ATTACHMENT 1

VOLUME 12

SAN ONOFRE NUCLEAR GENERATING STATION

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.9 REFUELING OPERATIONS

LIST OF ATTACHMENTS

ATTACHMENT 1

ITS 3.9.1, BORON CONCENTRATION

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ITS

A01

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

LCO 3.9.1

LCO 3.9.1 Boron concentrations of the Reactor Coolant System and the refueling ~~canal~~ cavity shall be maintained within the limit specified in the COLR.

A02

Applicability

APPLICABILITY: MODE 6.

NOTE
Only applicable to the refueling cavity when connected to the RCS.

L01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. Boron concentration not within limit.	~~A.1~~ ~~Suspend CORE ALTERATIONS.~~ ~~AND~~ 1 A.~~2~~ Suspend positive reactivity additions. AND 2 A.~~3~~ Initiate actions to restore boron concentration to within limits.	~~Immediately~~ Immediately Immediately

L02

SURVEILLANCE REQUIREMENTS

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

LA01

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ITS

A01

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

LCO 3.9.1

LCO 3.9.1 Boron concentrations of the Reactor Coolant System and the refueling ~~canal~~ shall be maintained within the limit specified in the COLR.

cavity

A02

Applicability

APPLICABILITY: MODE 6.

NOTE
Only applicable to the refueling cavity when connected to the RCS.

L01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. Boron concentration not within limit.	~~A.1 Suspend CORE ALTERATIONS.~~	~~Immediately~~
	~~AND~~ 1 A.~~2~~ Suspend positive reactivity additions.	Immediately
	AND 2 A.~~3~~ Initiate actions to restore boron concentration to within limits.	Immediately

L02

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.1.1 Verify boron concentration is within limit specified in the COLR.	~~72 hours~~

SR 3.9.1.1

LA01

In accordance with the Surveillance Frequency Control Program

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved 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 provides requirements on the boron concentration of the Reactor Coolant System and the refueling canal. ITS 3.9.1 provides requirements on the boron concentration of the Reactor Coolant System and the refueling cavity. This changes the CTS by changing the name of the refueling canal to the refueling cavity.

This change is acceptable because the technical requirements have not changed. The commonly used term to describe the area above the reactor vessel that is filled with borated water during activities and the adjacent area, below the plant elevation of the reactor vessel flange, is the refueling cavity. This change is designated as administrative because the technical requirements of the specifications have not changed.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.9.1.1 requires verification that the boron concentration is within the limit specified in the COLR within 72 hours. ITS SR 3.9.1.1 requires the same Surveillance, but specifies the periodic Frequency as "In accordance with the Surveillance Frequency Control Program. This changes the CTS by moving the specified Frequency for the SR and the Bases for the frequency to the Surveillance Frequency Control Program.

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

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performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in

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accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
   - System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
   - Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
   - Independence of barriers is not degraded;
   - Defenses against human errors are preserved; and
   - The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

   These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because a Surveillance Frequency is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.1 provides limits on the boron concentration of the Reactor Coolant System and the refueling canal when in MODE 6. ITS 3.9.1 modifies this requirement with a Note that states, "Only applicable to the refueling cavity when connected to the RCS." This changes the CTS by eliminating the applicability of the boron concentration limits on the refueling cavity when that volume is not connected to the RCS. See DOC A02 for discussion on changing "refueling canal" to "refueling cavity."

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 the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. If the refueling cavity is not connected to the RCS (such as the when the reactor vessel head is on the reactor vessel), the boron concentration to this volume cannot affect the SHUTDOWN MARGIN. In addition, prior to connecting the refueling cavity to the RCS, a boron concentration verification (SR 3.9.1.1) will be performed (as required by SR 3.0.4) to ensure the newly connected portion cannot decrease

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

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)* The CTS 3.9.1 ACTION specifies the compensatory action 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, or reactivity control components 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: addition of fuel to the reactor vessel and withdrawal of control rods. However, ITS 3.9.1 Required Action A.1 requires immediate suspension of positive reactivity changes. This would include both the addition of fuel to the reactor vessel and the withdrawal of control rods. Furthermore, another accident considered in MODE 6 that could affect SHUTDOWN MARGIN is the boron dilution event. A boron dilution accident is initiated by a dilution source which results in the boron concentration dropping below that required to maintain the SHUTDOWN MARGIN. A boron dilution accident is mitigated by stopping the dilution. Suspension of CORE ALTERATIONS has no affect on the mitigation of a boron dilution accident. 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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Improved Standard Technical Specifications (ISTS) Markup and Justification for Deviations (JFDs)

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

LCO 3.9.1

LCO 3.9.1 Boron concentrations of the Reactor Coolant System, [the refueling canal, and the refueling cavity] shall be maintained within the limit specified in the COLR. (2)

Applicability

APPLICABILITY: MODE 6.

----------NOTE----------
Only applicable to the refueling canal and refueling cavity when connected to the RCS. (2)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. Boron concentration not within limit.	A.1 Suspend CORE ALTERATIONS. AND	Immediately (TSTF-471-A)
	A.2 (1) Suspend positive reactivity additions. AND	Immediately (TSTF-471-A)
	A.3 (2) Initiate action to restore boron concentration to within limit.	Immediately (TSTF-471-A)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.1.1	SR 3.9.1.1 Verify boron concentration is within the limit specified in the COLR.	72 hours (TSTF-425-A) In accordance with the Surveillance Frequency Control Program

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.1, BORON CONCENTRATION

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed 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 3.9.1 Boron Concentration

BASES

BACKGROUND

The limit on the boron concentrations of the Reactor Coolant System (RCS), the refueling canal, and 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. Unit 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 element assemblies (CEAs) and fuel assemblies assumed to be in the most adverse configuration (least negative reactivity) allowed by unit procedures.

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 tank into the open reactor vessel by gravity feeding or by the use of the Shutdown Cooling (SDC) System pumps.

The pumping action of the SDC System in the RCS and the natural circulation due to thermal driving heads in the reactor vessel and the refueling cavity mix the added concentrated boric acid with the water in the refueling canal. The SDC System is in operation during refueling (see LCO 3.9.4, "Shutdown Cooling and Coolant Circulation - High Water Level," and LCO 3.9.5, "Shutdown Cooling 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

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.

The required boron concentration and the unit refueling procedures that demonstrate the correct fuel loading plan (including full core mapping) ensure 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.

transfer pool,

During refueling, the water volume in the spent fuel pool, the transfer tube 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. 1

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

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 refueling cavity while in MODE 6. 5 The boron concentration limit specified in the COLR ensures 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 to 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. 5 When the refueling canal and the refueling cavity are isolated from the RCS, no potential path for boron dilution exists.

this volume is

is

BASES

ACTIONS

A.1 and A.2

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

Suspension of CORE ALTERATIONS and positive reactivity additions shall not preclude moving a component to a safe position.

A.3 (2)

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

In determining the required combination of boration flow rate and concentration, there is no unique design basis event that 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 boration is initiated, it 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 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 (was) disconnected from the RCS, this SR ensures the correct boron concentration prior to communication with the RCS.

BASES

SURVEILLANCE REQUIREMENTS (continued)

INSERT 1

A minimum Frequency of once every 72 hours is therefore 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.

TSTF-425-A

REFERENCES

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

2. FSAR, Section [ ].

U

15.4.1.4

1 2

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 3

---------- Reviewer's Note ----------
Plants controlling Surveillance Frequencies under the Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.1 BASES, BORON CONCENTRATION

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk are not always true for each of the Frequencies.

4. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

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

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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 NSHC discussions for this Specification.

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ATTACHMENT 2

ITS 3.9.2, NUCLEAR INSTRUMENTATION

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

ITS

A01

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2

LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE.

Applicability

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One SRM inoperable.	A.1 Suspend ~~CORE ALTERATIONS~~. (positive reactivity additions) AND	Immediately
	A.2 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
ACTION B B. Two SRMs inoperable.	B.1 Initiate actions to restore one SRM to OPERABLE status. AND	Immediately
	B.2 Perform SR 3.9.1.1.	~~4 hours~~ ~~AND~~ Once per 12 hours ~~thereafter~~

L01

L02

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ITS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1 SR 3.9.2.1	Perform CHANNEL CHECK.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program LA01
SR 3.9.2.2 SR 3.9.2.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	~~24 months~~ LA01

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ITS

A01

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2

LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE.

