." CORE ALTERATIONS only occur when the reactor vessel head is removed; therefore, it only applies to MODE 6. There are two evolutions encompassed under the term CORE ALTERATION that could affect the reactivity of the core. They are the addition of fuel to the reactor vessel and the withdrawal of control rods. However, ITS 3.9.3 Required Action A.1 requires immediate suspension of positive reactivity changes, except the introduction of coolant into the RCS. This would include both the addition of fuel to the reactor vessel and the withdrawal of control rods. Therefore, since the CORE ALTERATIONS of concern are only those that could affect positive reactivity in the core and these are suspended by ITS 3.9.3 Required Action A.1, changing the requirement from suspending "CORE ALTERATIONS" to suspending "positive reactivity additions" is acceptable. This change has been designated as less restrictive because a less stringent Required Action is being applied in the ITS than was applied in the CTS.~~

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.9.2.b requires each source range neutron flux monitor to be demonstrated OPERABLE by performance of a CHANNEL FUNCTIONAL TEST at least once per 7 days. ITS 3.9.3 does not require the performance of a CHANNEL FUNCTIONAL TEST

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DISCUSSION OF CHANGES
ITS 3.9.3, NUCLEAR INSTRUMENTATION

for the source range neutron flux monitors. This changes the CTS by deleting the requirement to perform a CHANNEL FUNCTIONAL TEST.

The purpose of CTS 4.9.2.b is to verify that the source range neutron flux monitors are capable of performing their safety function. ITS SR 3.9.3.2 requires a CHANNEL CALIBRATION of the source range neutron flux monitors every 18 month. (See DOC M02 for discussion on the addition of the CHANNEL CALIBRATION.) Because the CHANNEL CALIBRATION test includes steps similar to the CTS CHANNEL FUNCTIONAL TEST, the source range neutron flux monitors will continue to be capable of performing their safety function. This change has been designated as less restrictive because a Surveillance Requirement required in the CTS is no longer required in the ITS.

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

CTS

3.9 REFUELING OPERATIONS

3.9.3 Nuclear Instrumentation

3.9.2

LCO 3.9.3 Two source range neutron flux monitors shall be OPERABLE.

~~AND~~

~~[One source range audible [alarm] [count rate] circuit shall be OPERABLE.]~~

3

Applicability

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ~~[required]~~ source range neutron flux monitor inoperable.	A.1 ~~Suspend positive reactivity additions.~~ AND A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately Immediately
B. Two ~~[required]~~ source range neutron flux monitors inoperable.	B.1 Initiate action to restore one source range neutron flux monitor to OPERABLE status. AND B.2 Perform SR 3.9.1.1.	Immediately Once per 12 hours

ACTION a

ACTION b
DOC M01

MHC001

Suspend CORE ALTERATIONS.

1 5

1

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~----REVIEWER'S NOTE---- Condition C is included only for plants that assume a boron dilution event is mitigated by operator response to an audible source range indication. ----------~~ ~~C. [Required source range audible [alarm] [count rate] circuit inoperable.~~	~~C.1 Initiate action to isolate unborated water sources.~~	~~Immediately]~~

3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Perform CHANNEL CHECK.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~

4.9.2.a

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CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
DOC M02 SR 3.9.3.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ----------	
	Perform CHANNEL CALIBRATION.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~ (4) (4)

CTS

3.9 REFUELING OPERATIONS

3.9.3 Nuclear Instrumentation

3.9.2

LCO 3.9.3 Two source range neutron flux monitors shall be OPERABLE.

~~AND~~

~~[One source range audible [alarm] [count rate] circuit shall be OPERABLE.]~~

3

Applicability

APPLICABILITY: MODE 6.

MHC001

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a A. One ~~[required]~~ source range neutron flux monitor inoperable.	A.1 ~~Suspend positive reactivity additions.~~ Suspend CORE ALTERATIONS. AND A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately Immediately
ACTION b DOC M01 B. Two ~~[required]~~ source range neutron flux monitors inoperable.	B.1 Initiate action to restore one source range neutron flux monitor to OPERABLE status. AND B.2 Perform SR 3.9.1.1.	Immediately Once per 12 hours

1 5

1

2

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~----REVIEWER'S NOTE---- Condition C is included only for plants that assume a boron dilution event is mitigated by operator response to an audible source range indication. ----------~~ ~~C. [Required source range audible [alarm] [count rate] circuit inoperable.~~	~~C.1 Initiate action to isolate unborated water sources.~~	~~Immediately]~~

3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.3.1	Perform CHANNEL CHECK.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~

4.9.2.a

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CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
DOC M02 SR 3.9.3.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ----------	
	Perform CHANNEL CALIBRATION.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~ (4) (4)

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3, NUCLEAR INSTRUMENTATION

1. 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.

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. ISTS 3.9.3 contains bracketed options for source range OPERABILITY requirements to include audible alarm and count rate function. The bracketed information is required to be included for plants that assume a boron dilution event that is mitigated by operator response to an audible indication. For plants that do not have an analyzed boron dilution event in MODE 6, ISTS 3.9.2 is incorporated and the bracket values in ISTS 3.9.3 are not required. Since Sequoyah Nuclear Plant (SQN) does not assume a boron dilution event in MODE 6, ITS 3.9.2 has been adopted and the requirements for an audible alarm and count rate have been removed from ITS 3.9.3. Therefore, the ISTS LCO 3.9.3 requirement that "One source range audible [alarm][count rate] circuit shall be OPERABLE," has not been incorporated into ITS 3.9.3. Furthermore, ISTS 3.9.3 ACTION C, which requires that when the source range audible [alarm][count rate] circuit is inoperable to immediately initiate action to isolate unborated water sources, has not been incorporate in ITS 3.9.3.

4. ISTS SR 3.9.3.1 and ISTS 3.9.3.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

5. ISTS 3.9.3 Required Action A.1 requires immediate suspension of positive reactivity additions. ITS 3.9.3 Required Action A.1 requires immediate suspension of CORE ALTERATIONS. This change reflects the retention of CTS 3.9.2 Action a, that requires with one source range neutron flux monitor inoperable, "immediately suspend all operations involving CORE ALTERATIONS."

MHC001

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

B 3.9 REFUELING OPERATIONS

B 3.9.3 Nuclear Instrumentation

BASES

BACKGROUND

~~REVIEWER'S NOTE~~

~~Bracketed options are provided for source range OPERABILITY requirements to include audible alarm or count rate function. These options apply to plants that assume a boron dilution event that is mitigated by operator response to an audible indication. For plants that isolate all boron dilution paths (per LCO 3.9.2), the source range OPERABILITY includes only a visual monitoring function.~~

1

The source range neutron flux monitors are used during refueling operations to monitor the core reactivity condition. The installed source range neutron flux monitors are part of the Nuclear Instrumentation System (NIS). These detectors are located external to the reactor vessel and detect neutrons leaking from the core.

Dual Chamber Unguarded Fission Chamber

The installed source range neutron flux monitors are ~~BF3~~ detectors ~~operating in the proportional region of the gas filled detector characteristic curve~~. The detectors monitor the neutron flux in counts per second. The instrument range covers six decades of neutron flux (1E+6 cps) with a ~~[5]~~% instrument accuracy. The detectors also provide continuous visual indication in the control room ~~[~~and an audible ~~[alarm] [~~count rate~~] to alert operators to a possible dilution accident].~~ The NIS is designed in accordance with the criteria presented in Reference 1.

2

7

in the containment and the control room.

3

3

APPLICABLE SAFETY ANALYSES

MHC001

Two OPERABLE source range neutron flux monitors are required to provide a signal to alert the operator to unexpected changes in core reactivity such as ~~with a boron dilution accident (Ref. 2) or~~ an improperly loaded fuel assembly. ~~[The audible count rate from the source range neutron flux monitors provides prompt and definite indication of any boron dilution. The count rate increase is proportional to the subcritical multiplication factor and allows operators to promptly recognize the initiation of a boron dilution event. Prompt recognition of the initiation of a boron dilution event is consistent with the assumptions of the safety analysis and is necessary to assure sufficient time is available for isolation of the primary water makeup source before SHUTDOWN MARGIN is lost (Ref. 2).]~~

stet

2

(Ref. 3)

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INSERT 1

2

7 2 **INSERT 1**

The need for a requirement for the source range neutron flux monitors to mitigate an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves."

Fuel assembly loading errors are prevented by administrative procedures implemented during core loading (Ref. 3). These administrative procedures include detailed neutron count rate monitoring to determine that the just loaded fuel assembly does not excessively increase the count rate and that the extrapolated inverse count rate ratio is not decreasing for unexplained reasons.

MHC001

The source range neutron flux monitors are not assumed to function during a MODE 6 design basis accident or transient. However, because the source range neutron flux monitors provide the primary on-scale monitoring of neutron flux levels during refueling, they are retained in the technical specifications.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

~~REVIEWER'S NOTE~~

~~The need for a safety analysis for an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves."~~

1

MHC001

~~The source range neutron flux monitors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

7

LCO

This LCO requires that two source range neutron flux monitors be OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity. To be OPERABLE, each monitor must provide visual indication ~~[~~in the control room~~]~~. ~~[In addition, at least one of the two monitors must provide an OPERABLE audible [alarm] [count rate] function to alert the operators to the initiation of a boron dilution event.]~~

4

APPLICABILITY

In MODE 6, the source range neutron flux monitors must be OPERABLE to determine changes in core reactivity. There are no other direct means available to check core reactivity levels. In MODES 2, 3, 4, and 5, these same installed source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation ~~[~~and LCO 3.3.9, "~~BDPS~~"~~]~~.

3

Boron Dilution Monitoring Instrumentation (BDMI)

ACTIONS

A.1 and A.2

MHC001

With only one source range neutron flux monitor OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, ~~positive reactivity additions and~~ introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1 must be suspended immediately. Suspending ~~positive reactivity additions that could result in failure to meet the minimum boron concentration limit~~ is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than ~~that~~ what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position.

CORE ALTERATIONS

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SII

Stet "and"

CORE ALTERATIONS

4

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BASES

ACTIONS (continued)

B.1

With no source range neutron flux monitor OPERABLE, action to restore a monitor to OPERABLE status shall be initiated immediately. Once initiated, action shall be continued until a source range neutron flux monitor is restored to OPERABLE status.

B.2

With no source range neutron flux monitor OPERABLE, there are no direct means of detecting changes in core reactivity. However, since positive reactivity additions are not to be made, the core reactivity condition is stabilized until the source range neutron flux monitors are OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to ensure that the required boron concentration exists.

The Completion Time of once per 12 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration and ensures that unplanned changes in boron concentration would be identified. The 12 hour Frequency is reasonable, considering the low probability of a change in core reactivity during this time period.

~~[C.1~~

~~With no audible [alarm] [count rate] OPERABLE, prompt and definite indication of a boron dilution event, consistent with the assumptions of the safety analysis, is lost. In this situation, the boron dilution event may not be detected quickly enough to assure sufficient time is available for operators to manually isolate the unborated water source and stop the dilution prior to the loss of SHUTDOWN MARGIN. Therefore, action must be taken to prevent an inadvertent boron dilution event from occurring. This is accomplished by isolating all the unborated water flow paths to the Reactor Coolant System. Isolating these flow paths ensures that an inadvertent dilution of the reactor coolant boron concentration is prevented. The Completion Time of "Immediately" assures a prompt response by operations and requires an operator to initiate actions to isolate an affected flow path immediately. Once actions are initiated, they must be continued until all the necessary flow paths are isolated or the circuit is restored to OPERABLE status.]~~ 4

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

SR 3.9.3.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

~~[The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1.~~

~~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.~~
~~]~~

SR 3.9.3.2

SR 3.9.3.2 is the performance of a CHANNEL CALIBRATION. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. ~~[The CHANNEL CALIBRATION also includes verification of the audible [alarm] [count rate] function.] [The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency.~~

~~OR~~

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

10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.

RPG-008

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.~~

~~]~~

1

REFERENCES

1. ~~10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29~~.

2

UFSAR, Section 7.1.2

U

2. FSAR, Section ~~[~~15.2.4~~]~~.

3 2

3. UFSAR, Section 15.3.3

2

B 3.9 REFUELING OPERATIONS

B 3.9.3 Nuclear Instrumentation

BASES

BACKGROUND

~~REVIEWER'S NOTE~~

~~Bracketed options are provided for source range OPERABILITY requirements to include audible alarm or count rate function. These options apply to plants that assume a boron dilution event that is mitigated by operator response to an audible indication. For plants that isolate all boron dilution paths (per LCO 3.9.2), the source range OPERABILITY includes only a visual monitoring function.~~

The source range neutron flux monitors are used during refueling operations to monitor the core reactivity condition. The installed source range neutron flux monitors are part of the Nuclear Instrumentation System (NIS). These detectors are located external to the reactor vessel and detect neutrons leaking from the core.

Dual Chamber Unguarded Fission Chamber

The installed source range neutron flux monitors are ~~BF3~~ detectors ~~operating in the proportional region of the gas filled detector characteristic curve~~. The detectors monitor the neutron flux in counts per second. The instrument range covers six decades of neutron flux (1E+6 cps) with a ~~[5]~~% instrument accuracy. The detectors also provide continuous visual indication in the control room ~~[~~and an audible ~~[alarm] [~~count rate~~] to alert operators to a possible dilution accident].~~ The NIS is designed in accordance with the criteria presented in Reference 1.

7

in the containment and the control room.

APPLICABLE SAFETY ANALYSES

MHC-001

stet

Two OPERABLE source range neutron flux monitors are required to provide a signal to alert the operator to unexpected changes in core reactivity such as with a boron dilution accident (Ref. 2) or an improperly loaded fuel assembly (Ref. 3). ~~[The audible count rate from the source range neutron flux monitors provides prompt and definite indication of any boron dilution. The count rate increase is proportional to the subcritical multiplication factor and allows operators to promptly recognize the initiation of a boron dilution event. Prompt recognition of the initiation of a boron dilution event is consistent with the assumptions of the safety analysis and is necessary to assure sufficient time is available for isolation of the primary water makeup source before SHUTDOWN MARGIN is lost (Ref. 2).]~~

INSERT 1

7 2 **INSERT 1**

The need for a requirement for the source range neutron flux monitors to mitigate an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves."

Fuel assembly loading errors are prevented by administrative procedures implemented during core loading (Ref. 3). These administrative procedures include detailed neutron count rate monitoring to determine that the just loaded fuel assembly does not excessively increase the count rate and that the extrapolated inverse count rate ratio is not decreasing for unexplained reasons.

MHC-001

The source range neutron flux monitors are not assumed to function during a MODE 6 design basis accident or transient. However, because the source range neutron flux monitors provide the primary on-scale monitoring of neutron flux levels during refueling, they are retained in the technical specifications.

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BASES

APPLICABLE SAFETY ANALYSES (continued)

~~REVIEWER'S NOTE~~

~~The need for a safety analysis for an uncontrolled boron dilution accident is eliminated by isolating all unborated water sources as required by LCO 3.9.2, "Unborated Water Source Isolation Valves."~~

MHC001

~~The source range neutron flux monitors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).~~

LCO

This LCO requires that two source range neutron flux monitors be OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity. To be OPERABLE, each monitor must provide visual indication ~~[~~in the control room~~]~~. ~~[In addition, at least one of the two monitors must provide an OPERABLE audible [alarm] [count rate] function to alert the operators to the initiation of a boron dilution event.]~~

APPLICABILITY

In MODE 6, the source range neutron flux monitors must be OPERABLE to determine changes in core reactivity. There are no other direct means available to check core reactivity levels. In MODES 2, 3, 4, and 5, these same installed source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.1, "Reactor Trip System (RTS) Instrumentation ~~[~~and LCO 3.3.9, "~~BDPS~~"~~]~~.

Boron Dilution Monitoring Instrumentation (BDMI)

ACTIONS

A.1 and A.2

MHC001

With only one source range neutron flux monitor OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, ~~positive reactivity additions and~~ introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1 must be suspended immediately. Suspending ~~positive reactivity additions that could result in failure to meet the minimum boron concentration limit~~ is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than ~~that~~ what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position.

CORE ALTERATIONS

SII

Stet "and"

CORE ALTERATIONS

BASES

ACTIONS (continued)

B.1

With no source range neutron flux monitor OPERABLE, action to restore a monitor to OPERABLE status shall be initiated immediately. Once initiated, action shall be continued until a source range neutron flux monitor is restored to OPERABLE status.

B.2

With no source range neutron flux monitor OPERABLE, there are no direct means of detecting changes in core reactivity. However, since positive reactivity additions are not to be made, the core reactivity condition is stabilized until the source range neutron flux monitors are OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to ensure that the required boron concentration exists.

The Completion Time of once per 12 hours is sufficient to obtain and analyze a reactor coolant sample for boron concentration and ensures that unplanned changes in boron concentration would be identified. The 12 hour Frequency is reasonable, considering the low probability of a change in core reactivity during this time period.

~~[C.1~~

~~With no audible [alarm] [count rate] OPERABLE, prompt and definite indication of a boron dilution event, consistent with the assumptions of the safety analysis, is lost. In this situation, the boron dilution event may not be detected quickly enough to assure sufficient time is available for operators to manually isolate the unborated water source and stop the dilution prior to the loss of SHUTDOWN MARGIN. Therefore, action must be taken to prevent an inadvertent boron dilution event from occurring. This is accomplished by isolating all the unborated water flow paths to the Reactor Coolant System. Isolating these flow paths ensures that an inadvertent dilution of the reactor coolant boron concentration is prevented. The Completion Time of "Immediately" assures a prompt response by operations and requires an operator to initiate actions to isolate an affected flow path immediately. Once actions are initiated, they must be continued until all the necessary flow paths are isolated or the circuit is restored to OPERABLE status.]~~ 4

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

SR 3.9.3.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

~~[The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1.~~

~~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.~~
~~]~~

SR 3.9.3.2

SR 3.9.3.2 is the performance of a CHANNEL CALIBRATION. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. ~~[The CHANNEL CALIBRATION also includes verification of the audible [alarm] [count rate] function.] [The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency.~~

~~OR~~

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

10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.

RPG-008

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.~~

~~]~~

1

REFERENCES

1. ~~10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29~~.

~~UFSAR, Section 7.1.2~~

U

2. FSAR, Section ~~[~~15.2.4~~]~~.

3. UFSAR, Section 15.3.3

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3 BASES, NUCLEAR INSTRUMENTATION

1. 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.

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. Changes are made to be consistent with changes made to the Specification.

5. Editorial changes made for enhanced clarity.

6. ISTS SR 3.9.3.1 and SR 3.9.3.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

7. ISTS 3.9.3 Applicable Safety Analysis (ASA) section states, "the source range neutron flux monitors satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii)." SQN's source range neutron flux monitors are not assumed to function during a MODE 6 design basis accident or transient. Therefore, the statement has been deleted from the ASA section. Furthermore, the ASA section is modified by the statement, "However, because the source range neutron flux monitors provide the primary on-scale monitoring of neutron flux during refueling, they are retained in the technical specifications." MHC-001

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.3, NUCLEAR INSTRUMENTATION

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

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ATTACHMENT 4

ITS 3.9.4, CONTAINMENT PENETRATIONS

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

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

LCO 3.9.4 3.9.4 The containment building penetrations shall be in the following status:

LCO 3.9.4.a a. The equipment door closed and held in place by a minimum of four bolts,

LCO 3.9.4.b b. A minimum of one door in each airlock is closed, and both doors of both containment personnel airlocks may be open if:

1. One personnel airlock door in each airlock is capable of closure, and

MHC006

STET

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~

A02

A03

(See ITS 3.7.12)

LCO 3.9.4.c c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

LCO 3.9.4.c.1 1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

LCO 3.9.4.c.2 2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILTY:

Applicability 3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

Applicability 3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of irradiated fuel within the containment.

recently L01

MHC003

ACTION:

ACTION A 1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~

A04

ACTION A 2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~

recently L01

A04

SURVEILLANCE REQUIREMENTS

MHC003

SR 3.9.4.1, SR 3.9.4.2 4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve ~~once per 7 days~~ during movement of irradiated fuel in the containment building by:

recently L01

A01

SR 3.9.4.1 a. Verifying the penetrations are in their required condition, or

~~once per 7 days~~

In accordance with the Surveillance Frequency Control Program

LA01

Add proposed SR 3.9.4.2 Note

SR 3.9.4.2 b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal.

L02

~~18 months~~

LA01

In accordance with the Surveillance Frequency Control Program

LCO 3.9.4 Note * Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

REFUELING OPERATIONS

3/4.9.9 CONTAINMENT VENTILATION ISOLATION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.9.4.c.2 3.9.9 The Containment Ventilation isolation system shall be OPERABLE.

Applicability APPLICABILITY: During movement of ~~irradiated~~ fuel within the containment.

recently L01 MHC003

ACTION:

LCO 3.9.4.c.1 With the Containment Ventilation isolation system inoperable, close each of the Ventilation penetrations providing direct access from the containment atmosphere to the outside atmosphere. ~~The provisions of Specification 3.0.3 are not applicable.~~ A04

SURVEILLANCE REQUIREMENTS

L02 Add proposed SR 3.9.4.2 Note L03

SR 3.9.4.2 Applicability

4.9.9 The Containment Ventilation isolation system shall be demonstrated OPERABLE ~~within 100 hours prior to the start of and~~ at least once ~~per 7 days~~ during movement of irradiated fuel within containment by verifying that Containment Ventilation isolation occurs on ~~manual initiation and on a high radiation test signal from each of the containment radiation monitoring instrumentation channels~~.

L03 recently L01 MHC003

an actual or simulated signal L04

~~18 months~~ L02

In accordance with the Surveillance Frequency Control Program LA01

ITS A01 ITS 3.9.4

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

LCO 3.9.4 3.9.4 The containment building penetrations shall be in the following status:

LCO 3.9.4.a a. The equipment door closed and held in place by a minimum of four bolts,

LCO 3.9.4.b b. A minimum of one door in each airlock is closed, or both doors of both containment personnel airlocks may be open if:

A02

MHC006

1. One personnel airlock door in each airlock is capable of closure, and

STET

~~2. One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12, and~~

A03

LCO 3.9.4.c c. Each penetration* providing direct access from the containment atmosphere to the outside atmosphere shall be either:

(See ITS 3.7.12)

LCO 3.9.4.c.1 1. Closed by an isolation valve, blind flange, manual valve, or equivalent, or

LCO 3.9.4.c.2 2. Be capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve.

APPLICABILITY:

Applicability 3.9.4.a. Containment Building Equipment Door - During movement of recently irradiated fuel within the containment.

recently L01

Applicability 3.9.4.b. and c. Containment Building Airlock Doors and Penetrations - During movement of irradiated fuel within the containment.

MHC003

ACTION:

ACTION A 1. With the requirements of the above specification not satisfied for the containment building equipment door, immediately suspend all operations involving movement of recently irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~

A04

ACTION A 2. With the requirements of the above specification not satisfied for containment airlock doors or penetrations, immediately suspend all operations involving movement of irradiated fuel in the containment building. ~~The provisions of Specification 3.0.3 are not applicable.~~

recently L01

A04

SURVEILLANCE REQUIREMENTS

MHC003

L02

SR 3.9.4.1, SR 3.9.4.2 4.9.4 Each of the above required containment building penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve ~~once per 7 days~~ during movement of irradiated fuel in the containment building by:

recently L01

SR 3.9.4.1 A01 a. Verifying the penetrations are in their required condition, or

~~once per 7 days~~

In accordance with the Surveillance Frequency Control Program

LA01

Add proposed SR 3.9.4.2 Note

SR 3.9.4.2 b. Verifying the Containment Ventilation isolation valves not locked, sealed, or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal.

L02

~~18 months~~

LA01

In accordance with the Surveillance Frequency Control Program

LCO 3.9.4 Note * Penetration flow path(s) providing direct access from the containment atmosphere that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

ITS A01 ITS 3.9.4

REFUELING OPERATIONS

3/4.9.9 CONTAINMENT VENTILATION ISOLATION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.9.4.c.2 3.9.9 The Containment Ventilation Isolation System shall be OPERABLE.

Applicability APPLICABILITY: During movement of irradiated fuel within the containment.

recently L01 MHC003

ACTION:

LCO 3.9.4.c.1 With the Containment Ventilation Isolation System inoperable, close each of the Ventilation penetrations providing direct access from the containment atmosphere to the outside atmosphere. ~~The provisions of Specification 3.0.3 are not applicable.~~ A04

SURVEILLANCE REQUIREMENTS

L02

Add proposed SR 3.9.4.2 Note L03

SR 3.9.4.2 Applicability

4.9.9 The Containment Ventilation Isolation System shall be demonstrated OPERABLE ~~within 100 hours prior to the start of and~~ at least once per 7 days during movement of irradiated fuel within containment by verifying that Containment Ventilation isolation occurs on ~~manual initiation and on a high radiation test signal from each of the containment radiation monitoring instrumentation channels~~.

recently L01 MHC003

L03

an actual or simulated signal L04

~~18 months~~ L02

In accordance with the Surveillance Frequency Control Program LA01

DISCUSSION OF CHANGES
ITS 3.9.4, CONTAINMENT PENETRATIONS

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 3.9.4.b requires that a minimum of one door in each airlock is closed, and both doors of both containment personnel airlocks may be open if one personnel airlock door in each airlock is capable of closure and one train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12. ITS LCO 3.9.4.b requires that one door in each air lock be capable of being closed. This changes the CTS by replacing the prescriptive requirement for control of the air lock doors with a more general requirement that the air lock doors must be capable of being closed.

This change is acceptable because the requirements have not changed, one door continues to be capable of being closed in the event of a fuel handling accident. The ITS requirement preserves the intent of the CTS in that should a fuel handling accident occur inside containment, at least one airlock door in each airlock will be closed following an evacuation of containment. This change is designated as administrated because it does not result in a technical change to the CTS.

Not used.

A03 ~~CTS 3.9.4.b allows both doors of each containment personnel airlocks to be open provided, in part, that "One train of the Auxiliary Building Gas Treatment System is OPERABLE in accordance with Technical Specification 3.9.12." ITS 3.9.4.b does not contain this specific requirement. This changes the CTS by removing the specific requirement that one train of the Auxiliary Building Gas Treatment System be OPERABLE.~~

MHC006

~~The purpose of CTS 3.9.4.b is to ensure that the Auxiliary Building Gas Treatment System is available when the containment personnel airlock doors are open during movement of recently irradiated fuel within the containment, this is accomplished by referencing CTS 3.9.12. This change is acceptable because the associated requirements referenced by CTS 3.9.4.b in CTS 3.9.12 are being addressed in ITS 3.7.12. Therefore, ITS 3.7.12 contains the appropriate requirements associated with the ABGTS. This change is designated as administrative because it does not result in a technical change to the CTS.~~

A04 CTS 3.9.4 and CTS 3.9.9 ACTIONS state "The provisions of Specification 3.0.3 are not applicable. ITS 3.9.4 does not include this statement. This changes the CTS by deleting the Specification 3.0.3 exemption.

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DISCUSSION OF CHANGES
ITS 3.9.4, CONTAINMENT PENETRATIONS

This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS Specification 3.0.3 exception is not needed. 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 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.9.4.a requires verifying that the containment building penetrations are in their required condition once per 7 days. CTS 4.9.4.b requires a verification that the Containment Ventilation Isolation valves, that are not locked sealed or otherwise secured in position, actuate to the isolation position on an actual or simulated actuation signal every 7 days. (See DOC L02 for discussion on changing the Frequency for CTS 4.9.4.b from 7 days to 18 months.) CTS 4.9.9 requires, in part, that the Containment Ventilation isolation system be demonstrated OPERABLE at least once per 7 days during the Applicability. (See DOC L02 for discussion on changing the Frequency for CTS 4.9.9 from 7 days to 18 months.) ITS SR 3.9.4.1 and SR 3.9.4.2 require similar Surveillances and specify the periodic Frequencies as, "In accordance with the Surveillance Frequency Control Program." (Note that the 18 month Frequency is being relocated for CTS 4.9.4.b and CTS 4.9.9.) 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.

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DISCUSSION OF CHANGES
ITS 3.9.4, CONTAINMENT PENETRATIONS

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.4.b and c. Applicability, for the Containment Building Airlock Doors and Penetrations, is "During movement of irradiated fuel within the containment." CTS 3.9.4 ACTION 2 requires that when the requirements for the containment airlock doors or penetrations are not met, to suspend all operations involving movement of irradiated fuel in the containment building. CTS 4.9.4 requires that each required containment building penetration be determined to be in either its required condition or capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve during movement of irradiated fuel in the containment building. CTS 3.9.9 Applicability is "During movement of irradiated fuel within the containment." CTS 4.9.9 requires that the Containment Ventilation isolation system shall be demonstrated OPERABLE during movement of irradiated fuel within containment by verifying that Containment Ventilation isolation occurs on manual initiation and on a high radiation test signal from each of the containment radiation monitoring instrumentation channels. ITS 3.9.4 Applicability for these items is "During movement of recently irradiated fuel assemblies within containment." ITS 3.9.4 ACTION A requires that when one or more containment penetrations are not in the required status to suspend movement of recently irradiated fuel assemblies within containment. ITS SR 3.9.4.1 and SR 3.9.4.2 are required to be satisfied during the ITS 3.9.4 Applicability. This changes the CTS by limiting the Applicability of the requirements for the Containment Building Airlock Doors and Penetrations and the Containment Ventilation isolation system to during movement of recently irradiated fuel assemblies within containment.

Not Used

MHC003

The purpose of CTS 3.9.4 and 3.9.9 is to provide assurance that the containment building penetrations and the Containment Ventilation Isolation System can perform their required safety functions. This change is acceptable because the requirements continue to ensure that the structures, system and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. TVA has performed a Fuel Handling Accident Radiological Accident Analysis for SQN using the alternate source term analysis methodology described in Regulatory Guide 1.183 obtaining acceptable results. The SQN fuel handling analysis assumes, in part, that the accident occurs within 100 hours after a plant shutdown, radioactive decay during the interval between shutdown and movement of the first spent fuel assembly is taken into account, and a single fuel assembly is damaged. As a result of the analysis, it has been determined that the handling of spent fuel assemblies can take place with the containment open and the Auxiliary Building Gas Treatment System out of service (i.e., no credit for filtration of releases) when handling fuel that has not occupied part of a critical reactor core within the previous 100 hours. The NRC approved use of this analysis for SQN under License Amendment 288/278 (Unit 1/Unit 2) (ADAMS Accession No. ML033070057). This change is designated as less restrictive because the LCO is applicable in fewer operating conditions under the ITS than under the CTS.

L02 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.9.4.b and CTS 4.9.9 include a Surveillance Frequency of "once per 7 days" for performing

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DISCUSSION OF CHANGES
ITS 3.9.4, CONTAINMENT PENETRATIONS

Surveillance of the Containment Ventilation Isolation System. The ITS SR 3.9.4.2 Frequency for the same requirement is 18 months. ITS SR 3.9.4.2 is also modified by a Note that states that SR 3.9.4.2 is not required to be met for containment ventilation isolation valve(s) in penetrations closed to comply with LCO 3.9.4.c.1. This changes the CTS by changing the Surveillance Frequency from 7 days to 18 months and adding a Note that the SR is not required to be met for containment ventilation isolation valve(s) in penetrations closed to comply with LCO 3.9.4.c.1.

The purpose of CTS 4.9.4.b and CTS 4.9.9 is to verify the equipment required to meet the LCO 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. Containment ventilation isolation valve testing is still required, but at a Frequency consistent with the testing Frequency for containment isolation valves required in MODES 1, 2, 3, and 4. This Frequency provides an appropriate degree of assurance that the valves are OPERABLE. When containment ventilation isolation valves are closed to comply with ITS LCO 3.9.4.c.1, the penetrations are in the expected condition (isolated) to mitigate the effects of a fuel handling accident inside containment. Therefore, there is no need for the actuation signal to reposition valves to the closed position. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L03 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.9.9 states, in part, that the Containment Ventilation isolation system shall be demonstrated OPERABLE within 100 hours prior to the start of movement of irradiated fuel within containment. ITS SR 3.9.4.2 does not include the frequency of within 100 hours prior to the start of movement of irradiated fuel within containment. ITS SR 3.0.1 states "SRs shall be met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR." Therefore, the ITS requires the Surveillance must be met prior to initiation of movement of ~~recently~~ irradiated fuel. ~~(See DOC L01 for discussion on changing the Applicability from during movement of irradiated fuel to during movement of recently irradiated fuel.)~~ This changes the CTS by eliminating the stipulation that the Surveillances be met within 100 hours prior to entering the conditions specified in the Applicability.

MHC003

The purpose of CTS 4.9.9 is to verify that the Containment Ventilation isolation system 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 ITS SR 3.9.4.2 periodic Surveillance Frequency for verifying that Containment Ventilation isolation occurs is acceptable during the conditions specified in the Applicability, and is also acceptable during the period prior to entering the conditions specified in the Applicability. This change is designated as less restrictive because a Surveillance will be performed less frequently under the ITS than under the CTS.

L04 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.9.9 requires verification that Containment Ventilation isolation occurs on manual initiation and on a high radiation test signal from each of the containment radiation monitoring instrumentation channels. ITS SR 3.9.4.2 requires

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verification that each required containment ventilation isolation valve that is not locked, sealed, or otherwise secured in position, actuates to the isolation position 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 4.9.9 is to ensure that the containment ventilation isolation valves operate correctly 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 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.