Applicability

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
ACTION A A. One SRM inoperable.	A.1	Suspend ~~CORE ALTERATIONS~~. (positive reactivity additions)	Immediately
	AND		
	A.2	Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
ACTION B B. Two SRMs inoperable.	B.1	Initiate actions to restore one SRM to OPERABLE status.	Immediately
	AND		
	B.2	Perform SR 3.9.1.1.	~~4 hours~~ ~~AND~~ Once per 12 hours ~~thereafter~~

L01

L02

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.2.1	SR 3.9.2.1 Perform CHANNEL CHECK.	~~12 hours~~
SR 3.9.2.2	SR 3.9.2.2 ----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ---------- Perform CHANNEL CALIBRATION.	~~24 months~~

In accordance with the Surveillance Frequency Control Program

LA01

LA01

DISCUSSION OF CHANGES
ITS 3.9.2, NUCLEAR INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved 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 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.9.2.1 requires performance of a CHANNEL CHECK of source range instrumentation within 12 hours. CTS SR 3.9.2.2 requires performance of a CHANNEL CALIBRATION of source range instrumentation within 24 months. ITS SR 3.9.2.1 and SR 3.9.2.2 require similar Surveillances, but specify the periodic Frequencies as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

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. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

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DISCUSSION OF CHANGES
ITS 3.9.2, NUCLEAR INSTRUMENTATION

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

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DISCUSSION OF CHANGES
ITS 3.9.2, NUCLEAR INSTRUMENTATION

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
   - System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
   - Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
   - Independence of barriers is not degraded;
   - Defenses against human errors are preserved; and
   - The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

   These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the

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licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

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

LESS RESTRICTIVE CHANGES

L01 (*Category 4 – Relaxation of Required Action)* CTS 3.9.2 ACTION A specifies the compensatory action for when one SRM is inoperable. One of the compensatory actions is to suspend CORE ALTERATIONS. Under similar conditions, ITS 3.9.2 does not require suspension of CORE ALTERATIONS but requires the suspension of positive reactivity additions. This changes the CTS by deleting the requirement to suspend CORE ALTERATIONS when one SRM is inoperable.

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 neutron monitor is inoperable, CORE ALTERATIONS are suspended to preclude an unmonitored reactivity change. CORE ALTERATIONS is defined in CTS 1.1, in part, as "the movement or manipulation of any fuel, sources, reactivity control components, or other components, excluding control element assemblies (CEAs) withdrawn into the upper guide structure, 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: addition of fuel to the reactor vessel and withdrawal of control rods. However, ITS 3.9.2 Required Action A.1 requires immediate suspension of positive reactivity additions. This would include both the addition of fuel to the reactor vessel and the withdrawal of control rods. Furthermore, another accident considered in MODE 6 that could affect SHUTDOWN MARGIN is the boron dilution event. A boron dilution accident is initiated by a dilution source which results in the boron concentration dropping below that required to

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DISCUSSION OF CHANGES
ITS 3.9.2, NUCLEAR INSTRUMENTATION

maintain the SHUTDOWN MARGIN. A boron dilution accident is mitigated by stopping the dilution. Suspension of CORE ALTERATIONS has no affect on the mitigation of a boron dilution accident. 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.

L02 (*Category 3 – Relaxation of Completion Time)* CTS 3.9.2 Required Action B.2 requires that if two SRMs are inoperable, then SR 3.9.1.1 shall be performed within 4 hours and then once per 12 hours thereafter. ITS 3.9.2 Required Action B.2 requires the same performance of SR 3.9.1.1 when two SRMs are inoperable but only on a once per 12 hours basis. This changes the CTS by not requiring the initial performance of SR 3.9.1.1 within 4 hours of entry into Condition B of LCO 3.9.2.

The purpose of CTS 3.9.2 Required Action B.2 is to verify the boron concentration when two SRMs are inoperable. The deletion of the initial performance of SR 3.9.1.1 within 4 hours of entry into Condition B of LCO 3.9.2 is acceptable because the accelerated performance of this SR is not warranted based on routine performance of SR 3.9.1.1 every 72 hours and knowledge of stable conditions prior to the loss of the source range monitor. Additionally, RCS dilution events are recognizable through other means such as uncontrolled increases in pool water level. 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)

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

LCO 3.9.2

LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE.

Applicability

APPLICABILITY: MODE 6.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One [required] SRM inoperable.	A.1 Suspend CORE ALTERATIONS. (positive reactivity additions) (2) (TSTF-471-A) 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 B. Two [required] SRMs inoperable.	B.1 Initiate action to restore one SRM to OPERABLE status. (2) AND B.2 Perform SR 3.9.1.1.	Immediately Once per 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.2.1	SR 3.9.2.1 Perform CHANNEL CHECK.	12 hours (In accordance with the Surveillance Frequency Control Program) (TSTF-425-A)

U2/U3 CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.9.2.2 SR 3.9.2.2	----------NOTE---------- Neutron detectors are excluded from CHANNEL CALIBRATION. ----------	
	Perform CHANNEL CALIBRATION.	[18] ~~months~~ In accordance with the Surveillance Frequency Control Program

TSTF-425-A

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.2, NUCLEAR INSTRUMENTATION

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed 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 3.9.2 Nuclear Instrumentation

BASES

BACKGROUND

The source range monitors (SRMs) are used during refueling operations to monitor the core reactivity condition. The installed SRMs are part of the Nuclear Instrumentation System (NIS). These detectors are located external to the reactor vessel and detect neutrons leaking from the core. The use of portable detectors is permitted, provided the LCO requirements are met.

INSERT 1

The installed SRMs 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 five decades of neutron flux (1E+5 cps) with a [5%] instrument accuracy. The detectors also provide continuous visual indication in the control room and an audible alarm to alert operators to a possible dilution accident. 1

The NIS is designed in accordance with the criteria presented in Reference 1. 2

If used, portable detectors should be functionally equivalent to the NIS SRMs.

APPLICABLE SAFETY ANALYSES

Two OPERABLE SRMs are required to provide a signal to alert the operator to unexpected changes in core reactivity such as by a boron dilution accident or an improperly loaded fuel assembly. The safety analysis of the uncontrolled boron dilution accident is described in Reference 2. 3 The analysis of the uncontrolled boron dilution accident shows that normally available SHUTDOWN MARGIN would be reduced, but there is sufficient time for the operator to take corrective actions.

The SRMs satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

This LCO requires two SRMs OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity.

APPLICABILITY

In MODE 6, the SRMs must be OPERABLE to determine changes in core reactivity. There is no other direct means available to check core reactivity levels.

In MODES 2, 3, 4, and 5, the installed source range detectors and circuitry are required to be OPERABLE by LCO 3.3.2, "RPS Instrumentation Shutdown." 5 1

3.3.13, "Boron Dilution Monitoring Channels."

(1) **INSERT 1**

The installed SRMs are fission chamber detectors operating in the ionization 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 ($0.1\text{-}10^5$ cps) with a 2% Equivalent Linear Full Scale (ELFS) (Reference 1). Two detectors provide continuous visual indication in the control room and one, as a minimum, an audible indication in the containment and control room.

BASES

ACTIONS

A.1 and A.2

With only one SRM OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, CORE ALTERATIONS 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.

positive reactivity additions

TSTF-471-A

B.1

With no SRM OPERABLE, action to restore a monitor to OPERABLE status shall be initiated immediately. Once initiated, action shall be continued until an SRM is restored to OPERABLE status.

B.2

With no SRM OPERABLE, there is no direct means of detecting changes in core reactivity. However, since CORE ALTERATIONS and positive reactivity additions are not to be made, the core reactivity condition is stabilized until the SRMs are OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to verify that the required boron concentration exists.

TSTF-471-A

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 period.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

SR 3.9.2.1 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.

INSERT 2

The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1, "Reactor Protection System."

TSTF-425-A

SR 3.9.2.2

SR 3.9.2.2 is the performance of a CHANNEL CALIBRATION every 18 months. 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.

TSTF-425-A

1

INSERT 2

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 on the 18 month Frequency.

TSTF-425-A

REFERENCES

2 → 1. 10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.