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

3.9 REFUELING OPERATIONS

3.9.4 Containment Penetrations

3.9.4, 3.9.9 LCO 3.9.4 The containment penetrations shall be in the following status:

3.9.4.a a. The equipment ~~is~~ hatch closed and held in place by ~~[~~four~~]~~ bolts~~;~~

3.9.4.b b. One door in each air lock is ~~[~~capable of being~~]~~ closed~~;~~ and

3.9.4.c c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere is either:

3.9.4.c.1 3.9.9 ACTION 1. Closed by a manual or automatic isolation valve, blind flange, or equivalent; or

3.9.4.c.2, 3.9.9 2. Capable of being closed by an OPERABLE ~~Purge and Exhaust~~ Ventilation isolation ~~System~~ valve.

---NOTE---

3.9.4.c, Note * Penetration flow path(s) providing direct access from the containment atmosphere ~~to the outside atmosphere~~ that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

MHC003

3.9.4.a. Containment Building Equipment Hatch-

3.9.4 Applicability, 3.9.9 Applicability APPLICABILITY: During movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment.

3.9.4 b.and c. Containment Building Airlock Doors and Penetrations-During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.9.4 ACTION 1 3.9.4 ACTION 2 A. ~~One or more containment penetrations~~ Containment equipment hatch not in required status during movement of recently irradiated fuel assemblies	A.1 Suspend movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment.	Immediately
MHC003 B. One or more containment penetrations not in required status during movement of irradiated fuel assemblies.	B.1 Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.9.4.a	SR 3.9.4.1	Verify each required containment penetration is in the required status.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~	6 6
4.9.4.b, 4.9.9	SR 3.9.4.2	----------NOTE---------- Not required to be met for containment ~~purge and exhaust~~ valve(s) in penetrations closed to comply with LCO 3.9.4.c.1. ----------		4
DOC L02		Verify each required containment ~~purge and exhaust~~ valve actuates to the isolation position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~	4 6 6

ventilation isolation

ventilation isolation

INSERT 1

4

INSERT 1

that is not locked, sealed, or otherwise secured in position,

3.9 REFUELING OPERATIONS

3.9.4 Containment Penetrations

3.9.4, 3.9.9 LCO 3.9.4 The containment penetrations shall be in the following status:

3.9.4.a a. The equipment ~~is~~ hatch closed and held in place by ~~[~~four~~]~~ bolts~~;~~

3.9.4.b b. One door in each air lock is ~~[~~capable of being~~]~~ closed~~;~~ and

3.9.4.c c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere is either:

3.9.4.c.1 3.9.9 ACTION 1. Closed by a manual or automatic isolation valve, blind flange, or equivalent; or

3.9.4.c.2, 3.9.9 2. Capable of being closed by an OPERABLE ~~Purge and Exhaust~~ Ventilation isolation ~~System~~ valve.

---NOTE---

3.9.4.c, Note * Penetration flow path(s) providing direct access from the containment atmosphere ~~to the outside atmosphere~~ that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure may be unisolated under administrative controls.

3.9.4.a Containment Building Equipment Hatch-

3.9.4 Applicability, 3.9.9 Applicability APPLICABILITY: During movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment. MHC003

3.9.4 b.and c. Containment Building Airlock Doors and Penetrations-During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.9.4 ACTION 1 3.9.4 ACTION 2 A. ~~One or more containment penetrations~~ not in required status. (Containment equipment hatch; during movement of recently irradiated fuel assemblies)	A.1 Suspend movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment.	Immediately

MHC003

MHC003 B. One or more containment penetrations not in required status during movement of irradiated fuel assemblies.

B.1 Suspend movement of irradiated fuel assemblies within containment.

Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.9.4.a	SR 3.9.4.1	Verify each required containment penetration is in the required status.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~	6 6
4.9.4.b, 4.9.9	SR 3.9.4.2	----------NOTE---------- Not required to be met for containment ~~purge and exhaust~~ valve(s) in penetrations closed to comply with LCO 3.9.4.c.1. ----------		4
DOC L02		Verify each required containment ~~purge and exhaust~~ valve actuates to the isolation position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~	4 6 6

ventilation isolation

ventilation isolation

INSERT 1

4

INSERT 1

that is not locked, sealed, or otherwise secured in position,

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.4, CONTAINMENT PENETRATIONS

1. Editorial changes made for enhanced clarity.

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. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

4. 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.

5. ~~ISTS 3.9.4 Applicability is "During movement of [recently] irradiated fuel assemblies within containment." Additionally, ISTS 3.9.4 Required Action A.1 requires suspending the movement of [recently] irradiated fuel assemblies within containment.~~ ITS 3.9.4 Applicability is "During movement of recently irradiated fuel assemblies within containment." ITS 3.9.4 Required Action A.1 requires suspending the movement of recently irradiated fuel assemblies within containment. The removal of the brackets around the word "recently" is acceptable since Sequoyah Nuclear Plant (SQN) has performed an alternate source term dose calculation for the site and found that it is acceptable to only require restrictions on containment penetrations during recently irradiated fuel movement. Therefore, the brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

6. ISTS SR 3.9.4.1 and SR 3.9.4.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

MHC003

ISTS 3.9.4 Applicability is "During movement of [recently] irradiated fuel assemblies within containment." Additionally, ISTS 3.9.4 Required Action A.1 requires suspending the movement of [recently] irradiated fuel assemblies within containment. ITS 3.9.4.a. Applicability is "During movement of recently irradiated fuel assemblies within containment" for the equipment hatch. ITS 3.9.4 Required Action A.1 requires suspending the movement of recently irradiated fuel assemblies within containment. Therefore, the brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis. ITS 3.9.4.b. and c. Applicability is "During movement of irradiated fuel assemblies within containment" for the airlock doors and containment penetrations providing direct access from the containment atmosphere to the outside atmosphere. ITS 3.9.4 Required Action B.1 requires suspending the movement of irradiated fuel assemblies within containment. Therefore, the Applicability and Required Actions have been revised to reflect the current licensing basis.

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

B 3.9 REFUELING OPERATIONS

B 3.9.4 Containment Penetrations

BASES

BACKGROUND

During movement of [recently] irradiated fuel assemblies within containment, a release of fission product radioactivity within containment will be restricted from escaping to the environment when the LCO requirements are met. In MODES 1, 2, 3, and 4, this is accomplished by maintaining containment OPERABLE as described in LCO 3.6.1, "Containment." In MODE 6, the potential for containment pressurization as a result of an accident is not likely; therefore, requirements to isolate the containment from the outside atmosphere can be less stringent. The LCO requirements are referred to as "containment closure" rather than "containment OPERABILITY." Containment closure means that all potential escape paths are closed or capable of being closed. Since there is no potential for containment pressurization, the Appendix J leakage criteria and tests are not required.

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained well within the requirements of 10 CFR 100. Additionally, the containment provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. During movement of [recently] irradiated fuel assemblies within containment, the equipment hatch must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced.

The containment air locks, which are also part of the containment pressure boundary, provide a means for personnel access during MODES 1, 2, 3, and 4 unit operation in accordance with LCO 3.6.2, "Containment Air Locks." Each air lock has a door at both ends. The doors are normally interlocked to prevent simultaneous opening when containment OPERABILITY is required. During periods of unit shutdown when containment closure is not required, 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. During movement of [recently] irradiated fuel assemblies within containment, containment closure is required; therefore, the door interlock mechanism may remain disabled, but one air lock door must always remain [capable of being] closed.

BASES

BACKGROUND (continued)

The requirements for containment penetration closure ensure that a release of fission product radioactivity within containment will be restricted to within regulatory limits.

~~The Containment Purge and Exhaust System includes two subsystems. The normal subsystem includes a 42 inch purge penetration and a 42 inch exhaust penetration. The second subsystem, a minipurge system, includes an 8 inch purge penetration and an 8 inch exhaust penetration. During MODES 1, 2, 3, and 4, the two valves in each of the normal purge and exhaust penetrations are secured in the closed position. The two valves in each of the two minipurge penetrations can be opened intermittently, but are closed automatically by the Engineered Safety Features Actuation System (ESFAS). Neither of the subsystems is subject to a Specification in MODE 5.~~

~~In MODE 6, large air exchangers are necessary to conduct refueling operations. The normal 42 inch purge system is used for this purpose, and all four valves are closed by the ESFAS in accordance with LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation."~~

~~[The minipurge system remains operational in MODE 6, and all four valves are also closed by the ESFAS.~~

~~[or]~~

~~The minipurge system is not used in MODE 6. All four 8 inch valves are secured in the closed position.]~~

2

INSERT 1

The other containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated on at least one side. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods must be approved and may include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for the other containment penetrations during ~~[recently]~~ irradiated fuel movements (Ref. 1).

(either open or closed)

2

1

MHC003

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident ~~[involving handling recently irradiated fuel]~~. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). ~~Fuel handling accidents, analyzed in Reference 3, include dropping a single irradiated fuel assembly and handling tool or a heavy object onto other irradiated fuel assemblies.~~ The requirements of LCO 3.9.7, "Refueling Cavity Water Level," in conjunction with a minimum

resulting from dropping a single irradiated fuel assembly

MHC003

1 2

2 11

2 **INSERT 1**

The Reactor Building Purge Ventilation (RBPV) System includes three subsystems. The normal subsystem includes four 24 inch purge penetrations and two 24 inch exhaust penetrations. The second subsystem, a pressure relief system, includes an 8 inch exhaust penetration. The third subsystem includes a 12 inch instrument room supply penetration and a 12 inch exhaust penetration. During MODES 1, 2, 3, and 4, no more than one pair of containment purge lines (one set of supply valves and one set of exhaust valves) may be opened (Ref. 4). None of the subsystems are subject to a Specification in MODE 5.

In MODE 6, large air exchangers are necessary to conduct refueling operations. The normal 24 inch purge system is used for this purpose, and all valves are closed by Containment Ventilation Isolation in accordance with LCO 3.3.6, "Containment Ventilation Isolation Instrumentation."

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BASES

APPLICABLE SAFETY ANALYSES (continued)

decay time of 100 hours prior to [irradiated fuel movement with containment closure capability ~~or a minimum decay time of [x] days without containment closure capability]~~, ensures that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are ~~well~~ within the ~~guideline~~ values specified in 10 CFR ~~100. Standard Review Plan, Section 15.7.4, Rev. 1 (Ref. 3), defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values. The acceptance limits for offsite radiation exposure will be 25% of 10 CFR 100 values~~ or the NRC staff approved licensing basis (e.g., ~~a specified fraction of 10 CFR 100~~ limits).

50.67

Regulatory Guide 1.183, (Ref. 3)

Containment penetrations satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

~~REVIEWER'S NOTE~~

~~The allowance to have containment personnel air lock doors open and penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated during fuel movement is based on (1) confirmatory dose calculations of a fuel handling accident as approved by the NRC staff which indicate acceptable radiological consequences and (2) commitments from the licensee to implement acceptable administrative procedures that ensure in the event of a refueling accident (even though the containment fission product control function is not required to meet acceptable dose consequences) that the open air lock can and will be promptly closed following containment evacuation and that the open penetration(s) can and will be promptly closed. The time to close such penetrations or combination of penetrations shall be included in the confirmatory dose calculations.~~

MHC003

This LCO limits the consequences of a fuel handling accident [involving handling ~~recently~~ irradiated fuel] in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment purge and exhaust penetrations [and the containment personnel air locks]. For the OPERABLE containment purge and exhaust penetrations, this LCO ensures that these penetrations are isolable by ~~the~~ Containment ~~Purge and Exhaust~~ Isolation ~~System~~. The OPERABILITY requirements for this LCO ensure that the ~~automatic purge and exhaust valve~~ closure times specified in the FSAR can be achieved and, therefore, meet the assumptions used in the safety analysis to ensure that releases through the valves are terminated, such that radiological doses are within the acceptance limit.

or to the auxiliary building secondary containment enclosure,

an automatic

Ventilation

containment ventilation isolation valve

U

valve

BASES

LCO (continued)

INSERT 2

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere ~~to the outside atmosphere~~ to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident.

that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure

MHC003

may

The containment personnel air lock doors ~~many~~ be open during movement of ~~[recently]~~ irradiated fuel in the containment provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, at least one personnel air lock door will be closed following an evacuation of containment.

INSERT 3

MHC006

APPLICABILITY

The containment penetration requirements are applicable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist.

Insert 5

MHC003

~~[~~Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[x] days~~) will result in doses that are ~~well~~ within the guideline values specified in 10 CFR ~~100~~ even without containment closure capability.~~]~~ Therefore, under these conditions no requirements are placed on containment penetration status.

100 hours

50.67

~~REVIEWER'S NOTE~~

~~The addition of the term "recently" associated with handling irradiated fuel in all of the containment function Technical Specification requirements is only applicable to those licensees who have demonstrated by analysis that after sufficient radioactive decay has occurred, off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).~~

~~Additionally, licensees adding the term "recently" must make the following commitment which is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5 "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading "Containment - Primary (PWR)/Secondary (BWR)."~~

~~"The following guidelines are included in the assessment of systems removed from service during movement irradiated fuel:~~

4

INSERT 2

During movement of recently irradiated fuel assemblies within containment, the equipment hatch is required to be held in place by at least four bolts.

~~2~~

~~**INSERT 3**~~

MHC006

~~The containment design is such that even though the primary and secondary containments are connected together when the personnel air lock doors are open, the normal auxiliary building ventilation system and Auxiliary Building Gas Treatment System (ABGTS) continue to provide the same fuel handling accident mitigation capability. With the personnel air lock doors open, the consequences of a fuel handling accident in the containment will be mitigated by the design of the ventilation systems (maintenance of a negative pressure during normal and applicable abnormal conditions, automatic isolation on high radiation in the auxiliary building, and automatic startup of emergency ventilation systems) and the leak-tight design of the auxiliary building. Both sets of the containment personnel airlock doors may be open during movement of recently irradiated fuel in containment provided one train of ABGTS is available for operation (LCO 3.7.12, "Auxiliary Building Gas Treatment System (AGBTS"). The fuel handling accident is analyzed to occur in either the containment or the auxiliary building; however, an ABGTS start may be necessary for a containment fuel handling accident. The requirement for an airlock door to be capable of closure is provided to allow for long-term recovery from a fuel handling accident in containment.~~

MHC003

Insert 5 ⑨

The containment penetration requirements are applicable when there is a potential for the limiting fuel handling accident (FHA). The applicability requirements are based on the FHA analysis which assumes a fuel assembly is dropped and damaged during refueling. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. Additionally, due to radioactive decay, a fuel handling accident involving handling irradiated fuel that is not "recently" irradiated (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) will result in doses that are ~~well~~ within the ~~guideline~~ values specified in 10 CFR ~~100~~ even without containment closure capability. The applicability of 3.9.4.a. for the Containment Building Equipment Hatch is "During the movement of recently irradiated fuel in containment" which maintains the containment closure requirements when the fuel has not sufficiently decayed to remain within these limits. The applicability of 3.9.4.b. and c. for the Containment Air Lock Doors and containment penetrations that provide direct access from containment atmosphere to outside atmosphere is "During movement of irradiated fuel in containment."

50.67

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BASES

APPLICABILITY (continued)

~~- During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification OPERABILITY amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.~~

~~- A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.~~

~~The purpose of the "prompt methods" mentioned above are to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."~~

5

MHC003

ACTIONS

A.1

If the containment equipment hatch, ~~air locks, or any containment~~ penetration ~~that provides direct access from the containment atmosphere to the outside atmosphere~~ is not in the required status, ~~including the~~ Containment ~~Purge and Exhaust~~ Isolation ~~System not capable of automatic actuation when the purge and exhaust~~ valves ~~are open,~~ the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of ~~[~~recently~]~~ irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

automatic

MHC003

Ventilation

Containment Ventilation isolation

valve(s)

2

9

1

9

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1

MHC006

This Surveillance demonstrates that each ~~of the~~ containment penetrations required ~~to be in its closed~~ position is in that position. ~~The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each~~ valve operator has motive power~~, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal~~.

is in its

INSERT 4

3

6

B.1 If the containment building air lock doors or any other containment penetration that provides direct access from the containment atmosphere to the outside atmosphere is not in the required status, including the Containment Ventilation Isolation valve(s) not capable of automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

status. The requirement that penetrations are capable of being closed by an OPERABLE automatic containment ventilation isolation valve, can be verified by ensuring that each required containment ventilation isolation

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Reference 3).~~

7

~~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.~~
~~----------]~~

8

4

SR 3.9.4.2

MHC006

INSERT 5

ventilation isolation

actuation

This Surveillance demonstrates that each containment ~~purge and exhaust~~ valve actuates to its isolation position on manual initiation or on an actual or simulated ~~high radiation~~ signal. ~~[The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge and Exhaust Isolation instrumentation requires a CHANNEL CHECK every 12 hours and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS.~~
~~SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.~~

2
9
10
7

4

9 **INSERT 5**

MHC006

, that is not locked, sealed, or otherwise secured in position,

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ 7

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.~~
~~]~~ 8

The SR is modified by a Note stating that this Surveillance is not required to be met for valves in isolated penetrations. The LCO provides the option to close penetrations in lieu of requiring automatic actuation capability.