3 → 2. U FSAR, Section [ ]. ← 15.4

1. DBD-SO23-470, Rev. 0, Excore Nuclear Instrumentation System, July 2, 1992.

1

1 2

1

1

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 3

---------- Reviewer's Note ----------
Plants controlling Surveillance Frequencies under the Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 4

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.2 BASES, NUCLEAR INSTRUMENTATION

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk are not always true for each of the Frequencies.

4. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

5. Typographical error corrected. ISTS 3.3.2 (for SONGS the SRMs are covered by ITS 3.3.13, not ISTS 3.3.2) does not require SRMs to be OPERABLE in MODE 2.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.2, NUCLEAR INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 3

ITS 3.9.3, CONTAINMENT PENETRATIONS

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

ITS

A01

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3

LCO 3.9.3 The containment penetrations shall be in the following status:

a. The equipment hatch closed and held in place by four bolts;

----------NOTE----------
The equipment hatch may be open if all of the following conditions are met:

1) The Containment Structure Equipment Hatch Shield Doors are capable of being closed within 30 minutes,

~~2) The plant is in Mode 6 with at least 23 feet of water above the reactor vessel flange,~~

A03

3) A designated crew is available to close the Containment Structure Equipment Hatch Shield Doors,

4) Containment purge is in service, and

5) The reactor has been subcritical for at least 72 hours.

---

is capable of being

b. One door in each air lock closed; and

A04

~~----------NOTE----------~~
~~Both doors of the containment personnel airlock may be open provided:~~

~~a. one personnel airlock door is OPERABLE, and~~

LA01

~~b1. the plant is in MODE 6 with 23 feet of water above the fuel in the reactor vessel, or~~

~~b2. defueled configuration with fuel in containment (i.e., fuel in refueling machine or upender).~~

A02

~~---~~

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

1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or

2. capable of being closed by an OPERABLE Containment Purge System.

INSERT 1

L01

L02

Applicability

APPLICABILITY: ~~During CORE ALTERATIONS,~~
During movement of irradiated fuel assemblies within containment.

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L01

INSERT 1

----------NOTE----------
Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

ITS

A01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	~~A.1 Suspend CORE ALTERATIONS.~~	~~Immediately~~
	~~AND~~	
	A.~~2~~ Suspend movement of irradiated fuel assemblies within containment.	Immediately

ACTION A

L02

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE			FREQUENCY
SR 3.9.3.1	SR 3.9.3.1	Verify each required containment penetration is in the required status.	~~7 days~~
SR 3.9.3.2	SR 3.9.3.2	Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	~~24 months~~

LA02

In accordance with the Surveillance Frequency Control Program

A05

LA02

INSERT 2

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A05

INSERT 2

----------NOTE----------
Not required to be met for containment purge and exhaust valve(s) in penetrations closed to comply with LCO 3.9.3.c.1.

ITS

A01

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3

LCO 3.9.3 The containment penetrations shall be in the following status:

a. The equipment hatch closed and held in place by four bolts;

----------NOTE----------
The equipment hatch may be open if all of the following conditions are met:

1) The Containment Structure Equipment Hatch Shield Doors are capable of being closed within 30 minutes,

~~2) The plant is in Mode 6 with at least 23 feet of water above the reactor vessel flange,~~

A03

3) A designated crew is available to close the Containment Structure Equipment Hatch Shield Doors,

4) Containment purge is in service, and

5) The reactor has been subcritical for at least 72 hours.

----

is capable of being

b. One door in each air lock closed; and

A04

~~----------NOTE----------~~

~~Both doors of the containment personnel airlock may be open provided:~~

~~a. one personnel airlock door is OPERABLE, and~~

LA01

~~b1. the plant is in MODE 6 with 23 feet of water above the fuel in the reactor vessel, or~~

~~b2. defueled configuration with fuel in containment (i.e., fuel in refueling machine or upender).~~

A02

~~----------~~

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

1. closed by a manual or automatic isolation valve, blind flange, or equivalent, or

2. capable of being closed by an OPERABLE Containment Purge System.

INSERT 1

L01

L02

Applicability

APPLICABILITY: ~~During CORE ALTERATIONS,~~
During movement of irradiated fuel assemblies within containment.

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L01

INSERT 1

----------NOTE----------
Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

ITS

A01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more containment penetrations not in required status.	~~A.1 Suspend CORE ALTERATIONS.~~ ~~AND~~ A.~~2~~ Suspend movement of irradiated fuel assemblies within containment.	~~Immediately~~ Immediately

ACTION A

L02

1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.9.3.1	SR 3.9.3.1 Verify each required containment penetration is in the required status.	~~7 days~~
SR 3.9.3.2	SR 3.9.3.2 Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	~~24 months~~

LA02

In accordance with the Surveillance Frequency Control Program

A05

LA02

INSERT 2

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A05

INSERT 2

----------NOTE----------
Not required to be met for containment purge and exhaust valve(s) in penetrations closed to comply with LCO 3.9.3.c.1.

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DISCUSSION OF CHANGES
ITS 3.9.3, CONTAINMENT PENETRATIONS

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved 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 3.9.3 allows both doors of the containment personnel air lock to be open provided, in part, that the plant is in MODE 6 with 23 feet of water above the fuel in the reactor vessel or defueled configuration with fuel in containment (i.e., fuel in refueling machine or upender). ITS 3.9.3 does not contain these restrictions. This changes the CTS by not including the requirements that the plant is in MODE 6 with 23 feet of water above the fuel in the reactor vessel or defueled configuration with fuel in containment (i.e., fuel in refueling machine or upender).

This change is acceptable because the requirements are duplicative of the requirement in ITS LCO 3.9.6 which requires that refueling cavity water level to be maintained ≥ 23 feet above the top of the reactor vessel flange during movement of irradiated fuel assemblies within containment. Additionally, there is no need to state that the plant is in a defueled configuration with fuel in the containment. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 3.9.3, in part, requires the equipment hatch to be closed and held in place by four bolts. The requirement is modified by a Note that allows the hatch to be open if certain conditions are met. One of the conditions is that the unit is in MODE 6 with a least 23 feet of water above the reactor vessel flange. ITS 3.9.3 includes the same equipment hatch requirement and includes the Note to allow the hatch to be open, but the specific condition concerning MODE 6 and the reactor water level is not included. This changes the CTS by deleting a conditional requirement for the equipment hatch to be open.

The purpose of the Note is to provide compensatory measures when the hatch is open. The specific condition concerning MODE 6 and the reactor water level is unnecessary, since this LCO and another LCO already require this condition to be met. Specifically, the unit must be in MODE 6 for this LCO to be applicable since CTS 3.9.3 and ITS 3.9.3 Applicability includes movement of irradiated fuel assemblies within containment. Since movement of irradiated fuel assemblies within containment can only occur when the unit is in MODE 6, the specific requirement in the Note is redundant and unnecessary. The second part of the Note required the water level to be at least 23 feet above the reactor vessel flange. Both CTS 3.9.6 and ITS 3.9.6 already specify this restriction, and the Applicability of CTS 3.9.6 and ITS 3.9.6 is during movement of irradiated fuel assemblies within containment, exactly like the Applicability of this LCO. Therefore, this part of the Note is also redundant and unnecessary. Therefore,

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deleting this condition form the Note is acceptable and considered administrative since the technical requirements are not changing.

A04 CTS 3.9.3 requires, in part, one door in each air lock to be closed or allows both doors of the containment personnel airlock to be open provided one personnel air lock door is OPERABLE. ITS 3.9.3 requires that one door in each air lock is capable of being closed. This changes the CTS by replacing the prescriptive requirements 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 CTS requirements have not changed. A door that is closed is a door that is also capable of being closed. The ITS requirements preserve the intent of the CTS. This change is designated as administrative because it does not result in technical changes to the CTS.

A05 CTS SR 3.9.3.2 requires, in part, verifying that each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal. ITS SR 3.9.3.2 requires this same verification but is modified by a Note that states that SR 3.9.3.2 is not required to be met for containment purge and exhaust valve(s) that are closed to comply with LCO 3.9.3.c.1. This changes the CTS by adding a Note that the SR is not required to be met for containment purge and exhaust valve(s) in penetrations that are closed to comply with ITS LCO 3.9.3.c.1.