REFERENCES

1. GPU Nuclear Safety Evaluation SE-0002000-001, Rev. 0, May 20, 1988.
2. ~~U~~ ~~FSAR, Section [15.4.5].~~ 5.6 Regulatory Guide 1.183, Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors, July 2000. 2 1
3. ~~NUREG-0800, Section 15.7.4, Rev. 1, July 1981~~. 2

4. UFSAR, Section 9.4.7. 2

MHC003

Document ID: LTR-CRA-02-219, Westinghouse Electric Company, "Radiological Consequences of Fuel Handling Accidents for the Sequoyah Nuclear Plant Units 1 and 2."

B 3.9 REFUELING OPERATIONS

B 3.9.4 Containment Penetrations

BASES

BACKGROUND

MHC003

During movement of ~~[recently]~~ irradiated fuel assemblies within containment, a release of fission product radioactivity within containment will be restricted from escaping to the environment when the LCO requirements are met. In MODES 1, 2, 3, and 4, this is accomplished by maintaining containment OPERABLE as described in LCO 3.6.1, "Containment." In MODE 6, the potential for containment pressurization as a result of an accident is not likely; therefore, requirements to isolate the containment from the outside atmosphere can be less stringent. The LCO requirements are referred to as "containment closure" rather than "containment OPERABILITY." Containment closure means that all potential escape paths are closed or capable of being closed. Since there is no potential for containment pressurization, the Appendix J leakage criteria and tests are not required. (1)

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained ~~well~~ within the requirements of 10 CFR ~~1~~00. Additionally, the containment provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions. (2)

50.67

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. During movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment, the equipment hatch must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced. (1)

The containment air locks, which are also part of the containment pressure boundary, provide a means for personnel access during MODES 1, 2, 3, and 4 unit operation in accordance with LCO 3.6.2, "Containment Air Locks." Each air lock has a door at both ends. The doors are normally interlocked to prevent simultaneous opening when containment OPERABILITY is required. During periods of unit shutdown when containment closure is not required, 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.

MHC003

During movement of ~~[recently]~~ irradiated fuel assemblies within containment, containment closure is required; therefore, the door interlock mechanism may remain disabled, but one air lock door must always remain ~~[~~capable of being~~]~~ closed. (1) (1)

BASES

BACKGROUND (continued)

The requirements for containment penetration closure ensure that a release of fission product radioactivity within containment will be restricted to within regulatory limits.

~~The Containment Purge and Exhaust System includes two subsystems. The normal subsystem includes a 42 inch purge penetration and a 42 inch exhaust penetration. The second subsystem, a minipurge system, includes an 8 inch purge penetration and an 8 inch exhaust penetration. During MODES 1, 2, 3, and 4, the two valves in each of the normal purge and exhaust penetrations are secured in the closed position. The two valves in each of the two minipurge penetrations can be opened intermittently, but are closed automatically by the Engineered Safety Features Actuation System (ESFAS). Neither of the subsystems is subject to a Specification in MODE 5.~~

~~In MODE 6, large air exchangers are necessary to conduct refueling operations. The normal 42 inch purge system is used for this purpose, and all four valves are closed by the ESFAS in accordance with LCO 3.3.2, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation."~~

~~[The minipurge system remains operational in MODE 6, and all four valves are also closed by the ESFAS.~~

~~[or]~~

~~The minipurge system is not used in MODE 6. All four 8 inch valves are secured in the closed position.]~~

2

INSERT 1

The other containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated on at least one side. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods must be approved and may include use of a material that can provide a temporary, atmospheric pressure, ventilation barrier for the other containment penetrations during ~~[recently]~~ irradiated fuel movements (Ref. 1).

(either open or closed)

2

1

MHC003

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident ~~[involving handling recently irradiated fuel]~~. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). ~~Fuel handling accidents, analyzed in Reference 3, include dropping a single irradiated fuel assembly and handling tool or a heavy object onto other irradiated fuel assemblies.~~ The requirements of LCO 3.9.7, "Refueling Cavity Water Level," in conjunction with a minimum

resulting from dropping a single irradiated fuel assembly

MHC003

1 2

2 11

(2) **INSERT 1**

The Reactor Building Purge Ventilation (RBPV) System includes three subsystems. The normal subsystem includes four 24 inch purge penetrations and two 24 inch exhaust penetrations. The second subsystem, a pressure relief system, includes an 8 inch exhaust penetration. The third subsystem includes a 12 inch instrument room supply penetration and a 12 inch exhaust penetration. During MODES 1, 2, 3, and 4, no more than one pair of containment purge lines (one set of supply valves and one set of exhaust valves) may be opened (Ref. 4). None of the subsystems are subject to a Specification in MODE 5.

In MODE 6, large air exchangers are necessary to conduct refueling operations. The normal 24 inch purge system is used for this purpose, and all valves are closed by Containment Ventilation Isolation in accordance with LCO 3.3.6, "Containment Ventilation Isolation Instrumentation."

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BASES

APPLICABLE SAFETY ANALYSES (continued)

decay time of 100 hours prior to [irradiated fuel movement with containment closure capability ~~or a minimum decay time of [x] days without containment closure capability]~~, ensures that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are ~~well~~ within the ~~guideline~~ values specified in 10 CFR ~~100. Standard Review Plan, Section 15.7.4, Rev. 1 (Ref. 3), defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values. The acceptance limits for offsite radiation exposure will be 25% of 10 CFR 100 values~~ or the NRC staff approved licensing basis (e.g., ~~a specified fraction of 10 CFR 100~~ limits).

50.67

Regulatory Guide 1.183, (Ref. 3)

Containment penetrations satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

~~REVIEWER'S NOTE~~

~~The allowance to have containment personnel air lock doors open and penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated during fuel movement is based on (1) confirmatory dose calculations of a fuel handling accident as approved by the NRC staff which indicate acceptable radiological consequences and (2) commitments from the licensee to implement acceptable administrative procedures that ensure in the event of a refueling accident (even though the containment fission product control function is not required to meet acceptable dose consequences) that the open air lock can and will be promptly closed following containment evacuation and that the open penetration(s) can and will be promptly closed. The time to close such penetrations or combination of penetrations shall be included in the confirmatory dose calculations.~~

~~REVIEWER'S NOTE~~

MHC003

This LCO limits the consequences of a fuel handling accident [involving handling ~~recently~~ irradiated fuel] in containment by limiting the potential escape paths for fission product radioactivity released within containment. The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere or to the auxiliary building secondary containment enclosure, to be closed except for the OPERABLE containment purge and exhaust penetrations [and the containment personnel air locks]. For the OPERABLE containment purge and exhaust penetrations, this LCO ensures that these penetrations are isolable by an automatic Ventilation containment ventilation isolation valve U ~~the~~ Containment ~~Purge and Exhaust~~ Isolation ~~System~~ valve. The OPERABILITY requirements for this LCO ensure that the ~~automatic purge and exhaust valve~~ closure times specified in the FSAR can be achieved and, therefore, meet the assumptions used in the safety analysis to ensure that releases through the valves are terminated, such that radiological doses are within the acceptance limit.

BASES

LCO (continued)

INSERT 2

The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere ~~to the outside atmosphere~~ to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident.

that transverse and terminate in the Auxiliary Building Secondary Containment Enclosure

MHC003

may

The containment personnel air lock doors ~~many~~ be open during movement of ~~[recently]~~ irradiated fuel in the containment provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, at least one personnel air lock door will be closed following an evacuation of containment.

MHC006

INSERT 3

MHC003

APPLICABILITY

Insert 5

The containment penetration requirements are applicable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment because this is when there is a potential for the limiting fuel handling accident. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. ~~[~~Additionally, due to radioactive decay, a fuel handling accident involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[x] days~~) will result in doses that are ~~well~~ within the guideline values specified in 10 CFR ~~100~~ even without containment closure capability.~~]~~ Therefore, under these conditions no requirements are placed on containment penetration status.

100 hours

50.67

~~REVIEWER'S NOTE~~

~~The addition of the term "recently" associated with handling irradiated fuel in all of the containment function Technical Specification requirements is only applicable to those licensees who have demonstrated by analysis that after sufficient radioactive decay has occurred, off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).~~

~~Additionally, licensees adding the term "recently" must make the following commitment which is consistent with NUMARC 93-01, Revision 4, Section 11.3.6.5 "Safety Assessment for Removal of Equipment from Service During Shutdown Conditions," subheading "Containment - Primary (PWR)/Secondary (BWR)."~~

~~"The following guidelines are included in the assessment of systems removed from service during movement irradiated fuel:~~

4

INSERT 2

During movement of recently irradiated fuel assemblies within containment, the equipment hatch is required to be held in place by at least four bolts.

~~2~~

~~**INSERT 3**~~

MHC006

~~The containment design is such that even though the primary and secondary containments are connected together when the personnel air lock doors are open, the normal auxiliary building ventilation system and Auxiliary Building Gas Treatment System (ABGTS) continue to provide the same fuel handling accident mitigation capability. With the personnel air lock doors open, the consequences of a fuel handling accident in the containment will be mitigated by the design of the ventilation systems (maintenance of a negative pressure during normal and applicable abnormal conditions, automatic isolation on high radiation in the auxiliary building, and automatic startup of emergency ventilation systems) and the leak-tight design of the auxiliary building. Both sets of the containment personnel airlock doors may be open during movement of recently irradiated fuel in containment provided one train of ABGTS is available for operation (LCO 3.7.12, "Auxiliary Building Gas Treatment System (AGBTS"). The fuel handling accident is analyzed to occur in either the containment or the auxiliary building; however, an ABGTS start may be necessary for a containment fuel handling accident. The requirement for an airlock door to be capable of closure is provided to allow for long-term recovery from a fuel handling accident in containment.~~

Insert 5

9

MHC003

The containment penetration requirements are applicable when there is a potential for the limiting fuel handling accident (FHA). The applicability requirements are based on the FHA analysis which assumes a fuel assembly is dropped and damaged during refueling. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1. In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. Additionally, due to radioactive decay, a fuel handling accident involving handling irradiated fuel that is not “recently” irradiated (i.e., fuel that has occupied part of a critical reactor core within the previous 100 hours) will result in doses that are ~~well~~ within the ~~guideline~~ values specified in 10 CFR ~~100~~ even without containment closure capability. The applicability of 3.9.4.a. for the Containment Building Equipment Hatch is “During the movement of recently irradiated fuel in containment” which maintains the containment closure requirements when the fuel has not sufficiently decayed to remain within these limits. The applicability of 3.9.4.b. and c. for the Containment Air Lock Doors and containment penetrations that provide direct access from containment atmosphere to outside atmosphere is “During movement of irradiated fuel in containment."

50.67

BASES

APPLICABILITY (continued)

~~- During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification OPERABILITY amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.~~

~~- A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.~~

~~The purpose of the "prompt methods" mentioned above are to enable ventilation systems to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored."~~

5

ACTIONS

A.1

MHC003

If the containment equipment hatch, ~~air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere~~ is not in the required status, ~~including the~~ Containment ~~Purge and Exhaust~~ Isolation ~~System not capable of automatic actuation when the purge and exhaust valves are open~~, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of ~~[~~recently~]~~ irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

automatic

MHC003

Ventilation

Containment Ventilation isolation

valve(s)

2

9

1

9

SURVEILLANCE REQUIREMENTS

3

SR 3.9.4.1

This Surveillance demonstrates that each ~~of the~~ containment penetrations required ~~to be in its closed position~~ is in that position. ~~The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each~~ valve operator has motive power~~, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal~~.

is in its

MHC006

INSERT 4

6

MHC003

B.1 If the containment building air lock doors or any other containment penetration that provides direct access from the containment atmosphere to the outside atmosphere is not in the required status, including the Containment Ventilation Isolation valve(s) not capable of automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition where the isolation function is not needed. This is accomplished by immediately suspending movement of irradiated fuel assemblies within containment. Performance of these actions shall not preclude completion of movement of a component to a safe position.

2

3

6 **INSERT 4**

MHC006

status. The requirement that penetrations are capable of being closed by an OPERABLE automatic containment ventilation isolation valve, can be verified by ensuring that each required containment ventilation isolation

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Reference 3).~~

7

~~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.~~
~~----------]~~

8

4 SR 3.9.4.2

MHC006

INSERT 5

ventilation isolation

This Surveillance demonstrates that each containment ~~purge and exhaust~~ valve actuates to its isolation position on manual initiation or on an actual or simulated ~~high radiation~~ signal. ~~[The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.6, the Containment Purge and Exhaust Isolation instrumentation requires a CHANNEL CHECK every 12 hours and a COT every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS.~~
~~SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.~~

actuation

2
9
10
7

4

9 **INSERT 5**

MHC006

, that is not locked, sealed, or otherwise secured in position,

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~OR~~ 7

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.~~
~~]~~ 8

The SR is modified by a Note stating that this Surveillance is not required to be met for valves in isolated penetrations. The LCO provides the option to close penetrations in lieu of requiring automatic actuation capability.

REFERENCES

1. GPU Nuclear Safety Evaluation SE-0002000-001, Rev. 0, May 20, 1988.
2. ~~U~~ ~~FSAR, Section [15.4.5].~~ 5.6 Regulatory Guide 1.183, Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors, July 2000. 2 1
3. ~~NUREG-0800, Section 15.7.4, Rev. 1, July 1981~~. 2
4. UFSAR, Section 9.4.7. 2

MHC003

Document ID: LTR-CRA-02-219, Westinghouse Electric Company, "Radiological Consequences of Fuel Handling Accidents for the Sequoyah Nuclear Plant Units 1 and 2."

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.4 BASES, CONTAINMENT PENETRATIONS

1. 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.

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 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. Disposition of the issue associated with this Reviewers Note was in SQN License Amendment 209/199 (U1/U2) [ADAMS Accession No ML013320204], which added CTS 3.9.4.b.2.

4. Typographical/grammatical error corrected.

RPG-014

5. ~~The Reviewer's Note has been deleted and appropriate information retained. This Reviews Note is associated with the adoption of TSTF-51, "Revise containment requirements during handling irradiated fuel and core alterations," which added the term 'recently'. TVA added information to the CTS bases when the term 'recently' was added to SQN TS under License Amendments 288/278 (Unit 1/Unit 2) (ADAMS Accession Nos. ML033030206 and ML033070057). The Bases is changed to include the applicable information contained in TSTF-51 and NUMARC 91-06. This will allow TVA to have a method in place to promptly close the primary containment (i.e., the equipment hatch) or the secondary containment (i.e., auxiliary building secondary containment enclosure (ABSCE)) using the ABGTS to draw the release from a postulated fuel handling accident in the proper direction such that it can be treated and monitored.~~

6. ISTS SR 3.9.4.1 Bases contains a statement "This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. The Surveillance on the open purge and exhaust valves will demonstrate that the valves are not blocked from closing. Also the Surveillance will demonstrate that each valve operator has motive power, which will ensure that each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal." ITS SR 3.9.4.1 Bases states "This Surveillance demonstrates that each containment penetration is in its required status. The requirement that penetrations are capable of being closed by an OPERABLE automatic containment ventilation isolation valve, can be verified by ensuring that each required containment ventilation isolation valve operator has motive power." This change is acceptable because it is consistent with the requirements in the Specification.

7. ISTS SR 3.9.4.1 and SR 3.9.4.2 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.

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 to be retained in the final version of the plant specific submittal. See Enclosure 8 for SQN's commitment associated with the Reviewer's Note.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.4 BASES, CONTAINMENT PENETRATIONS

8. 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.

9. Changes are made to be consistent with changes made to the Specification.

10. Changes are made to be consistent with the Specification. MHC003

11. This information is not site specific information. Therefore, it is deleted from the SQN ITS Bases.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.4, CONTAINMENT PENETRATIONS

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

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ATTACHMENT 5

ITS 3.9.5, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – HIGH WATER LEVEL

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

ITS A01 ITS 3.9.5

REFUELING OPERATIONS

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

LCO 3.9.5 3.9.8.1 At least one residual heat removal (RHR) loop shall be OPERABLE and in operation. (M01)

Applicability APPLICABILITY: MODE 6 with the water level ≥ 23 ft above the top of the reactor vessel flange (A02).

ACTION:

ACTION A

a. With less than one residual heat removal loop in operation, except as provided in b. below, suspend all operations involving an increase in the reactor decay heat load (A03) and suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet LCO 3.9.1. (L01) Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. Add proposed Required Action A.3 (M02)

LCO 3.9.5 Note

b. The residual heat removal loop may be removed from operation for up to 1 hour per 8 hour period ~~during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.~~ , provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, "Boron Concentration." (L02)

~~c. The provisions of Specification 3.0.3 are not applicable.~~ (A04)

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1 4.9.8.1 At least one residual heat removal loop shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2000 gpm ~~at least once per 12 hours~~. In accordance with the Surveillance Frequency Control Program (LA01)

ITS A01 ITS 3.9.5

REFUELING OPERATIONS

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

LCO 3.9.5 3.9.8.1 At least one residual heat removal (RHR) loop shall be in operation.