The purpose of CTS SR 3.9.3.2 is to verify that the equipment required to meet the LCO is OPERABLE. LCO 3.9.3.c provides two options to meet the LCO requirement: either the penetrations must be isolated (LCO 3.9.3.c.1) or the automatic actuation signal must be capable of closing the valves (LCO 3.9.3.c.2). Thus, when LCO 3.9.3.c.1 is being met, LCO 3.9.3.c.2 is not required, and its associated SR (SR 3.9.3.2) is also not required, per SR 3.0.1. Therefore, the addition of this Note is editorial and acceptable. This change is designated as administrative since it does not result in any technical changes.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS LCO 3.9.3.b contains a Note which states, in part, that both doors of the containment personnel airlock may be open provided that one personnel airlock door is OPERABLE. ITS 3.9.3.b does not contain this Note. This changes the CTS by moving the information that both doors can be

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open provided that one personnel airlock door is OPERABLE to the ITS Bases. See DOC A02 for additional changes to the CTS 3.9.3 Note. Specifically, the term OPERABLE is not used in the Bases, but it is changed to capable of being closed.

This removal of these details, which are related to procedural details for meeting Technical Specification 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. ITS LCO 3.9.3.b continues to require one door in each airlock to be capable of being closed. 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 because information relating to procedural details for meeting Technical Specification requirements is being removed from the Technical Specifications.

LA02 (*Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program*) CTS SR 3.9.3.1 requires a verification that each required containment penetration is in the required status every 7 days. CTS SR 3.9.3.2 requires a verification that each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal every 24 months. ITS SRs 3.9.3.1 and 3.9.3.2 require the same verifications but specify the periodic Frequencies as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs and the Bases for the Frequencies to the Surveillance Frequency Control Program.

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. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance

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DISCUSSION OF CHANGES
ITS 3.9.3, CONTAINMENT PENETRATIONS

Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.
The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;

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- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);

- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;

- Independence of barriers is not degraded;

- Defenses against human errors are preserved; and

- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

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DISCUSSION OF CHANGES
ITS 3.9.3, CONTAINMENT PENETRATIONS

5. The impact of the proposed change should be monitored using performance measurement strategies.

NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

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 LCO 3.9.3.c requires each penetration providing direct access from the containment atmosphere to the outside atmosphere to either be closed by a manual or automatic isolation valve, blind flange, or equivalent, or be capable of being closed by an OPERABLE Containment Purge System. ITS LCO 3.9.3.c has a similar requirement, but it includes a Note that states "Penetrations flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls." This changes the CTS by allowing containment penetrations to be unisolated under administrative controls during movement of fuel assemblies within containment.

This purpose of CTS 3.9.3 is to ensure the containment penetrations are in the condition assumed in the Fuel Handling Accident (FHA) analysis. 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. The Reviewer's Note in the ISTS LCO Bases associated with the LCO Note states that the allowance to have the personnel air lock doors open and the penetration flow paths unisolated under administrative control requires confirmatory dose calculations approved by the NRC staff and commitments from the licensee to implement acceptable administrative procedures to ensure that in the event of a refueling accident that the open penetration(s) can and will be promptly closed. The confirmatory dose calculations were made by the NRC as part of the NRC SE for Unit 2 and Unit 3 License Amendments 117 and 106, respectively (ADAMS Accession No. ML021990403), the NRC SE for Unit 2 and Unit 3 License Amendments 193 and 184, respectively (ADAMS Accession No. ML043570481), and the NRC SE for Unit 2 and Unit 3 License Amendments 210 and 202, respectively (ADAMS Accession No. ML063400359). SCE commits to implementing administrative procedures to ensure that in the event of a refueling accident, the open air locks and open penetration(s) can and will be promptly closed. 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 2 – Relaxation of Applicability*) CTS 3.9.3 Applicability is during CORE ALTERATIONS and during movement of irradiated fuel assemblies within

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DISCUSSION OF CHANGES
ITS 3.9.3, CONTAINMENT PENETRATIONS

containment. CTS 3.9.3 ACTION A provides the actions when one or more containment penetrations are not in the required status. CTS 3.9.3 Required Action A.1 requires immediate suspension of CORE ALTERATIONS while Required Action A.2 requires immediate suspension of movement of irradiated fuel assemblies within containment. ITS 3.9.3 Applicability does not apply during CORE ALTERATIONS. ITS 3.9.3 ACTION A does not contain a Required Action to suspend CORE ALTERATIONS. This changes the CTS by deleting the Applicability of CORE ALTERATIONS and the Required Action to suspend CORE ALTERATIONS.

The purpose of CTS 3.9.3 Applicability and ACTION A is to ensure that a fuel handling accident cannot occur. The proposed change deletes the Required Action to suspend CORE ALTERATIONS. This change is acceptable because suspending CORE ALTERATIONS has no effect on the initial conditions or mitigation of any DBA or transient. The requirement to suspend core alterations applies an operational burden with no corresponding safety benefit. Furthermore, the requirement to suspend movement of irradiated fuel assemblies basically ensures that CORE ALTERATIONS is suspended, since the main contributor to reactivity changes is irradiated fuel movement. Therefore the use of the defined term CORE ALTERATIONS are all being removed from TS per TSTF-471.

The term “core alteration” does not appear in the Standard Review Plan or in Title 10 of the Code of Federal Regulations. Since CORE ALTERATIONS only occur when the reactor vessel head is removed, it only applies in MODE 6. There are only two accidents considered during MODE 6 for PWRs: a fuel handling accident and a boron dilution accident. According to the Standard Review Plan, a fuel handling accident is initiated by the dropping of a [recently] irradiated fuel assembly, either in the containment or in the fuel building. There are no mitigation actions, except some plants credit ventilation systems to reduce the dose consequences. Suspension of CORE ALTERATIONS, except for suspension of movement of [recently] irradiated fuel, will not prevent or impair the mitigation of a fuel handling accident.

The second analyzed event is a boron dilution accident. A boron dilution accident is initiated by a dilution source which results in the boron concentration dropping below that required to maintain the SHUTDOWN MARGIN. As described in the Bases of Specification 3.9.1, “Boron Concentration,” (which applies in MODE 6), “The refueling boron concentration limit is specified in the COLR. Unit 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 element assemblies (CEAs) and fuel assemblies assumed to be in the most adverse configuration (least negative reactivity) allowed by unit procedures.” The accident is mitigated by stopping the dilution. Suspension of CORE ALTERATIONS has no effect on the mitigation of a boron dilution accident. Movement of control rods or fuel do not affect the initial conditions of a boron dilution accident as it is assumed that the control rods and fuel are in the most adverse conditions with a large safety margin ($k_{eff} \leq 0.95$). To address the possibility of a misloaded fuel assembly for the Nuclear Instrumentation TS during refueling, a Required Action is added that suspends positive reactivity

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additions if nuclear instrumentation is not available. This precludes movement of fuel assemblies which could add reactivity to the core.

In summary, with the exception of suspending movement of fuel assemblies, there are no DBAs or transients that are initiated by, or mitigation affected by, suspension of CORE ALTERATIONS. Therefore, if all Required Actions that require suspension of CORE ALTERATIONS also require suspension of movement of irradiated fuel, suspension of CORE ALTERATIONS provides no safety benefit.

This change is designated as less restrictive because the Required Actions of the ITS are being relaxed from what is currently in the CTS.

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

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

LCO 3.9.3

LCO 3.9.3 The containment penetrations shall be in the following status:

INSERT 1

a. The equipment hatch closed and held in place by [four] bolts, (2)

b. One door in each air lock is [capable of being] closed, and (3) (2)

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

1. Closed by a manual or automatic isolation valve, blind flange, or equivalent or

2. Capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System. (1)

----------NOTE----------
Penetration flow path(s) providing direct access from the containment atmosphere to the outside atmosphere may be unisolated under administrative controls.