OPERABLE and — M01

Applicability APPLICABILITY: MODE 6

with the water level ≥ 23 ft above the top of the reactor vessel flange — A02

ACTION:

ACTION A a. With less than one residual heat removal loop in operation, except as provided in b. below, suspend all operations involving an increase in the reactor decay heat load and suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet LCO 3.9.1. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

A03

L01

Add proposed Required Action A.3 — M02

LCO 3.9.5 Note b. The residual heat removal loop may be removed from operation for up to 1 hour per 8 hour period ~~during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.~~ , provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, "Boron Concentration."

~~c. The provisions of Specification 3.0.3 are not applicable.~~

L02

A04

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1 4.9.8.1 At least one residual heat removal loop shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2000 gpm ~~at least once per 12 hours~~.

In accordance with the Surveillance Frequency Control Program — LA01

DISCUSSION OF CHANGES
ITS 3.9.5, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – HIGH WATER LEVEL

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 3.9.8.1 requires at least one residual heat removal (RHR) loop shall be in operation in MODE 6. ITS 3.9.5 requires one RHR loop to be OPERABLE and in operation in MODE 6 with water level greater than or equal to 23 feet above the top of the reactor vessel flange. However, ITS 3.9.6 covers the Applicability of MODE 6 with the water level less than 23 feet above the top of the reactor vessel flange. This changes the CTS by changing the presentation of the CTS 3.9.8.1 Applicability. ITS 3.9.5 will have the Applicability of MODE 6 with water level greater than or equal to 23 feet above the top of the reactor vessel flange and ITS 3.9.6 will have the Applicability of MODE 6 with water level less than 23 feet above the top of the reactor vessel flange.

The purpose of CTS 3.9.8.1 is to ensure that adequate decay heat removal capability is in operation and that the coolant is circulated in MODE 6. This change is acceptable because the requirements continue to ensure that the process variables are maintained in MODES or other specified conditions assumed in the safety analyses and licensing basis. MODE 6 RHR and coolant circulation requirements are governed by ITS 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level," and ITS 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level." The combination of ITS 3.9.5 and ITS 3.9.6 ensures that the appropriate RHR loops are available in MODE 6 regardless of the water level. This change is designated as administrative because it makes a change in the presentation and does not result in technical changes to the CTS.

A03 CTS 3.9.8.1 ACTION a states, in part, that with less than one residual heat removal loop in operation, suspend all operations involving an increase in the reactor decay heat load. ITS 3.9.5 Required Action A.2 states, in part, with the RHR loop requirements not met, suspend loading irradiated fuel assemblies in the core. This changes the CTS by requiring that the loading of irradiated fuel assemblies be suspended instead of requiring that all operations involving an increase in the reactor decay heat load be suspended.

This change is acceptable because the requirements have not changed. The reactor decay heat load is generated only by irradiated fuel. The only method of increasing the decay heat load of the reactor in MODE 6 is to load additional irradiated fuel assemblies into the core. Therefore, the CTS and ITS

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requirements are equivalent. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS 3.9.8.1 ACTION c states "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.5 does not include this statement. This changes the CTS by deleting the Specification 3.0.3 exception.

This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS Specification 3.0.3 exception is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.9.8.1 requires that at least one RHR loop be in operation. ITS 3.9.5 requires that one RHR loop shall be OPERABLE and in operation. This changes the CTS by requiring the RHR loop to be OPERABLE, instead of just in operation.

The purpose of CTS 3.9.8.1 is to ensure that adequate decay heat removal and coolant circulation are available in MODE 6. However, the CTS LCO could be interpreted as allowing an RHR loop to be placed in operation that was not OPERABLE. The ITS eliminated this possible misinterpretation. This change is acceptable because the RHR loop must be OPERABLE (i.e., capable of performing its safety function) instead of just being in operation. This change is designated as more restrictive because the ITS contains more specific requirements on a component.

M02 ITS 3.9.5 Required Action A.3 requires that when an RHR loop requirement is not met in MODE 6 with the water level greater than or equal to 23 feet above the top of the reactor vessel flange, to immediately initiate action to satisfy RHR loop requirements. CTS 3.9.8.1 does not contain this requirement. This changes the CTS by requiring that an action be taken immediately to satisfy the RHR loop requirements.

The purpose of CTS 3.9.8.1 is to ensure that adequate decay heat removal and coolant circulation are available in MODE 6. Although decay heat is removed from the Reactor Coolant System via natural circulation to the bulk of water contained in the refueling canal, this method of heat transfer can continue for only a discrete amount of time before boiling would occur. This change is acceptable because it requires that action be initiated to restore the RHR loop requirements in order to restore forced coolant flow and heat removal. This change is designated as more restrictive because an additional action will be required in the ITS than is required in the CTS.

DISCUSSION OF CHANGES
ITS 3.9.5, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – HIGH WATER LEVEL

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.9.8.1 requires verification, at least once per 12 hours, that at least one RHR loop is in operation and circulating reactor coolant at a flow rate greater than or equal to 2000 gpm. ITS SR 3.9.5.1 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 Frequency 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 Frequency is 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 Frequency 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 Frequency is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.9.8.1 ACTION a states, in part, that with less than one RHR loop in operation, close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. ITS 3.9.5 Required Actions A.4, A.5, and A.6 state that with the RHR loop requirements not met, within 4 hours, close and secure the equipment hatch with at least four bolts, close one door in each air lock, and verify each penetration with direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent, or is capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve. This changes the CTS ACTIONS by identifying the equipment hatch door and the air lock requirements and allowing penetrations capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve to remain open when the RHR requirements are not met.

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DISCUSSION OF CHANGES
ITS 3.9.5, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – HIGH WATER LEVEL

The purpose of CTS 3.9.8.1 ACTION a is to ensure that radioactive material does not escape the containment should the RHR requirements continue to not be met and boiling occurs in the core. Therefore, containment penetrations are closed to seal the containment. 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 OPERABILITY status of the redundant system 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 an accident occurring during the repair period. The Required Actions are consistent with the action taken for containment closure in CTS 3.9.4 and ITS 3.9.4. Penetrations which can be closed by an OPERABLE automatic Containment Ventilation isolation valve do not need to be closed if RHR is inoperable, since the presence of radioactivity in the containment will cause the valves to close automatically, thus performing the isolation function. 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 1 – Relaxation of LCO Requirements)* CTS 3.9.8.1 ACTION b states that the RHR loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs. The ITS LCO 3.9.5 Note states that the required RHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, "Boron Concentration." This changes the CTS by no longer restricting the removal of the RHR loop from operation to only during the performance of core alterations in the vicinity of the reactor pressure vessel hot legs.

The purpose of CTS 3.9.8.1 ACTION b is to limit the amount of time the required RHR loop is not in operation. In addition to securing RHR loops flow during CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs, other operations (e.g., RCS to RHR isolation valve testing) must be performed during the time that the RHR loop is removed from operation. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. In addition, the ITS will still limit the time the RHR loop is not in operation to 1 hour in an 8 hour period, and during the time the RHR loop is not in operation, all operations that would cause an introduction of coolant into the RCS with boron concentration less than required to maintain SDM are suspended. This change is designated as less restrictive since less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

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

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - High Water Level

3.9.8.1

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

----------NOTE----------

ACTION b

The required RHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1~~.~~ , "Boron Concentration." 1

Applicability

APPLICABILITY: MODE 6 with the water level ≥ 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a A. RHR loop requirements not met.	A.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	AND	
ACTION a	A.2 Suspend loading irradiated fuel assemblies in the core.	Immediately
	AND	
DOC M02	A.3 Initiate action to satisfy RHR loop requirements.	Immediately
	AND	

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A.4 Close equipment hatch and secure with [four] bolts.	4 hours (3)
	AND	
DOC L01	A.5 Close one door in each air lock.	4 hours
	AND	
ACTION a	A.6.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	OR	
DOC L01	A.6.2 Verify each penetration is capable of being closed by an OPERABLE automatic Ventilation Containment ~~Purge and Exhaust~~ Isolation valve ~~System~~.	4 hours (2)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.8.1 SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ [~~2800~~] 2000 gpm.	~~[12 hours~~ (3) (4) ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ (4)

CTS

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - High Water Level

3.9.8.1

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

----------NOTE----------

ACTION b

The required RHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1~~.~~ , "Boron Concentration." 1

Applicability

APPLICABILITY: MODE 6 with the water level ≥ 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION a A. RHR loop requirements not met.	A.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	AND	
ACTION a	A.2 Suspend loading irradiated fuel assemblies in the core.	Immediately
	AND	
DOC M02	A.3 Initiate action to satisfy RHR loop requirements.	Immediately
	AND	

CTS

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L01	A.4 Close equipment hatch and secure with [four] bolts.	4 hours (3)
	AND	
DOC L01	A.5 Close one door in each air lock.	4 hours
	AND	
ACTION a	A.6.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	OR	
DOC L01	A.6.2 Verify each penetration is capable of being closed by an OPERABLE automatic Ventilation Containment ~~Purge and Exhaust~~ Isolation valve ~~System~~.	4 hours (2)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.8.1 SR 3.9.5.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ [~~2800~~] 2000 gpm.	~~[12 hours~~ (3) (4) ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ (4)

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.5, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – HIGH WATER LEVEL

1. An editorial change has been made to be consistent with the ITS formatting. When a specific LCO is addressed in a Note, ACTION, or Surveillance Requirement, it should contain the title the first time that it is used.

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. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.9.5.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

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

B 3.9 REFUELING OPERATIONS

B 3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - High Water Level

BASES

BACKGROUND

The purpose of the RHR System in MODE 6 is to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by GDC 34~~, to provide~~ mixing of borated coolant and ~~to~~ prevent boron stratification ~~(Ref. 1)~~. Heat is removed from the RCS by circulating reactor coolant through the RHR heat exchanger(s), where the heat is transferred to the Component Cooling Water System. The coolant is then returned to the RCS via the RCS cold leg(s). Operation of the RHR System for normal cooldown or decay heat removal is manually accomplished from the control room. The heat removal rate is adjusted by controlling the flow of reactor coolant through the RHR heat exchanger(s) and the bypass. Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the RHR System.

Operation of the RHR system provides (Ref. 1).

s

1

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to a loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to boron plating out on components near the areas of the boiling activity. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is a fission product barrier. One ~~train~~ of the RHR System is required to be operational in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to prevent this challenge. The LCO does permit the RHR pump to be removed from operation for short durations, under the condition that the boron concentration is not diluted. This conditional stopping of the RHR pump does not result in a challenge to the fission product barrier.

loop

1

The RHR System satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

Only one RHR loop is required for decay heat removal in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange. Only one RHR loop is required to be OPERABLE, because the volume of water above the reactor vessel flange provides backup decay heat removal capability. At least one RHR loop must be OPERABLE and in operation to provide:

a. Removal of decay heat~~,~~; 2

b. Mixing of borated coolant to minimize the possibility of criticality~~,~~; and 2

c. Indication of reactor coolant temperature.

BASES

LCO (continued)

An OPERABLE RHR loop includes an RHR pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine the low end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

The LCO is modified by a Note that allows the required operating RHR loop to be removed from operation for up to 1 hour per 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1. Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles and RCS to RHR isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity.

, "Boron Concentration."

3

APPLICABILITY

One RHR loop must be OPERABLE and in operation in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft water level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.7, "Refueling Cavity Water Level." Requirements for the RHR System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level < 23 ft are located in LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level."

ACTIONS

RHR loop requirements are met by having one RHR loop OPERABLE and in operation, except as permitted in the Note to the LCO.

A.1

If RHR loop requirements are not met, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

BASES

ACTIONS (continued)

A.2

If RHR loop requirements are not met, actions shall be taken immediately to suspend loading of irradiated fuel assemblies in the core. With no forced circulation cooling, decay heat removal from the core occurs by natural convection to the heat sink provided by the water above the core. A minimum refueling water level of 23 ft above the reactor vessel flange provides an adequate available heat sink. Suspending any operation that would increase decay heat load, such as loading a fuel assembly, is a prudent action under this condition.

A.3

If RHR loop requirements are not met, actions shall be initiated and continued in order to satisfy RHR loop requirements. With the unit in MODE 6 and the refueling water level ≥ 23 ft above the top of the reactor vessel flange, corrective actions shall be initiated immediately.

A.4, A.5, A.6.1, and A.6.2

within 4 hours (3)

If no RHR is in operation, the following actions must be taken:

a. The equipment hatch must be closed and secured with ~~[~~four~~]~~ bolts~~,~~ ; (4)

b. One door in each air lock must be closed~~,~~ and ; (2)

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere must be either closed by a manual or automatic isolation valve, blind flange, or equivalent, or verified to be capable of being closed by an OPERABLE Containment ~~Purge and Exhaust~~ Isolation ~~System~~. (5)

automatic; valve; Ventilation

With RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Performing the actions described above ensures that all containment penetrations are either closed or can be closed so that the dose limits are not exceeded.

The Completion Time of 4 hours allows fixing of most RHR problems and is reasonable, based on the low probability of the coolant boiling in that time.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. [The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator in the control room for monitoring the RHR 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.
----------]

REFERENCES

1. FSAR, Section [5.5.7].

B 3.9 REFUELING OPERATIONS

B 3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - High Water Level

BASES

BACKGROUND

The purpose of the RHR System in MODE 6 is to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by GDC 34~~, to provide~~ mixing of borated coolant and ~~to~~ prevent boron stratification ~~(Ref. 1)~~. Heat is removed from the RCS by circulating reactor coolant through the RHR heat exchanger(s), where the heat is transferred to the Component Cooling Water System. The coolant is then returned to the RCS via the RCS cold leg(s). Operation of the RHR System for normal cooldown or decay heat removal is manually accomplished from the control room. The heat removal rate is adjusted by controlling the flow of reactor coolant through the RHR heat exchanger(s) and the bypass. Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the RHR System.

Operation of the RHR system provides (Ref. 1).

s

1

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to a loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to boron plating out on components near the areas of the boiling activity. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is a fission product barrier. One ~~train~~ of the RHR System is required to be operational in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to prevent this challenge. The LCO does permit the RHR pump to be removed from operation for short durations, under the condition that the boron concentration is not diluted. This conditional stopping of the RHR pump does not result in a challenge to the fission product barrier.

loop

1

The RHR System satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

Only one RHR loop is required for decay heat removal in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange. Only one RHR loop is required to be OPERABLE, because the volume of water above the reactor vessel flange provides backup decay heat removal capability. At least one RHR loop must be OPERABLE and in operation to provide:

a. Removal of decay heat~~,~~; 2

b. Mixing of borated coolant to minimize the possibility of criticality~~,~~; and 2

c. Indication of reactor coolant temperature.

BASES

LCO (continued)

An OPERABLE RHR loop includes an RHR pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine the low end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

The LCO is modified by a Note that allows the required operating RHR loop to be removed from operation for up to 1 hour per 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1. Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles and RCS to RHR isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity.

, "Boron Concentration."

3

APPLICABILITY

One RHR loop must be OPERABLE and in operation in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft water level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.7, "Refueling Cavity Water Level." Requirements for the RHR System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level < 23 ft are located in LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level."

ACTIONS

RHR loop requirements are met by having one RHR loop OPERABLE and in operation, except as permitted in the Note to the LCO.

A.1

If RHR loop requirements are not met, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

BASES

ACTIONS (continued)

A.2

If RHR loop requirements are not met, actions shall be taken immediately to suspend loading of irradiated fuel assemblies in the core. With no forced circulation cooling, decay heat removal from the core occurs by natural convection to the heat sink provided by the water above the core. A minimum refueling water level of 23 ft above the reactor vessel flange provides an adequate available heat sink. Suspending any operation that would increase decay heat load, such as loading a fuel assembly, is a prudent action under this condition.

A.3

If RHR loop requirements are not met, actions shall be initiated and continued in order to satisfy RHR loop requirements. With the unit in MODE 6 and the refueling water level ≥ 23 ft above the top of the reactor vessel flange, corrective actions shall be initiated immediately.

A.4, A.5, A.6.1, and A.6.2

within 4 hours (3)

If no RHR is in operation, the following actions must be taken:

a. The equipment hatch must be closed and secured with ~~[~~four~~]~~ bolts~~,~~ ; (4)

b. One door in each air lock must be closed~~,~~ and ; (2)

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere must be either closed by a manual or automatic isolation valve, blind flange, or equivalent, or verified to be capable of being closed by an OPERABLE Containment ~~Purge and Exhaust~~ Isolation ~~System~~. (5)

automatic; valve; Ventilation

With RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Performing the actions described above ensures that all containment penetrations are either closed or can be closed so that the dose limits are not exceeded.

The Completion Time of 4 hours allows fixing of most RHR problems and is reasonable, based on the low probability of the coolant boiling in that time.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that the RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. ~~[The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator in the control room for monitoring the RHR System.~~ 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
~~]~~

REFERENCES

U
1. FSAR, Section ~~[~~5.5.7~~]~~. 1 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.5 BASES, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – HIGH WATER LEVEL

1. 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.

2. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

3. Changes are made to be consistent with the Specification.

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. Changes are made to be consistent with changes made to the Specification.

6. ISTS SR 3.9.5.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program

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.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.5, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – HIGH WATER LEVEL

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

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ATTACHMENT 6

ITS 3.9.6, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

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

ITS A01 ITS 3.9.6

REFUELING OPERATIONS

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

LCO 3.9.6

3.9.8.1 At least one residual heat removal (RHR) loop shall be in operation.

Add proposed LCO Note 1.c — L01

Applicability

APPLICABILITY: MODE 6 with the water level < 23 ft above the top of the reactor vessel flange — A02

ACTION:

ACTION B

a. With less than one residual heat removal loop in operation, except as provided in b. below, suspend all operations involving an increase in the reactor decay heat load and suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet LCO 3.9.1. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. — A03, L02

Add proposed Required Action B.2 — M01

b. The residual heat removal loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs. — See ITS 3.9.5

~~c. The provisions of Specification 3.0.3 are not applicable.~~ — A04

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

4.9.8.1 At least one residual heat removal loop shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2000 gpm ~~at least once per 12 hours~~.

In accordance with the Surveillance Frequency Control Program — LA01

ITS A01 ITS 3.9.6

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

A05

LCO 3.9.6

3.9.8.2 Two independent Residual Heat Removal (RHR) loops shall be OPERABLE.~~*~~

Add proposed LCO Note 2 — L01

Applicability

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

ACTION:

ACTION A

a. With less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.

Add proposed Required Action A.2 — A06

~~b. The provisions of Specification 3.0.3 are not applicable.~~

A04

SURVEILLANCE REQUIREMENTS

L03

~~4.9.8.2 The required Residual Heat Removal loops shall be determined OPERABLE per Specification 4.0.5.~~

Add proposed SR 3.9.6.2 at a Frequency of ~~7 days~~ — M02

In accordance with the Surveillance Frequency Control Program — LA01

A05

~~*The normal or emergency power source may be inoperable for each RHR loop.~~

ITS

A01

ITS 3.9.6

REFUELING OPERATIONS

3/4.9.8 RESIDUAL HEAT REMOVAL AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

LCO 3.9.6

3.9.8.1 At least one residual heat removal (RHR) loop shall be in operation.

Add proposed LCO Note 1 — L01

Applicability

APPLICABILITY: MODE 6,

with the water level < 23 ft above the top of the reactor vessel flange — A02

ACTION:

ACTION B

a. With less than one residual heat removal loop in operation, except as provided in b. below, suspend all operations involving an increase in the reactor decay heat load and suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet LCO 3.9.1. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. — A03, L02

Add proposed Required Action B.2 — M01

b. The residual heat removal loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs. — See ITS 3.9.5

c. ~~The provisions of Specification 3.0.3 are not applicable.~~ — A04

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

4.9.8.1 At least one residual heat removal loop shall be verified to be in operation and circulating reactor coolant at a flow rate of greater than or equal to 2000 gpm ~~at least once per 12 hours~~.

In accordance with the Surveillance Frequency Control Program — LA01

ITS

A01

ITS 3.9.6

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

A05

LCO 3.9.6

3.9.8.2 Two independent Residual Heat Removal (RHR) loops shall be OPERABLE.*

Add proposed LCO Note 2

L01

Applicability

APPLICABILITY: MODE 6 when the water level above the top of the reactor pressure vessel flange is less than 23 feet.

ACTION:

ACTION A

a. With less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible.

Add proposed Required Action A.2

A06

~~b. The provisions of Specification 3.0.3 are not applicable.~~

A04

SURVEILLANCE REQUIREMENTS

L03

~~4.9.8.2 The required Residual Heat Removal loops shall be determined OPERABLE per Specification 4.0.5.~~

Add proposed SR 3.9.6.2 at a Frequency ~~of 7 days~~

M02

In accordance with the Surveillance Frequency Control Program

LA01

A05

~~*The normal or emergency power source may be inoperable for each RHR loop~~.

DISCUSSION OF CHANGES
ITS 3.9.6, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

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 3.9.8.1 requires at least one residual heat removal (RHR) loop to be in operation in MODE 6. ITS 3.9.6 requires two RHR loops to be OPERABLE and one RHR loop to be in operation in MODE 6 with the water level less than 23 feet above the top of the reactor vessel flange. However, ITS 3.9.5 covers the Applicability of MODE 6 with water level greater than or equal to 23 feet above the top of the reactor vessel flange. This changes the CTS by changing the presentation of the CTS 3.9.8.1 Applicability. ITS 3.9.5 will have the Applicability of MODE 6 with water level greater than or equal to 23 feet above the top of the reactor vessel flange and ITS 3.9.6 will have the Applicability of MODE 6 with water level less than 23 feet above the top of the reactor vessel flange.

The purpose of CTS 3.9.8.1 is to ensure that adequate decay heat removal capability is in operation and that the coolant is circulated in MODE 6. This change is acceptable because the requirements continue to ensure that the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. MODE 6 RHR and coolant circulation requirements are governed by ITS 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level," and ITS 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level." The combination of ITS 3.9.5 and ITS 3.9.6 ensures that the appropriate RHR loops are available in MODE 6 regardless of water level. This change is designated as administrative because it makes a change in the presentation and does not result in technical changes to the CTS.

A03 CTS 3.9.8.1 provides the requirement for one RHR loop to be in operation in MODE 6. CTS 3.9.8.1 ACTION a states, in part, that with less than one residual heat removal loop in operation, suspend all operations involving an increase in the reactor decay heat load. CTS 3.9.10 requires ≥ 23 feet of water above the reactor vessel flange during movement of irradiated fuel assemblies in containment. ITS 3.9.6 provides the same requirement for one RHR loop to be in operation, however, ITS 3.9.6 is applicable in MODE 6 with the water level < 23 feet above the top of the reactor vessel flange. Additionally, ITS 3.9.7 retains the requirement for ≥ 23 feet during movement of irradiated fuel in containment. This changes the CTS by eliminating the requirement to suspend operations involving an increase in reactor decay heat load with < 23 feet of water above the reactor vessel flange. Discussion of the requirement to suspend operations involving an

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DISCUSSION OF CHANGES
ITS 3.9.6, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

increase in reactor decay heat with ≥ 23 feet of water the reactor vessel flange is addressed in ITS 3.9.5.

This change is acceptable because the requirements have not changed. The reactor decay heat load is generated only by irradiated fuel. The only method of increasing the decay heat load of the reactor in MODE 6 is to load additional irradiated fuel assemblies in the core. However, ITS LCO 3.9.7 prohibits loading of fuel assemblies into the reactor vessel when the water level is less than 23 feet over the top of the reactor vessel flange. Therefore, when ITS LCO 3.9.6 is applicable, there is no method available to increase the reactor decay heat load and the requirement can be deleted with no effect on plant operations. This change is designated as administrative because it does not result in a technical change to the CTS.

A04 CTS 3.9.8.1 ACTION c and CTS 3.9.8.2 ACTION b state "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.6 does not include this statement. This changes the CTS by deleting the Specification 3.0.3 exception.

This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS Specification 3.0.3 exception is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

A05 CTS 3.9.8.2 is modified by a footnote (footnote*) which states that the normal or emergency power source may be inoperable for each RHR loop. ITS 3.9.6 does not include this statement. This changes the CTS by removing an allowance that is already provided in a different portion of the ITS.

This change is acceptable because the ITS definition of OPERABLE contains the necessary requirements for a component to perform its safety function. The ITS definition of OPERABLE states a component is OPERABLE if either the normal or emergency power source is OPERABLE. This change is designated as administrative because it does not result in technical changes to the CTS.

A06 CTS 3.9.8.2 ACTION a states that with less than the required RHR loops OPERABLE, immediately initiate corrective action to return the required RHR loops to OPERABLE status as soon as possible. ITS 3.9.6 ACTION A includes this same requirement, but also includes an allowance (Required Action A.2) to immediately initiate action to establish greater than or equal to 23 feet of water above the top of the reactor vessel flange. This changes the CTS by providing the option to exit the Applicability of the LCO.

This change is acceptable because the requirements have not changed. Exiting the Applicability of the LCO is always an option to exit an ACTION. Therefore, stating this option explicitly does not change the requirements of the Specification. This change is designated as administrative because it does not result in technical changes to the CTS.

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DISCUSSION OF CHANGES
ITS 3.9.6, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

MORE RESTRICTIVE CHANGES

M01 ITS 3.9.6 Required Action B.2 requires that when no RHR loop is in operation in MODE 6 with the water level less than 23 feet above the top of the reactor vessel flange, to immediately initiate action to restore one RHR loop to operation. The CTS 3.9.8.1 ACTIONS do not include an action to immediately initiate action to restore one RHR loop to operation in the event the RHR loop requirements are not met. This changes the CTS by requiring that an action be taken immediately to satisfy the RHR loop requirements.

The purpose of CTS 3.9.8.1 is to ensure that adequate decay heat removal and coolant circulation are available in MODE 6. Although decay heat is removed from the Reactor Coolant System via natural circulation to the bulk of water contained in the refueling canal, this method of heat transfer can continue for only a discrete amount of time before boiling would occur. This change is acceptable because it requires that action be initiated to restore one RHR loop to operation in order to restore forced coolant flow and heat removal. This change is designated as more restrictive because an additional action will be required in the ITS than is required in the CTS.

M02 CTS 3.9.8.2 requires two independent RHR loops to be OPERABLE and CTS 3.9.8.1 requires at least one RHR loop to be in operation. ITS LCO 3.9.6 requires two RHR loops to be OPERABLE and one RHR loop to be in operation. ITS 3.9.6 adds a new Surveillance (SR 3.9.6.2) that requires verification every seven days of correct breaker alignment and that indicated power is available to the required RHR pump not in operation. This changes the CTS by adding a new Surveillance Requirement. (See DOC LA01 for moving the Surveillance Frequency to the Surveillance Frequency Control Program.)

The purpose of CTS 3.9.8.1 and CTS 3.9.8.2 is to require one RHR loop to be in operation and one additional RHR loop to be held in readiness should it be needed. Additionally, the loop that is not in operation is still required to OPERABLE, and must be verified that it can placed in operation when needed. ITS SR 3.9.6.1 verifies, in part, that one RHR loop is in operation and ITS SR 3.9.6.2 verifies that the loop that is not in operation is available. Therefore, this change is acceptable because the new Surveillance Requirement (ITS SR 3.9.6.2) requires verification that the RHR loop in standby, will be ready should it be needed. This change is designated as more restrictive because it adds a new Surveillance Requirement to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program)* CTS 4.9.8.1 requires verification, at least once per 12 hours, that at

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DISCUSSION OF CHANGES
ITS 3.9.6, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

least one RHR loop is in operation and circulating reactor coolant at a flow rate greater than or equal to 2000 gpm. ITS SR 3.9.6.1 requires a similar Surveillance and specifies the periodic Frequency as, "In accordance with the Surveillance Frequency Control Program." Additionally, ITS SR 3.9.6.2 is being added as discussed in DOC M02. This changes the CTS by moving the specified Frequencies for this SR and the new SR along with their 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 1 – Relaxation of LCO Requirements)* CTS 3.9.8.1 requires at least one residual heat removal (RHR) loop to be in operation in MODE 6. CTS 3.9.8.2 requires two independent RHR loops to be OPERABLE when in MODE 6 with < 23 feet of water above the reactor pressure vessel flange. ITS 3.9.6 requires two RHR loops to be OPERABLE and one RHR loop to be in operation in MODE 6 with water level < 23 ft above the top of reactor vessel flange. ITS LCO 3.9.6 is modified by two Notes. Note 1 allows all RHR pumps to be removed from operation for less than or equal to ~~one hour~~ when switching from one loop to another, provided several conditions are met. Note 2 allows one RHR loop to be inoperable for up to 2 hours for Surveillance testing provided that the other RHR loop is OPERABLE and in operation. This changes the CTS by allowing the LCO to not be met under certain situations.

SII

15 minutes

The purpose of CTS 3.9.8.1 and CTS 3.9.8.2 is to ensure sufficient decay heat removal is available in the specified MODES and conditions. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. In addition, to use Note 1, specific conditions must be established and certain operations restricted that minimize the potential for an unsafe condition occurring during the short duration allowed for switching from one train to the other. Also, while invoking Note 2, one RHR loop is OPERABLE and in operation providing core cooling. The ITS LCO Notes allow normal

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operational evolutions, such as pump swapping and Surveillance testing, to be performed while in the Applicability of the Specification. These evolutions are necessary to demonstrate RHR OPERABILITY. Furthermore, this Note is consistent with the allowances in CTS 3.4.1.4, "Reactor Coolant System – Cold Shutdown" (ITS LCO 3.4.8, "RCS Loops – MODE 5, Loops not filled"). This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.9.8.1 ACTION a states, in part, that with less than one RHR loop in operation, close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. ITS 3.9.6 Required Actions B.3, B.4, and B.5 state that with no RHR loop in operation, within 4 hours, close and secure the equipment hatch with at least four bolts, close one door in each air lock, and verify each penetration with direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent, or is capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve. This changes the CTS ACTIONS by identifying the equipment hatch and the air lock requirements and allowing penetrations capable of being closed by an OPERABLE automatic Containment Ventilation isolation valve to remain open when the RHR requirements are not met.

The purpose of CTS 3.9.8.1 ACTION a is to ensure that radioactive material does not escape the containment should the RHR requirements continue to not be met and boiling occurs in the core. Therefore, containment penetrations are closed to seal the containment. 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 OPERABILITY status of the redundant system 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 an accident occurring during the repair period. The Required Actions are consistent with the action taken for containment closure in CTS 3.9.4 and ITS 3.9.4. Penetrations which can be closed by an OPERABLE automatic Containment Ventilation isolation valve do not need to be closed if RHR is inoperable, since the presence of radioactivity in the containment will cause the valves to close automatically, thus performing the isolation function. 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 5 – Deletion of Surveillance Requirement)* CTS 4.9.8.2 requires verification that each RHR loop is OPERABLE per Specification 4.0.5. ITS 3.9.6 does not contain this Surveillance. This changes the CTS by deleting the Surveillance to verify each RHR loop is OPERABLE per Specification 4.0.5.

The purpose of CTS Specification 4.0.5 is to require inservice testing in accordance with 10 CFR 50.55a. The purpose of inservice testing of RHR is to

DISCUSSION OF CHANGES
ITS 3.9.6, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

detect gross degradation caused by impeller structural damage or other hydraulic component problems. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed function. This Technical Specification will no longer tie RHR loop OPERABILITY to the Inservice Testing Program. This change is acceptable because it is not necessary to perform inservice testing of an RHR loop to determine if it is OPERABLE, as the system is routinely operated and the RHR loops are instrumented so that degradation can be observed. Significant degradation of the RHR System would be indicated by the RHR System flow and temperature instrumentation in the Control Room. This change is designated as less restrictive because Surveillances that were required in the CTS will not be required in the ITS.

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

3.9 REFUELING OPERATIONS

3.9.6 Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

3.9.8.1, 3.9.8.2

LCO 3.9.6 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

----------NOTES----------

DOC L01

1. All RHR pumps may be removed from operation for ≤ 15 minutes when switching from one train to another provided:

   a. The core outlet temperature is maintained > 10 degrees F below saturation temperature~~,~~; (1)

   b. No operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1~~,~~; and (1)

   c. No draining operations to further reduce RCS water volume are permitted.

DOC L01

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing, provided that the other RHR loop is OPERABLE and in operation.

3.9.8.1 Aoolicability, 3.9.8.2 Applicability

APPLICABILITY: MODE 6 with the water level < 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.9.8.2 ACTION a A. Less than the required number of RHR loops OPERABLE.	A.1 Initiate action to restore required RHR loops to OPERABLE status. OR A.2 Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.9.8.1 ACTION a B. No RHR loop in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	AND	
DOC M01	B.2 Initiate action to restore one RHR loop to operation.	Immediately
	AND	
DOC L02	B.3 Close equipment hatch and secure with ~~[~~four~~]~~ bolts.	4 hours 2 3
	AND	
DOC L02	B.4 Close one door in each air lock.	4 hours
	AND	
3.9.8.1 ACTION a	B.5.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	OR	

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L02	B.5.2 Verify each penetration is capable of being closed by an OPERABLE automatic Ventilation Containment ~~Purge and Exhaust~~ Isolation valve ~~System~~.	4 hours 2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.8.1 SR 3.9.6.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ ~~[2800]~~ 2000 gpm.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 3 4 4
DOC M02 SR 3.9.6.2	Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 4 4

3.9 REFUELING OPERATIONS

3.9.6 Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

3.9.8.1, 3.9.8.2

LCO 3.9.6 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

----------NOTES----------

DOC L01

1. All RHR pumps may be removed from operation for ≤ 15 minutes when switching from one train to another provided:

   a. The core outlet temperature is maintained > 10 degrees F below saturation temperature~~,~~; (1)

   b. No operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1~~,~~; and (1)

   c. No draining operations to further reduce RCS water volume are permitted.