Applicability

APPLICABILITY: During movement of [recently] irradiated fuel assemblies within containment. (2)

ACTIONS

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

3

INSERT 1

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

The equipment hatch may be open if all of the following conditions are met:

1. The Containment Structure Equipment Hatch Shield Doors are capable of being closed within 30 minutes;

2. A designated crew is available to close the Containment Structure Equipment Hatch Shield Doors;

3. Containment purge is in service; and

4. The reactor has been subcritical for at least 72 hours.

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SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
SR 3.9.3.1	SR 3.9.3.1	Verify each required containment penetration is in the required status.	7 days
SR 3.9.3.2	SR 3.9.3.2	----------NOTE---------- Not required to be met for containment purge and exhaust valve(s) in penetrations closed to comply with LCO 3.9.3.c.1. ---------- Verify each required containment purge and exhaust valve actuates to the isolation position on an actual or simulated actuation signal.	In accordance with the Surveillance Frequency Control Program [18] months

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3, CONTAINMENT PENETRATIONS

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. CTS LCO 3.9.3.a contains a Note stating that the equipment hatch may be open if the Containment Structure Equipment Hatch Shield Doors are capable of being closed within 30 minutes, a designated crew is available to close the Containment Structure Equipment Hatch Shield Doors, containment purge is in service, and the reactor has been subcritical for at least 72 hours. SONGS will maintain this current licensing option as an ITS LCO 3.9.3.a Note, as approved by the NRC Safety Evaluation for SONGS Units 2 and 3 amendments 193 and 184, dated December 23, 2004 (ADAMS Accession No. ML. 043570481).

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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 Containment Penetrations

BASES

BACKGROUND

During movement of [recently] irradiated fuel assemblies within containment, a release of fission product radioactivity within the 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 structure provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions.

guideline values of 10 CFR 50.67 and NUREG-0800 (References 2 and 3)

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 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 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 on 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.

Containment Purge Isolation Signal (CPIS)

In MODE 6, large air exchanges are necessary to conduct refueling operations. The normal 42 inch purge system is used for this purpose and all valves are closed by the ESFAS in accordance with LCO 3.3.2, "Reactor Protective System (RPS) - Shutdown."

CPIS

3.3.8, "Containment Purge Isolation Signal (CPIS)."

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

CPIS

[or]

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

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).

APPLICABLE SAFETY ANALYSES

During CORE ALTERATIONS or 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 Ref. 3,

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BASES

APPLICABLE SAFETY ANALYSES (continued)

include dropping a single irradiated fuel assembly and handling tool or a heavy object onto other irradiated fuel assemblies. The requirements of LCO 3.9.6, "Refueling Water Level," in conjunction with minimum decay time of [72] hours prior to [irradiated fuel movement with containment closure capability or a minimum decay time of [x] days without containment closure capability], ensure 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. The acceptance limits for offsite radiation exposure are contained in Standard Review Plan Section 15.7.4, Rev. 1 (Ref. 3), which defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values.

of 10 CFR 50.67 and NUREG-0800 (References 2 and 3).

2

1

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 and CORE ALTERATIONS 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 penetrations or combination of penetrations shall be included in the confirmatory dose calculations.

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3

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

INSERT 1

2

2

5

1

5 **INSERT 1**

For the containment personnel air lock, this LCO ensures that the airlock can be closed after containment evacuation in the event of a fuel handling accident. The requirement that the plant be in MODE 6 with 23 feet of water above the fuel in the reactor vessel or defueled configuration with fuel in the containment (i.e., fuel in the refueling machine or upender) ensures that there is sufficient time to close the personnel air lock following a loss of shutdown cooling before boiling occurs.

The LCO is modified by a Note that allows the opening of the containment equipment hatch during movement of irradiated fuel in the containment provided that: 1) the Containment Structure Equipment Hatch Shield Doors are capable of being closed within 30 minutes; 2) a designated crew is available to close the Containment Structure Equipment Hatch Shield Doors; 3) containment purge is in service; and 4) the reactor has been subcritical for at least 72 hours.

The Containment Structure Equipment Hatch Shield Doors include flashing on the top and sides of the shield doors which act to retard or restrict a release of post-accident fission products. The capability to close the containment shield doors includes requirements that the doors are capable of being closed and that any cables or hoses across the opening have quick disconnects to ensure the doors are capable of being closed within 30 minutes.

The 30 minute closure time for the containment shield doors is considered to start when the control room communicates the need to shut the Containment Structure Equipment Hatch Shield Doors. This 30-minute requirement is significantly less than the fuel handling accident analysis assumption that the containment remains open to the outside environment for a two-hour period subsequent to the accident. Placing containment purge (i.e., main purge exhaust with or without supply) in service will ensure any release from containment will be monitored.

Administrative controls will specify the responsibility to be able to communicate with the control room, and specify the responsibility to ensure that the containment shield doors are capable of being closed in the event of a fuel handling accident. These administrative controls will ensure containment closure would be established in the event of a fuel handling accident inside containment.

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BASES

LCO (continued)

U

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 releases through the valves are terminated, such that the radiological doses are within the acceptance limit. 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 CORE ALTERATIONS or 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.

1

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The containment personnel air lock doors may 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, one personnel airlock door will be closed following an evacuations of containment.

A designated individual shall be available at all times during movement of fuel to close an air lock door, if required.

2

1

air lock

6

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, "Containment." 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.

2

2

----------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).

3

1

BASES

APPLICABILITY (continued)

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 of irradiated fuel:

- 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. 3

- 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."

ACTIONS

A.1 and A.2 6

With the containment equipment hatch, air locks, or any containment penetration that provides direct access from the containment atmosphere to the outside atmosphere not in the required status, including the Containment Purge and Exhaust Isolation System not capable of 1
automatic actuation when the purge and exhaust valves are open, the unit must be placed in a condition in which the isolation function is not needed. This is accomplished by immediately suspending movement of [recently] irradiated fuel assemblies within containment. Performance of 2
these actions shall not preclude completion of movement of a component to a safe position.

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BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

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 each valve is capable of being closed by an OPERABLE automatic containment purge and exhaust isolation signal (CPIS). 1

INSERT 2 → The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within the 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 (Ref. 3). 4 TSTF-425-A

SR 3.9.3.2

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.

INSERT 2 → The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.4 [(Digital) or 3.3.3 (Analog)], "Miscellaneous Actuations," the Containment Purge Isolation Signal System requires a CHANNEL CHECK every 7 days and a CHANNEL FUNCTIONAL TEST every 31 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. 4 TSTF-425-A

This Surveillance → 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. 4 2

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.

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INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 4

---------- Reviewer's Note ----------
Plants controlling Surveillance Frequencies under the Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 3

BASES

REFERENCES

1. GPU Nuclear Safety Evaluation SE-0002000-001, Rev. 0, May 20, 1988.

2. 10 CFR 50.67.

2. FSAR, Section [ ].

NUREG-0712, Safety Evaluation Report related to the operation of San Onofre Nuclear Generating Station, Units 2 and 3, February 1981.

3. NUREG-0800, Section 15.7.4, Rev. 1, July 1981.

Standard Review Plan 15.0.1

0

2000

1

1

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3 BASES, CONTAINMENT PENETRATIONS

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

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

4. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk are not always true for each of the Frequencies. In addition, the statement "These surveillances performed during MODE 6" in SR 3.9.3.2 has been replaced with "This Surveillance" since TSTF-425 deleted all the information related to "These Surveillances."

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

6. Typographical error corrected.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.3, CONTAINMENT PENETRATIONS

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 4

ITS 3.9.4, SHUTDOWN COOLING AND COOLANT CIRCULATION – HIGH WATER LEVEL

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

ITS

A01

3.9 REFUELING OPERATIONS

3.9.4 Shutdown Cooling (SDC) and Coolant Circulation — High Water Level

LCO 3.9.4

LCO 3.9.4 One SDC loop shall be OPERABLE and in operation.

----------NOTES----------
With the upper guide structure removed from the reactor vessel the required SDC loop may be removed from operation for ≤ 2 hours per 8-hour period, provided:

a. The maximum RCS temperature is maintained ≤ 140°F.
b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.
c. The capability to close the containment penetrations with direct access to the outside atmosphere within the calculated time to boil is maintained.
~~d. The reactor cavity water level is maintained ≥ 20 feet above the top of the reactor pressure vessel flange, or, for core alterations, ≥ 23 feet above the top of the reactor pressure vessel flange.~~

A02

~~----------NOTE----------~~
~~A containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow.~~

LA01

Applicability

APPLICABILITY: MODE 6 with the water level ≥ 20 ft above the top of reactor vessel flange.