DOC L01

2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing, provided that the other RHR loop is OPERABLE and in operation.

3.9.8.1 Aoolicability, 3.9.8.2 Applicability

APPLICABILITY: MODE 6 with the water level < 23 ft above the top of reactor vessel flange.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.9.8.2 ACTION a A. Less than the required number of RHR loops OPERABLE.	A.1 Initiate action to restore required RHR loops to OPERABLE status. OR A.2 Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately Immediately

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.9.8.1 ACTION a B. No RHR loop in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
	AND	
DOC M01	B.2 Initiate action to restore one RHR loop to operation.	Immediately
	AND	
DOC L02	B.3 Close equipment hatch and secure with ~~[~~four~~]~~ bolts.	4 hours (2) (3)
	AND	
DOC L02	B.4 Close one door in each air lock.	4 hours
	AND	
3.9.8.1 ACTION a	B.5.1 Close each penetration providing direct access from the containment atmosphere to the outside atmosphere with a manual or automatic isolation valve, blind flange, or equivalent.	4 hours
	OR	

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC L02	B.5.2 Verify each penetration is capable of being closed by an OPERABLE automatic Ventilation Containment ~~Purge and Exhaust~~ Isolation valve ~~System~~.	4 hours 2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.8.1 SR 3.9.6.1	Verify one RHR loop is in operation and circulating reactor coolant at a flow rate of ≥ ~~[2800]~~ 2000 gpm.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 3 4 4
DOC M02 SR 3.9.6.2	Verify correct breaker alignment and indicated power available to the required RHR pump that is not in operation.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ 4 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.6, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

1. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

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. The brackets are removed and the proper plant specific information/value is inserted to reflect the current licensing basis.

4. ISTS SR 3.9.6.1 and SR 3.9.6.2 provide two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

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

B 3.9 REFUELING OPERATIONS

B 3.9.6 Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

BASES

BACKGROUND

The purpose of the RHR System in MODE 6 is to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by GDC 34, ~~to provide~~ mixing of borated coolant, and ~~to~~ prevent boron stratification ~~(Ref. 1)~~. Heat is removed from the RCS by circulating reactor coolant through the RHR heat exchangers where the heat is transferred to the Component Cooling Water System. The coolant is then returned to the RCS via the RCS cold leg(s). Operation of the RHR System for normal cooldown decay heat removal is manually accomplished from the control room. The heat removal rate is adjusted by controlling the flow of reactor coolant through the RHR heat exchanger(s) and the bypass lines. Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the RHR System.

Operation of the RHR system provides (Ref. 1).

s

1

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to a loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to the boron plating out on components near the areas of the boiling activity. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant will eventually challenge the integrity of the fuel cladding, which is a fission product barrier. Two ~~train~~s of the RHR System are required to be OPERABLE, and one ~~train~~ in operation, in order to prevent this challenge.

loop

2

The RHR System satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

In MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, both RHR loops must be OPERABLE. Additionally, one loop of RHR must be in operation in order to provide:

a. Removal of decay heat~~,~~;

b. Mixing of borated coolant to minimize the possibility of criticality~~,~~; and

c. Indication of reactor coolant temperature.

3

3

This LCO is modified by two Notes. Note 1 permits the RHR pumps to be removed from operation for ≤ 15 minutes when switching from one train to another. The circumstances for stopping both RHR pumps are to be limited to situations when the outage time is short ~~[~~and the core outlet

4

BASES

LCO (continued)

(e.g., if saturation temperature = 190°F, core outlet temperature must be < 180°F)

temperature is maintained > 10 degrees F below saturation temperature. The Note prohibits boron dilution or draining operations when RHR forced flow is stopped. 4 5

Note 2 allows one RHR loop to be inoperable for a period of 2 hours provided the other loop is OPERABLE and in operation. Prior to declaring the loop inoperable, consideration should be given to the existing plant configuration. This consideration should include that the core time to boil is short, there is no draining operation to further reduce RCS water level and that the capability exists to inject borated water into the reactor vessel. This permits surveillance tests to be performed on the inoperable loop during a time when these tests are safe and possible.

An OPERABLE RHR loop consists of an RHR pump, a heat exchanger, valves, piping, instruments and controls to ensure an OPERABLE flow path and to determine the low end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

Both RHR pumps may be aligned to the Refueling Water Storage Tank to support filling or draining the refueling cavity or for performance of required testing.

APPLICABILITY

Two RHR loops are required to be OPERABLE, and one RHR loop must be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to provide decay heat removal. Requirements for the RHR System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level ≥ 23 ft are located in LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level."

ACTIONS

A.1 and A.2

If less than the required number of RHR loops are OPERABLE, action shall be immediately initiated and continued until the RHR loop is restored to OPERABLE status ~~and to operation~~ or until ≥ 23 ft of water level is established above the reactor vessel flange. When the water level is ≥ 23 ft above the reactor vessel flange, the Applicability changes to that of LCO 3.9.5, and only one RHR loop is required to be OPERABLE and in operation. An immediate Completion Time is necessary for an operator to initiate corrective actions. 2

BASES

ACTIONS (continued)

B.1

If no RHR loop is in operation, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

B.2

If no RHR loop is in operation, actions shall be initiated immediately, and continued, to restore one RHR loop to operation. Since the unit is in Conditions A and B concurrently, the restoration of two OPERABLE RHR loops and one operating RHR loop should be accomplished expeditiously.

B.3, B.4, B.5.1, and B.5.2

within 4 hours (2)

If no RHR is in operation, the following actions must be taken:

a. The equipment hatch must be closed and secured with ~~[~~four~~]~~ bolts~~,~~ ; (4) (3)

b. One door in each air lock must be closed~~,~~ ; and (3)

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere must be either closed by a manual or automatic isolation valve, blind flange, or equivalent, or verified to be capable of being closed by an OPERABLE automatic valve (1) Containment ~~Purge and Exhaust~~ Isolation ~~System~~. Ventilation

With RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Performing the actions stated above ensures that all containment penetrations are either closed or can be closed so that the dose limits are not exceeded.

The Completion Time of 4 hours allows fixing of most RHR problems and is reasonable, based on the low probability of the coolant boiling in that time.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

This Surveillance demonstrates that one RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. In addition, during operation of the RHR loop with the water level in the vicinity of the reactor vessel nozzles, the RHR pump suction requirements must be met. ~~[The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator for monitoring the RHR System in the control room.~~

~~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 3.9.6.2

Verification that the required pump is OPERABLE ensures that a~~n additional RCS or~~ RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. ~~[The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~

~~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

REFERENCES 1. FSAR, Section [5.5.7].

B 3.9 REFUELING OPERATIONS

B 3.9.6 Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level

BASES

BACKGROUND

The purpose of the RHR System in MODE 6 is to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by GDC 34, ~~to provide~~ mixing of borated coolant, and ~~to~~ prevent boron stratification ~~(Ref. 1)~~. Heat is removed from the RCS by circulating reactor coolant through the RHR heat exchangers where the heat is transferred to the Component Cooling Water System. The coolant is then returned to the RCS via the RCS cold leg(s). Operation of the RHR System for normal cooldown decay heat removal is manually accomplished from the control room. The heat removal rate is adjusted by controlling the flow of reactor coolant through the RHR heat exchanger(s) and the bypass lines. Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the RHR System.

Operation of the RHR system provides (Ref. 1).

s

1

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to a loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to the boron plating out on components near the areas of the boiling activity. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant will eventually challenge the integrity of the fuel cladding, which is a fission product barrier. Two ~~train~~s of the RHR System are required to be OPERABLE, and one ~~train~~ in operation, in order to prevent this challenge.

loop

2

The RHR System satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

In MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, both RHR loops must be OPERABLE. Additionally, one loop of RHR must be in operation in order to provide:

a. Removal of decay heat~~,~~;

b. Mixing of borated coolant to minimize the possibility of criticality~~,~~; and

c. Indication of reactor coolant temperature.

3

3

This LCO is modified by two Notes. Note 1 permits the RHR pumps to be removed from operation for ≤ 15 minutes when switching from one train to another. The circumstances for stopping both RHR pumps are to be limited to situations when the outage time is short ~~[~~and the core outlet

4

BASES

LCO (continued)

(e.g., if saturation temperature = 190°F, core outlet temperature must be < 180°F)

temperature is maintained > 10 degrees F below saturation temperature. The Note prohibits boron dilution or draining operations when RHR forced flow is stopped. 4 5

Note 2 allows one RHR loop to be inoperable for a period of 2 hours provided the other loop is OPERABLE and in operation. Prior to declaring the loop inoperable, consideration should be given to the existing plant configuration. This consideration should include that the core time to boil is short, there is no draining operation to further reduce RCS water level and that the capability exists to inject borated water into the reactor vessel. This permits surveillance tests to be performed on the inoperable loop during a time when these tests are safe and possible.

An OPERABLE RHR loop consists of an RHR pump, a heat exchanger, valves, piping, instruments and controls to ensure an OPERABLE flow path and to determine the low end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs.

Both RHR pumps may be aligned to the Refueling Water Storage Tank to support filling or draining the refueling cavity or for performance of required testing.

APPLICABILITY

Two RHR loops are required to be OPERABLE, and one RHR loop must be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to provide decay heat removal. Requirements for the RHR System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). RHR loop requirements in MODE 6 with the water level ≥ 23 ft are located in LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level."

ACTIONS

A.1 and A.2

If less than the required number of RHR loops are OPERABLE, action shall be immediately initiated and continued until the RHR loop is restored to OPERABLE status ~~and to operation~~ or until ≥ 23 ft of water level is established above the reactor vessel flange. When the water level is ≥ 23 ft above the reactor vessel flange, the Applicability changes to that of LCO 3.9.5, and only one RHR loop is required to be OPERABLE and in operation. An immediate Completion Time is necessary for an operator to initiate corrective actions. 2

BASES

ACTIONS (continued)

B.1

If no RHR loop is in operation, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation.

B.2

If no RHR loop is in operation, actions shall be initiated immediately, and continued, to restore one RHR loop to operation. Since the unit is in Conditions A and B concurrently, the restoration of two OPERABLE RHR loops and one operating RHR loop should be accomplished expeditiously.

B.3, B.4, B.5.1, and B.5.2

within 4 hours (2)

If no RHR is in operation, the following actions must be taken:

a. The equipment hatch must be closed and secured with ~~[~~four~~]~~ bolts~~,~~ ; (4) (3)

b. One door in each air lock must be closed~~,~~ ; and (3)

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere must be either closed by a manual or automatic isolation valve, blind flange, or equivalent, or verified to be capable of being closed by an OPERABLE automatic Containment ~~Purge and Exhaust~~ Isolation valve ~~System~~. (1)
Ventilation

With RHR loop requirements not met, the potential exists for the coolant to boil and release radioactive gas to the containment atmosphere. Performing the actions stated above ensures that all containment penetrations are either closed or can be closed so that the dose limits are not exceeded.

The Completion Time of 4 hours allows fixing of most RHR problems and is reasonable, based on the low probability of the coolant boiling in that time.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

This Surveillance demonstrates that one RHR loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. In addition, during operation of the RHR loop with the water level in the vicinity of the reactor vessel nozzles, the RHR pump suction requirements must be met. ~~[The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator for monitoring the RHR System in the control room.~~

~~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 3.9.6.2

Verification that the required pump is OPERABLE ensures that a~~n additional RCS or~~ RHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. ~~[The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~

~~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

REFERENCES 1. FSAR, Section ~~[~~5.5.7~~]~~.

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.6 BASES, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

1. 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.

2. Changes are made to be consistent with the Specification.

3. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Technical Specifications, TSTF-GG-05-01, Section 5.1.3.

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. Editorial changes made for enhanced clarity

6. ISTS SR 3.9.6.1 and SR 3.9.6.2 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.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.6, RESIDUAL HEAT REMOVAL (RHR) AND COOLANT CIRCULATION – LOW WATER LEVEL

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

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ATTACHMENT 7

ITS 3.9.7, REFUELING CAVITY WATER LEVEL

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

ITS

A01

ITS 3.9.7

REFUELING OPERATIONS

3/4.9.10 WATER LEVEL - REACTOR VESSEL

LIMITING CONDITIONS FOR OPERATIONS

LCO 3.9.7

3.9.10 At least 23 feet of water shall be maintained over the top of the reactor pressure vessel flange.

APPLICABILITY:

Applicability

During movement of irradiated fuel assemblies within containment.

ACTION:

ACTION A

With the requirements of the above specification not satisfied, immediately suspend operations involving movement of irradiated fuel assemblies within containment.

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

4.9.10 The water level shall be determined to be at least its minimum required depth ~~within 2 hours prior to the start of and~~ at least once per 24 hours ~~thereafter during movement of irradiated fuel assemblies within containment~~.

L01

In accordance with the Surveillance Frequency Control Program

LA01

ITS

A01

ITS 3.9.7

REFUELING OPERATIONS

3/4.9.10 WATER LEVEL - REACTOR VESSEL

LIMITING CONDITION FOR OPERATION

LCO 3.9.7

3.9.10 At least 23 feet of water shall be maintained over the top of the reactor pressure vessel flange.

APPLICABILITY:

Applicability

During movement of irradiated fuel assemblies within containment.

ACTION:

ACTION A

With the requirements of the above specification not satisfied, immediately suspend operations involving movement of irradiated fuel assemblies within containment.

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

4.9.10 The water level shall be determined to be at least its minimum required depth ~~within 2 hours prior to the start of and~~ at least once per 24 hours ~~thereafter during operations involving movement of irradiated fuel assemblies within containment~~.

L01

In accordance with the Surveillance Frequency Control Program

LA01

DISCUSSION OF CHANGES
ITS 3.9.7, REFUELING CAVITY WATER LEVEL

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 4.9.10 requires, in part, that the water level is determined to be at least its minimum required depth at least once per 24 hours. (See DOC L01 for discussion on changing the periodicity from within 2 hours prior to the start of and at least once per 24 hours thereafter during operations involving movement of irradiated fuel assemblies within containment to once per 24 hours.) ITS SR 3.9.7.1 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 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

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as a less restrictive removal of detail change, because the Surveillance Frequencies are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.9.10 requires, in part, that the water level is determined to be at least its minimum required depth within 2 hours prior to the start of and at least once per 24 hours thereafter during operations involving movement of irradiated fuel assemblies within containment. ITS SR 3.9.7.1 requires verification that the refueling cavity water level is greater than or equal to 23 feet above the top of the reactor vessel flange every 24 hours. (See DOC LA01 for discussion on relocating the Surveillance Frequency to the Surveillance Frequency Control Program.) This changes the CTS by reducing the Frequency for verifying refueling cavity water level from 2 hours before entering the Applicability of the LCO to 24 hours before entering the Applicability of the LCO.

The purpose of CTS 4.9.10 is to ensure that the refueling cavity water level is greater than or equal to that assumed in the fuel handling accident analysis. This change is acceptable because the new Surveillance Frequency has been evaluated to ensure it provides an acceptable level of equipment reliability. The Frequency of 24 hours is sufficient during the movement of fuel assemblies; therefore, it is sufficient before fuel assemblies are moved. ITS SR 3.0.1 requires the SR to be met during the MODES or other specified conditions in the Applicability. This means that the water level must be met when fuel assemblies are moved or fuel assembly movement must be suspended immediately (thereby exiting the Applicability of the Specification). Therefore, changing the Frequency from 2 hours before moving fuel assemblies to within 24 hours before moving fuel assemblies has no effect on plant safety. 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)

CTS

3.9 REFUELING OPERATIONS

3.9.7 Refueling Cavity Water Level

3.9.10

LCO 3.9.7 Refueling cavity water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

Applicability

APPLICABILITY: During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A. Refueling cavity water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.10 SR 3.9.7.1	Verify refueling cavity water level is ≥ 23 ft above the top of reactor vessel flange.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

1

1

2

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CTS

3.9 REFUELING OPERATIONS

3.9.7 Refueling Cavity Water Level

3.9.10

LCO 3.9.7 Refueling cavity water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

Applicability

APPLICABILITY: During movement of irradiated fuel assemblies within containment.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A. Refueling cavity water level not within limit.	A.1 Suspend movement of irradiated fuel assemblies within containment.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.10 SR 3.9.7.1	Verify refueling cavity water level is ≥ 23 ft above the top of reactor vessel flange.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

1

1

2

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.7, REFUELING CAVITY WATER LEVEL

1. ISTS SR 3.9.7.1 provides two options for controlling the Frequencies of Surveillance Requirements. SQN is proposing to control the Surveillance Frequencies under the Surveillance Frequency Control Program.

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.