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ITS

A01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One required SDC loop ~~requirements not met.~~ inoperable or not in operation.	A.~~1~~ 2 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1. AND	Immediately A03

(continued)

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ITS

A01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. (continued)	A.~~2~~ 3 Suspend loading irradiated fuel assemblies in the core. AND	Immediately A03
	A.~~2~~ 1 Initiate action to restore ~~satisfy~~ SDC loop ~~requirements~~. to OPERABLE status and operation AND	Immediately A03
	~~A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.~~ INSERT 1	~~4 hours or within the calculated time to boil, whichever is less~~ A03

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	SR 3.9.4.1 Verify one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ 2200 gpm.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program LA02

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A03

INSERT 1

	A.4	Close equipment hatch and secure with four bolts.	4 hours or within the calculated time to boil, whichever is less
	AND		
	A.5	Close one door in each air lock.	4 hours or within the calculated time to boil, whichever is less
	AND		
	A.6	Verify each penetration providing 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 Containment Purge Isolation System.	4 hours or within the calculated time to boil, whichever is less

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A01

3.9 REFUELING OPERATIONS

3.9.4 Shutdown Cooling (SDC) and Coolant Circulation — High Water Level

LCO 3.9.4

LCO 3.9.4 One SDC loop shall be OPERABLE and in operation.

----------NOTES----------
With the upper guide structure removed from the reactor vessel the required SDC loop may be removed from operation for ≤ 2 hours per 8-hour period, provided:

a. The maximum RCS temperature is maintained ≤ 140°F.
b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.
c. The capability to close the containment penetrations with direct access to the outside atmosphere within the calculated time to boil is maintained.
~~d. The reactor cavity water level is maintained ≥ 20 feet above the top of the reactor pressure vessel flange, or, for core alterations, ≥ 23 feet above the top of the reactor pressure vessel flange.~~

A02

~~----------NOTE----------~~
~~A containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow.~~

LA01

Applicability

APPLICABILITY: MODE 6 with the water level ≥ 20 ft above the top of reactor vessel flange.

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ITS

A01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One required SDC loop ~~requirements not met.~~ inoperable or not in operation.	A.~~1~~ 2 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1. AND	Immediately

A03

(continued)

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ITS

A01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. (continued)	A.~~2~~3 Suspend loading irradiated fuel assemblies in the core. AND	Immediately A03
	A.~~3~~1 Initiate action to ~~satisfy~~ restore to OPERABLE status and operation SDC loop ~~requirements~~. AND	Immediately A03
	~~A.4 Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.~~ INSERT 1	~~4 hours or within the calculated time to boil, whichever is less~~ A03

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	Verify one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ 2200 gpm.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program

SR 3.9.4.1

LA02

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A03

INSERT 1

	A.4	Close equipment hatch and secure with four bolts.	4 hours or within the calculated time to boil, whichever is less
	AND		
	A.5	Close one door in each air lock.	4 hours or within the calculated time to boil, whichever is less
	AND		
	A.6	Verify each penetration providing 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 Containment Purge Isolation System.	4 hours or within the calculated time to boil, whichever is less

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DISCUSSION OF CHANGES
ITS 3.9.4, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – HIGH WATER LEVEL

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved 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 LCO 3.9.4 contains a Note which states with the upper guide structure removed from the reactor vessel the required SDC loop may be removed from operation for ≤ 2 hours per 8 hour period provided, in part, that the reactor cavity water level is maintained ≥ 20 feet above the top of the reactor pressure vessel flange, or, for core alterations, ≥ 23 feet above the top of the reactor pressure vessel flange. ITS LCO 3.9.4 does not contain this specific restriction of the Note. This changes the CTS by removing the water level requirements.

This change is acceptable because the requirement is duplicative of the requirement in ITS LCO 3.9.4 and LCO 3.9.6. ITS LCO 3.9.4 is applicable in MODE 6 when the water level (i.e., the reactor cavity water level) is ≥ 20 feet above the top of the reactor vessel flange. ITS LCO 3.9.6 requires that refueling cavity water level to be maintained ≥ 23 feet above the top of the reactor vessel flange during movement of fuel assemblies within containment. Therefore, at all times during the two cases, the LCOs ensure these requirements are met. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 3.9.4 ACTION A requires suspension of operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1, suspension of loading irradiated fuel assemblies in the core, initiation of action to satisfy SDC loop requirements, and closing of all containment penetrations providing access from containment atmosphere to outside atmosphere when one required SDC loop inoperable or not in operation. ITS 3.9.4 ACTION A requires initiation of action to restore SDC loop to OPERABLE status and operation, suspension of 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, suspension of loading irradiated fuel assemblies in the core, closing equipment hatch and securing with four bolts, closing of one door in each air lock, and verifying that each penetration providing direct access from the containment to the outside atmosphere is either closed with a manual or automatic isolation valves, blind flange, or equivalent or is capable of being closed by an OPERABLE Containment Purge Isolation System. This changes the CTS by rewording Condition A to more closely match the LCO requirements. This also changes the CTS by renumbering the Required Actions and clarifying, by breaking up the single Required Action into three Required Actions, that closing all containment penetrations providing access

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from containment atmosphere to outside atmosphere includes the equipment hatch, the air lock, and the individual penetrations. Note that the Completion Times for the new three Required Actions are not changing (i.e., they are the same as the CTS 3.9.4 Required Action A.4 Completion Time).

The purpose of CTS 3.9.4 is to ensure one loop of SDC is OPERABLE and in operation in MODE 6 when the water level is greater than or equal to 20 ft above the top of the reactor vessel flange. The proposed change to CTS 3.9.4 Condition A more accurately reflects the LCO requirement for one SDC loop being OPERABLE and in operation. Furthermore, these changes have several advantages in that establishing closure prevents fission products from being released from the containment during a loss of shutdown cooling event and containment closure is a well understood and controlled condition which is used routinely during a refueling outage. The CTS 3.9.4 Required Action to close all penetrations providing direct access from the containment atmosphere is a rarely used arrangement. Additionally, utilizing containment closure words from CTS 3.9.3 (and ITS 3.9.3) instead of the current Required Action gives greater confidence that the containment will be in the appropriate alignment. Furthermore, the analysis assumptions are preserved while eliminating an unclear requirement, lessening the administrative burden on the plant, and increasing confidence that the containment will be in the proper status should an event occur. This change is designated as administrative because the CTS is being clarified without technically changing the intent.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS LCO 3.9.4 contains a Note which states that a containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow. ITS LCO 3.9.4 does not contain this Note. This changes the CTS by moving the details of what constitutes a shutdown cooling loop to the Bases.

The removal of these details 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 a shutdown cooling loop be OPERABLE and in operation. 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

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DISCUSSION OF CHANGES
ITS 3.9.4, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – HIGH WATER LEVEL

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.

LA02 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.9.4.1 requires verification that one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ 2200 gpm every 12 hours. ITS SR 3.9.4.1 requires the same Surveillance, but specifies the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequency for the SR and the Bases for the Frequency to the Surveillance Frequency Control Program.

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. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

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DISCUSSION OF CHANGES
ITS 3.9.4, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – HIGH WATER LEVEL

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
   - System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
   - Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
   - Independence of barriers is not degraded;

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DISCUSSION OF CHANGES
ITS 3.9.4, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – HIGH WATER LEVEL

- Defenses against human errors are preserved; and
- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because a Surveillance Frequency is being removed from the Technical Specifications.

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DISCUSSION OF CHANGES
ITS 3.9.4, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – HIGH WATER LEVEL

LESS RESTRICTIVE CHANGES

None

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

3.9 REFUELING OPERATIONS

3.9.4 Shutdown Cooling (SDC) and Coolant Circulation - High Water Level

LCO 3.9.4

LCO 3.9.4 One SDC loop shall be OPERABLE and in operation.

INSERT 1

----------NOTE----------
The required SDC 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.

3

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Applicability

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

3

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One required SDC loop inoperable or not in operation.	A.1 Initiate action to restore SDC loop to OPERABLE status and operation. 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. AND A.3 Suspend loading irradiated fuel assemblies in the core. AND	Immediately Immediately Immediately

3

INSERT 1

----------NOTES----------
With the upper guide structure removed from the reactor vessel the required SDC loop may be removed from operation for ≤ 2 hours per 8-hour period, provided:

a. The maximum RCS temperature is maintained ≤ 140°F;

b. No operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1; and

c. The capability to close the containment penetrations with direct access to the outside atmosphere within the calculated time to boil is maintained.