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

B 3.9 REFUELING OPERATIONS

B 3.9.7 Refueling Cavity Water Level

BASES

BACKGROUND

The movement of irradiated fuel assemblies within containment requires a minimum water level of 23 ft above the top of the reactor vessel flange. During refueling, this maintains sufficient water level in the containment, refueling canal, fuel transfer canal, refueling cavity, and spent fuel pool. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident (Refs. 1 and 2). Sufficient iodine activity would be retained to limit offsite doses from the accident to ~~< 25% of~~ 10 CFR ~~100~~ limits, ~~as provided~~ by the guidance of Reference ~~3~~.

10 CFR 50.67 | further restricted | 2 | 1

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies, the water level in the refueling canal and the refueling cavity is an initial condition design parameter in the analysis of a fuel handling accident in containment, as postulated by Regulatory Guide ~~1.25~~ (Ref. 1). A minimum water level of 23 ft (~~Regulatory Position C.1.c~~ of Ref. 1) allows a decontamination factor of ~~100~~ (~~Regulatory Position C.1.g~~ of Ref. 1) to be used in the accident analysis for iodine. This relates to the assumption that ~~99~~% of the total iodine released from the pellet to cladding gap of all the dropped fuel assembly rods is retained by the refueling cavity water. The fuel pellet to cladding gap is assumed to contain ~~10%~~ of the total fuel rod ~~iodine~~ inventory (Ref. 1).

1.183 | Appendix B | 200 | 99.5 | 2 | 8% I-131, 10% Kr-85, and 5% of other iodines and noble gases

The fuel handling accident analysis inside containment is described in Reference 2. With a minimum water level of 23 ft and a minimum decay time of ~~[X]~~ hours prior to fuel handling, the analysis and test programs demonstrate that the iodine release due to a postulated fuel handling accident is adequately captured by the water and offsite doses are maintained within allowable limits (Refs. ~~4~~ and ~~5~~).

100 | 1 | 2 | 1 | 3

Refueling cavity water level satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

A minimum refueling cavity water level of 23 ft above the reactor vessel flange is required to ensure that the radiological consequences of a postulated fuel handling accident inside containment are within acceptable limits, as provided by the guidance of Reference ~~3~~.

1 | 2

APPLICABILITY

LCO 3.9.7 is applicable when moving irradiated fuel assemblies within containment. The LCO minimizes the possibility of a fuel handling accident in containment that is beyond the assumptions of the safety analysis. If irradiated fuel assemblies are not present in containment, there can be no significant radioactivity release as a result of a postulated fuel handling accident. Requirements for fuel handling accidents in the spent fuel pool are covered by LCO 3.7.~~15~~, "Fuel ~~Storage~~ Pool Water Level."

2 | 13 | Spent

BASES

ACTIONS

A.1

With a water level of < 23 ft above the top of the reactor vessel flange, all operations involving or movement of irradiated fuel assemblies within the containment shall be suspended immediately to ensure that a fuel handling accident cannot occur.

The suspension of fuel movement shall not preclude completion of movement of a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

Verification of a minimum water level of 23 ft above the top of the reactor vessel flange ensures that the design basis for the analysis of the postulated fuel handling accident during refueling operations is met. Water at the required level above the top of the reactor vessel flange limits the consequences of damaged fuel rods that are postulated to result from a fuel handling accident inside containment (Ref. 2).

~~[The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls of valve positions, which make significant unplanned level changes unlikely.~~

~~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. Regulatory Guide ~~1.25, March 23, 1972~~ 1.183, July 2000.
2. FSAR, Section ~~[~~15.~~4.5~~] 5.6.

~~3. NUREG-0800, Section 15.7.4.~~

~~4~~ 3. 10 CFR ~~100.10~~ 50.67.

BASES

REFERENCES (continued)

~~5. Malinowski, D. D., Bell, M. J., Duhn, E., and Locante, J., WCAP-7828, Radiological Consequences of a Fuel Handling Accident, December 1971.~~

2

B 3.9 REFUELING OPERATIONS

B 3.9.7 Refueling Cavity Water Level

BASES

BACKGROUND

The movement of irradiated fuel assemblies within containment requires a minimum water level of 23 ft above the top of the reactor vessel flange. During refueling, this maintains sufficient water level in the containment, refueling canal, fuel transfer canal, refueling cavity, and spent fuel pool. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident (Refs. 1 and 2). Sufficient iodine activity would be retained to limit offsite doses from the accident to ~~< 25% of~~ 10 CFR ~~100~~ limits, ~~as provided~~ by the guidance of Reference ~~3~~.

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies, the water level in the refueling canal and the refueling cavity is an initial condition design parameter in the analysis of a fuel handling accident in containment, as postulated by Regulatory Guide ~~1.25~~ (Ref. 1). A minimum water level of 23 ft (~~Regulatory Position C.1.c~~ of Ref. 1) allows a decontamination factor of ~~100~~ (~~Regulatory Position C.1.g~~ of Ref. 1) to be used in the accident analysis for iodine. This relates to the assumption that ~~99~~% of the total iodine released from the pellet to cladding gap of all the dropped fuel assembly rods is retained by the refueling cavity water. The fuel pellet to cladding gap is assumed to contain ~~10%~~ of the total fuel rod ~~iodine~~ inventory (Ref. 1).

The fuel handling accident analysis inside containment is described in Reference 2. With a minimum water level of 23 ft and a minimum decay time of ~~[X]~~ hours prior to fuel handling, the analysis and test programs demonstrate that the iodine release due to a postulated fuel handling accident is adequately captured by the water and offsite doses are maintained within allowable limits (Refs. ~~4~~ and ~~5~~).

Refueling cavity water level satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

A minimum refueling cavity water level of 23 ft above the reactor vessel flange is required to ensure that the radiological consequences of a postulated fuel handling accident inside containment are within acceptable limits, as provided by the guidance of Reference ~~3~~.

APPLICABILITY

LCO 3.9.7 is applicable when moving irradiated fuel assemblies within containment. The LCO minimizes the possibility of a fuel handling accident in containment that is beyond the assumptions of the safety analysis. If irradiated fuel assemblies are not present in containment, there can be no significant radioactivity release as a result of a postulated fuel handling accident. Requirements for fuel handling accidents in the spent fuel pool are covered by LCO 3.7.~~15~~, "Fuel ~~Storage~~ Pool Water Level."

BASES

ACTIONS

A.1

With a water level of < 23 ft above the top of the reactor vessel flange, all operations involving or movement of irradiated fuel assemblies within the containment shall be suspended immediately to ensure that a fuel handling accident cannot occur.

The suspension of fuel movement shall not preclude completion of movement of a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.7.1

Verification of a minimum water level of 23 ft above the top of the reactor vessel flange ensures that the design basis for the analysis of the postulated fuel handling accident during refueling operations is met. Water at the required level above the top of the reactor vessel flange limits the consequences of damaged fuel rods that are postulated to result from a fuel handling accident inside containment (Ref. 2).

~~[The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls of valve positions, which make significant unplanned level changes unlikely.~~

~~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. Regulatory Guide ~~1.25, March 23, 1972~~ 1.183, July 2000.
2. FSAR, Section ~~[~~15.~~4.5~~] 5.6.

~~3. NUREG-0800, Section 15.7.4.~~

~~4~~ 3. 10 CFR ~~100.10~~ 50.67.

BASES

REFERENCES (continued)

~~5. Malinowski, D. D., Bell, M. J., Duhn, E., and Locante, J., WCAP-7828, Radiological Consequences of a Fuel Handling Accident, December 1971.~~

2

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.7 BASES, REFUELING CAVITY WATER LEVEL

1. 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.

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 SR 3.9.7.1 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.

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.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.7, REFUELING CAVITY WATER LEVEL

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

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ATTACHMENT 8

ITS 3.9.8, DECAY TIME

~~RELOCATED/DELETED CURRENT TECHNICAL SPECIFICATIONS~~

KAB066

~~**CTS 3/4.9.3, DECAY TIME**~~ KAB-066

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

ITS

A01

CTS 3/4.9.3

KAB-066

~~REFUELING OPERATIONS~~

~~3/4 9.3 DECAY TIME~~

~~LIMITING CONDITION FOR OPERATION~~

STET

LCO 3.9.8

~~3.9.3 The reactor shall be subcritical for at least 100 hours.~~

APPLICABILITY

~~APPLICABILITY: During movement or irradiated fuel in the reactor pressure vessel.~~

APPLICABILITY: During CORE ALTERATIONS

M01

~~ACTION:~~

STET

ACTION A

~~With the reactor subcritical for less than 100 hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.~~

Suspend CORE ALTERATIONS

M01

LA01

~~SURVEILLANCE REQUIREMENTS~~

STET

SR 3.9.8.1

~~4.9.3 The reactor shall be determined to have been subcritical for at least 100 hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.~~

Prior to CORE ALTERATIONS

M01

ITS

A01

CTS 3/4.9.3

~~REFUELING OPERATIONS~~

~~3/4.9.3 DECAY TIME~~

KAB-066

~~LIMITING CONDITION FOR OPERATION~~

STET

LCO 3.9.8

~~3.9.3 The reactor shall be subcritical for at least 100 hours.~~

APPLICABILITY

~~APPLICABILITY: During movement of irradiated fuel in the reactor pressure vessel.~~

APPLICABILITY: During CORE ALTERATIONS

M01

~~ACTION:~~

STET

ACTION A

~~With the reactor subcritical for less than 100 hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.~~

Suspend CORE ALTERATIONS

M01

LA01

~~SURVEILLANCE REQUIREMENT~~

STET

SR 3.9.8.1

~~4.9.3 The reactor shall be determined to have been subcritical for at least 100 hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.~~

Prior to CORE ALTERATIONS

M01

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DISCUSSION OF CHANGES
ITS 3.9.8 → ~~CTS 3/4.9.3~~, DECAY TIME

KAB-066

INSERT 1 →

ADMINISTRATIVE CHANGES

~~None~~

INSERT 2 →

MORE RESTRICTIVE CHANGES

~~None~~

RELOCATED SPECIFICATIONS

None

INSERT 3 →

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 3.9.3 requires the reactor to be subcritical for at least 100 hours during movement or irradiated fuel in the reactor pressure vessel. ITS 3.9 does not include the requirement for decay time. This changes the CTS by moving the explicit decay time requirements from the Technical Specifications to the Technical Requirements Manual (TRM).~~

~~The removal of these details from the Technical Specifications is acceptable because this type of information is not necessary to provide adequate protection of public health and safety. The purpose of CTS LCO 3.9.3 is to ensure that sufficient time has elapsed to allow radioactive decay of the short lived fission products in the irradiated fuel consistent with the assumptions used in the fuel handling accident analysis. This change is acceptable because the removed information will be adequately controlled in the TRM. Changes to the TRM are controlled by the provisions of 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as less restrictive removal of detail change because a requirement is being removed from the Technical Specifications.~~

LESS RESTRICTIVE CHANGES

None

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KAB-066

INSERT 1

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.

INSERT 2

M01

CTS LCO 3.9.3 Applicability is, “During movement of [SIC for SQN Unit 1] irradiated fuel in the reactor pressure vessel.” CTS 3.9.3 ACTION requires, in part, “suspending all operations involving the movement of irradiated fuel in the reactor pressure vessel,” when the 100 hour decay time is not met. CTS Surveillance Requirement 4.9.3 states, “The reactor shall be determined to have been subcritical for at least 100 hours by verification of the date and time of subcriticality prior to the movement of irradiated fuel in the reactor pressure vessel.” ITS LCO 3.9.8 Applicability is, “During CORE ALTERATIONS.” ITS 3.9.8 Required Action A.1 requires the suspension of CORE ALTERATIONS. ITS SR 3.9.8.1 requires verification that the reactor has been subcritical for ≥ 100 hours with a Frequency of prior to CORE ALTERATIONS (See DOC LA01 for a discussion concerning the removal of the requirement to verify subcriticality by date and time). This changes the CTS Applicability, ACTION, and Surveillance Requirement by replacing the phrase, “during movement of irradiated fuel in the reactor pressure vessel,” with the phrase, “during CORE ALTERATIONS.”

These changes provide an explicit requirement that the decay time of the reactor be greater than or equal to 100 hours prior to commencing CORE ALTERATIONS. In a letter dated November 7, 2013, (ADAMS Accession No. ML13246A358), the NRC stated a concern with CORE ALTERATIONS prior to the assumed decay time. Specifically, the Staff's concerns were associated with related changes with the following Technical Specification Task Force (TSTF) changes:

1. TSTF-51, Revision 2, "Revise Containment Requirements during Handling Irradiated Fuel and Core Alterations," approved on November 1, 1999 (ADAMS Accession No. ML993190284), and

2. TSTF-471, Revision 1, "Eliminate Use of Term Core Alterations in Actions and Notes," approved on December 7, 2006 (ADAMS Accession No. ML062860320).

In this letter the NRC stated, "The NRC staff is concerned that a dropped source, fuel assembly, or component (or any other item allowed to be moved by CORE ALTERATIONS) could damage or break a fuel assembly creating a radioactive source term. Additionally, a dropped source, component, or fuel assembly could add reactivity if it is dropped over or in the vicinity of other fuel.” Therefore, SQN will limit both the movement of irradiated fuel assemblies in the reactor pressure vessel and CORE ALTERATIONS to a decay time of ≥ 100 hours. This change is designated as more restrictive because the Applicability of the Specification has been expanded.

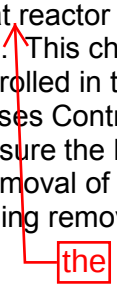
KAB-066

INSERT 3

LA01

(*Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS Surveillance Requirement 4.9.3 states that, "The reactor shall be determined to have been subcritical for at least 100 hours by verification of the date and time of subcriticality prior to the movement of irradiated fuel in the reactor pressure vessel." ITS SR 3.9.8.1 states, "Verify the reactor has been subcritical for ≥ 100 hours." ITS SR 3.9.8.1 does not contain the details on the methods of verification of subcriticality. This changes the CTS by moving details on methods of verification of subcriticality to the ITS 3.9.8 Bases. Additionally, the Frequency of "prior to movement of irradiated fuel in the reactor pressure vessel," is being changed to, "Prior to CORE ALTERATIONS." This change is discussed in Discussion of Change (DOC) M01.

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 determine that reactor has been subcritical for at least 100 hours prior to commencing CORE ALTERATIONS. This change is acceptable, because these types of procedural 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 details for meeting Technical Specification requirements are being removed from the Technical Specifications to the ITS Bases.



CTS

INSERT 4

KAB-066

3.9 REFUELING OPERATIONS

3.9.8 Decay Time

3.9.3

LCO 3.9.8 The reactor shall be subcritical for ≥ 100 hours.

Applicability M01

APPLICABILITY: During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION M01 A. Reactor subcritical for < 100 hours.	A.1 Suspend CORE ALTERATIONS.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.3 M01 SR 3.9.8.1	Verify the reactor has been subcritical for ≥ 100 hours.	Prior to CORE ALTERATIONS

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CTS

INSERT 4 (continued)

KAB-066

3.9 REFUELING OPERATIONS

3.9.8 Decay Time

3.9.3 LCO 3.9.8 The reactor shall be subcritical for ≥ 100 hours.

Applicability M01 APPLICABILITY: During CORE ALTERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION M01 A. Reactor subcritical for < 100 hours.	A.1 Suspend CORE ALTERATIONS.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.3 M01 SR 3.9.8.1	Verify the reactor has been subcritical for ≥ 100 hours.	Prior to CORE ALTERATIONS

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INSERT 4 (continued)

KAB066

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.8, DECAY TIME

1. None.

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INSERT 4 (continued)

KAB-066

B 3.9 REFUELING OPERATIONS

B 3.9.8 Decay Time

BASES

BACKGROUND

The primary purpose of the decay time requirement is to ensure that the fission product inventories assumed in the fuel handling accident analysis are met. As soon as the reactor is subcritical, the quantity of fission products in the core decreases as the fission products undergo natural radioactive decay. As long as the reactor remains subcritical, this decrease will continue and the radiation levels will also decrease.

APPLICABLE SAFETY ANALYSES

The fuel handling accident is the postulated event of concern in MODE 6 during fuel handling operations (Ref. 1). It establishes the minimum decay time. It is assumed that all of the fuel rods in the equivalent of one fuel assembly are damaged to the extent that all the gap activity in the rods is released. The damaged fuel assembly is assumed to be the assembly with the highest fission product inventory. The fission product inventories are those assumed to be present 100 hours after the reactor becomes subcritical.

The decay time satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The LCO requires that the reactor be subcritical for at least 100 hours prior to commencing CORE ALTERATIONS. The requirement to be subcritical for greater than or equal to 100 hours ensures that the fission product radioactivity has undergone natural radioactive decay and that the consequences of a fuel handling accident will be within the bounds of the safety analysis.

APPLICABILITY

This LCO applies during CORE ALTERATIONS, since the potential for a release of fission products exists.

ACTIONS

A.1

With the reactor subcritical for less than 100 hours, there shall be no operations involving CORE ALTERATIONS. This will preclude a fuel handling accident with fuel containing more fission product radioactivity than assumed in the safety analysis.

The immediate Completion Time is consistent with the required times for actions to be performed without delay and in a controlled manner.