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A.4 Close equipment hatch and secure with [four] bolts. AND A.5 Close one door in each air lock. AND 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. OR A.6.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.	4 hours 4 hours 4 hours 4 hours

Verify

is either closed

; or

or within the calculated time to boil, whichever is less

2

3

4

1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.4.1	SR 3.9.4.1 Verify one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ [2200] gpm.	12 hours In accordance with the Surveillance Frequency Control Program

SR 3.9.4.1

TSTF-425-A

2

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.4, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – HIGH WATER LEVEL

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

3. ISTS LCO 3.9.4 contains a Note which allows the required SDC loop to 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. Additionally, ISTS 3.9.4 states that the Applicability of the SDC and Coolant High Water Level is MODE 6 with the water level ≥ 23 ft above the top of the reactor vessel flange. CTS LCO 3.9.4 contains a different Note than the ISTS LCO 3.9.4 Note. The CTS 3.9.4 LCO Note states, that with the upper guide structure removed from the reactor vessel the required SDC loop may be removed from operation for ≤ 2 hours per 8-hour period, provided that the maximum RCS temperature is maintained ≤ 140°F, no operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, and the capablility to close the containment penetrations with direct access to the outside atmosphere within the calculated time to boil is maintained. CTS 3.9.4 states that the Applicability of the SDC and Coolant High Water Level is MODE 6 with the water level ≥ 20 ft above the top of the reactor vessel flange. SONGS will maintain the CTS LCO Note and Applicability which was approved in the NRC Safety Evaluation for SONGS Units 2 and 3 License Amendments 153 and 144, respectively, dated May 13, 1999 (ADAMS Accession No. ML022000420). In addition, as part of this approved change, SONGS modified the Completion Time of CTS 3.9.4 Required Action A.4. The time was modified to be "4 hours or within the calculated time to boil, whichever is less." This was to ensure that the Required Action would be completed before the calculated time to boil was reached since water level was lowered down to 20 feet. This requirement has also been maintained in ITS 3.9.4 Required Actions A.4, A.5, and A.6.

4. ISTS 3.9.4 Required Action A.6.1 and A.6.2 are connected by an "OR" logical connector, such that either one can be performed to meet the requirements of the ACTION. However, the two Required Actions are applicable to all the penetrations; either Required Action A.6.1 or Required Action A.6.2 must be performed for all the penetrations. Thus, this will not allow one penetration to be isolated by use of a manual valve and another penetration to be capable of being closed by an OPERABLE Containment Purge Isolation System. This is not the intent of the requirement. The requirement is based on ISTS LCO 3.9.3, which requires each penetration to be either: a) closed by a manual or automatic isolation valve, blind flange, or equivalent; or b) capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System. For consistency with the actual LCO requirement, ISTS 3.9.4 Required Actions A.6.1 and A.6.2 have been combined into a single Required Action in ITS 3.9.4 Required Action A.6.

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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 Shutdown Cooling (SDC) and Coolant Circulation - High Water Level

BASES

BACKGROUND

The purposes of the SDC System in MODE 6 are to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by GDC 34, to provide mixing of borated coolant, to provide sufficient coolant circulation to minimize the effects of a boron dilution accident, and to prevent boron stratification (Ref. 1). Heat is removed from the RCS by circulating reactor coolant through the SDC heat exchanger(s), where the heat is transferred to the Component Cooling Water System via the SDC heat exchanger(s). The coolant is then returned to the RCS via the RCS cold leg(s). Operation of the SDC 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 SDC heat exchanger(s) and bypassing the heat exchanger(s). Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the SDC System.

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 inadequate cooling of the reactor fuel due to a resulting 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, and because of the possible addition of water to the reactor vessel with a lower boron concentration than is required to keep the reactor subcritical. 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 SDC 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 SDC pump to be removed from operation for short durations under the condition that the boron concentration is not diluted. This conditional stopping of the SDC pump does not result in a challenge to the fission product barrier.

loop

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2

SDC and Coolant Circulation - High Water Level satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

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Only one SDC loop is required for decay heat removal in MODE 6, with water level ≥ 23 ft above the top of the reactor vessel flange. Only one SDC loop is required because the volume of water above the reactor vessel flange provides backup decay heat removal capability. At least one SDC loop must be OPERABLE and in operation to provide: 2

a. Removal of decay heat,

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

c. Indication of reactor coolant temperature.

An SDC pump is either a low pressure safety injection pump or a containment spray pump.

An OPERABLE SDC loop includes an SDC 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. 1

filling

Both SDC pumps may be aligned to the Refueling Water Storage Tank to support filling or draining the refueling cavity or for performance of required testing. 6

INSERT 1

The LCO is modified by a Note that allows the required operating SDC loop to be removed from operation for up to 1 hour in each 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 SDC 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. 2

APPLICABILITY

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One SDC 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. The 23 ft level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.6, "Refueling Water Level." Requirements for the SDC 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). SDC loop requirements in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, are located in LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level." 2

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2

 1

2 **INSERT 1**

with the upper guide structure removed from the reactor vessel, the required operating SDC loop is allowed to be removed from service for up to 2 hours in each 8 hour period, provided that:

a. The maximum RCS temperature is maintained ≤ 140°F;

b. No operations are permitted that would dilute the RCS boron concentration to less than that required to meet the minimum required boron concentration of LCO 3.9.1; and

c. The capability to close the containment penetrations with direct access to the outside atmosphere within the calculated time to boil is maintained.

This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles, RCS to SDC isolation valve testing, and inservice testing of LPSI system components. During this 2 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity.

BASES

ACTIONS

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

A.1

If one required SDC loop is inoperable or not in operation, action shall be immediately initiated and continued until the SDC loop is restored to OPERABLE status and to operation. An immediate Completion Time is necessary for an operator to initiate corrective actions.

A.2

If SDC 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.

A.3

If SDC loop requirements are not met, actions shall be taken immediately to suspend loading 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 the decay heat load, such as loading a fuel assembly, is a prudent action under this condition.

20

2

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

2

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

a. The equipment hatch must be closed and secured with [four] bolts,

3

b. One door in each air lock must be closed, and

BASES

ACTIONS (continued)

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. (1)

With SDC 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.

or within the calculated time to boil, whichever is less,

The Completion Time of 4 hours allows fixing of most SDC problems and is reasonable, based on the low probability of the coolant boiling in that time. (2)

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1

This Surveillance demonstrates that the SDC 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 SDC System. (4) TSTF-425-A

INSERT 2

REFERENCES

1. FSAR, Section [ ]. (1) (3)

U

5.4.7

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 4

---------- Reviewer's Note ----------
Plants controlling Surveillance Frequencies under the Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 5

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.4 BASES, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – HIGH WATER LEVEL

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

2. Changes were made to be consistent with changes made to the Specification.

3. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

4. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk are not always true for each of the Frequencies.

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

6. Typographical error corrected.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.4, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – HIGH WATER LEVEL

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 5

ITS 3.9.5, SHUTDOWN COOLING AND COOLANT CIRCULATION – LOW WATER LEVEL

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

ITS

A01

3.9 REFUELING OPERATIONS

3.9.5 Shutdown Cooling (SDC) and Coolant Circulation — Low Water Level

LCO 3.9.5

LCO 3.9.5 Two SDC loops shall be OPERABLE, and one SDC loop shall be in operation.

INSERT 1

L01

LCO Note 1

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

~~A containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow.~~

LA01

~~or~~

SDC loop may be inoperable for an unlimited period of time provided

2.

LCO Note 2

One ~~loop of shutdown cooling shall be OPERABLE and operating under the following conditions~~:

A02

1) The reactor has been shutdown for at least 6 days.

2) The water level above the reactor vessel flange is 12 feet or greater.

3) The associated loop of Salt Water Cooling (SWC) is OPERABLE and operating.

4) The associated Component Cooling Water (CCW) pump and the CCW swing pump are OPERABLE, and the associated CCW loop is OPERABLE and operating.

5) The Shutdown Cooling system is operating using the containment spray pump, and the associated high pressure safety injection pump and the low pressure safety injection pump are OPERABLE and at ambient temperature, available for injection from the RWST.

6) The RWST contains the volume of water required to raise the level to 20 feet above the reactor vessel flange.

7) The associated Emergency Diesel Generator is OPERABLE.

8) The water temperature of the SDC system is maintained less than 120°F.

Applicability

APPLICABILITY: MODE 6 with the water level < 20 ft above the top of reactor vessel flange.

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L01

INSERT 1

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

ITS

A01

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One SDC loop inoperable. ~~(Applicable to initial conditions of two shutdown cooling loops OPERABLE)~~	A.1 Initiate action to restore SDC loop to OPERABLE status. OR A.2 Initiate actions to establish ≥ 20 ft of water above the top of reactor vessel flange.	Immediately Immediately
~~B. One SDC loop operable, less than 20 feet of water above the reactor vessel flange and any of the 8 requirements not met~~ ~~(Applicable to initial conditions of one shutdown cooling loop OPERABLE and operating with requirements 1-8)~~	~~B.1 Initiate actions to establish ≥ 20 feet of water.~~	~~Immediately~~
ACTION B C. No SDC loop OPERABLE or in operation.	C.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1. AND	Immediately (continued)

A02

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ITS

A01

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION B C. (continued)	C.2 Initiate action to restore one SDC loop to OPERABLE status and to operation. AND	Immediately
	INSERT 2 C.3 ~~Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.~~	~~4 hours or within the calculated time to boil, whichever is less~~ A03

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	SR 3.9.5.1 Verify required SDC loops are OPERABLE and one SDC loop is in operation ~~and circulating reactor coolant at a flow rate of ≥ 2200 gpm~~.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program LA02 L02

INSERT 3

M01

A03

INSERT 2

	B.3	Close equipment hatch and secure with four bolts.	4 hours or within the calculated time to boil, whichever is less
	AND		
	B.4	Close one door in each air lock.	4 hours or within the calculated time to boil, whichever is less
	AND		
	B.5	Verify each penetration providing 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 Containment Purge Isolation System.	4 hours or within the calculated time to boil, whichever is less

M01

INSERT 3

SR 3.9.5.2	----------NOTE---------- Not required to be performed until 24 hours after a required pump is not in operation. ---------- Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

ITS

A01

3.9 REFUELING OPERATIONS

3.9.5 Shutdown Cooling (SDC) and Coolant Circulation — Low Water Level

LCO 3.9.5

LCO 3.9.5 Two SDC loops shall be OPERABLE, and one SDC loop shall be in operation.

INSERT 1

L01

LCO Note 1

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

~~A containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow.~~

LA01

~~or~~

SDC loop may be inoperable for an unlimited period of time provided

2.

LCO Note 2

One ~~loop of shutdown cooling shall be OPERABLE and operating under the following conditions~~:

A02

1) The reactor has been shutdown for at least 6 days.

2) The water level above the reactor vessel flange is 12 feet or greater.

3) The associated loop of Salt Water Cooling (SWC) is OPERABLE and operating.

4) The associated Component Cooling Water (CCW) pump and the CCW swing pump are OPERABLE, and the associated CCW loop is OPERABLE and operating.

5) The Shutdown Cooling system is operating using the containment spray pump, and the associated high pressure safety injection pump and the low pressure safety injection pump are OPERABLE and at ambient temperature, available for injection from the RWST.

6) The RWST contains the volume of water required to raise the level to 20 feet above the reactor vessel flange.

7) The associated Emergency Diesel Generator is OPERABLE.

8) The water temperature of the SDC system is maintained less than 120°F.

Applicability

APPLICABILITY: MODE 6 with the water level < 20 ft above the top of reactor vessel flange.

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L01

INSERT 1

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

ITS

A01

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One SDC loop inoperable. ~~(Applicable to initial conditions of two shutdown cooling loops OPERABLE)~~	A.1 Initiate action to restore SDC loop to OPERABLE status. OR A.2 Initiate actions to establish ≥ 20 ft of water above the top of reactor vessel flange.	Immediately Immediately
~~B. One SDC loop operable, less than 20 feet of water above the reactor vessel flange and any of the 8 requirements not met~~ ~~(Applicable to initial conditions of one shutdown cooling loop OPERABLE and operating with requirements 1-8)~~	~~B.1 Initiate actions to establish ≥ 20 feet of water.~~	~~Immediately~~
ACTION B C. No SDC loop OPERABLE or in operation.	C.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1. AND	Immediately (continued)

A02

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ITS

A01

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION B C. (continued)	C.2 Initiate action to restore one SDC loop to OPERABLE status and to operation.	Immediately
	AND	
	INSERT 2 C.3 ~~Close all containment penetrations providing direct access from containment atmosphere to outside atmosphere.~~	~~4 hours or within the calculated time to boil, whichever is less~~ A03

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.5.1	SR 3.9.5.1 Verify required SDC loops are OPERABLE and one SDC loop is in operation ~~and circulating reactor coolant at a flow rate of ≥ 2200 gpm~~.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program LA02 L02

INSERT 3

M01

A03

INSERT 2

	B.3	Close equipment hatch and secure with four bolts.	4 hours or within the calculated time to boil, whichever is less
	AND		
	B.4	Close one door in each air lock.	4 hours or within the calculated time to boil, whichever is less
	AND		
	B.5	Verify each penetration providing 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 Containment Purge Isolation System.	4 hours or within the calculated time to boil, whichever is less

M01

INSERT 3

SR 3.9.5.2	----------NOTE---------- Not required to be performed until 24 hours after a required pump is not in operation. ----------	
	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	In accordance with the Surveillance Frequency Control Program

DISCUSSION OF CHANGES
ITS 3.9.5, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved 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 LCO 3.9.5 states that either two SDC loops shall be OPERABLE and one SDC loop is in operation, or that one loop of shutdown cooling shall be OPERABLE and operating under the following conditions, and then specifies eight conditions that must be met. CTS 3.9.5 provides an ACTION (ACTION B) if any of the 8 conditions are not met when only one SDC loop is OPERABLE and in operation. The ACTION states to establish water level ≥ 20 feet above the reactor vessel flange. ITS LCO 3.9.5 includes both of these options, but the second allowance is included in a Note. The Note allows one SDC loop to be inoperable for an unlimited period of time provided the same eight conditions specified in the CTS are met. Thus, when this Note is being used (i.e., one SDC loop is inoperable) and one or more of the eight conditions becomes not met, then the ACTIONS for an inoperable SDC loop must be entered (i.e., ITS 3.9.5 ACTION A). ITS 3.9.5 ACTION A requires either actions to be initiated to restore the inoperable SDC loop to OPERABLE status or to initiate actions to establish ≥ 20 feet of water above the top of reactor vessel flange. This changes the CTS by editorially rewording the second option to be more consistent with the ISTS format.

The purpose of the CTS allowance is to provide the specified conditions under which only one SDC loop is required to be OPERABLE in lieu of the two SDC loop requirement, and to provide actions if the conditions are not met. The ITS 3.9.5 Note 2 wording provides the same allowances. The ITS Note allows one of the two required SDC loops to be inoperable for an unlimited period of time, provided the eight specified conditions are met. If any of the conditions are not met, ITS 3.9.5 ACTION A requires either the inoperable SDC loop to be restored to OPERABLE status (which restore compliance with the LCO requirement) or the water level to be raised to ≥ 20 feet above the top of reactor vessel flange, which exits the Applicability. While the CTS only provided the second option, the first, to restore the inoperable SDC loop to OPERABLE status, is always an option. Therefore, these changes do not technically change the current requirements; they are only editorial changes in the presentation of the requirements. Therefore, these changes are acceptable and are designated as administrative because it does not result in a technical change to the CTS.

A03 CTS 3.9.5 ACTION C provides the requirements when the SDC loop is not OPERABLE or is not in operation. CTS 3.9.5 Required Action C.3 requires closing all containment penetrations providing direct access from containment

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DISCUSSION OF CHANGES
ITS 3.9.5, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

atmosphere to outside atmosphere in 4 hours or within the calculated time to boil, whichever is less. Under similar conditions, ITS 3.9.5 Required Action B.3 requires the closure of the equipment hatch and securing it with four bolts, Required Action B.4 requires the closing of one door in each air lock, and Required Action B.5 requires verifying that each penetration providing 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 Containment Purge Isolation System. This changes the CTS by giving explicit instructions on how to close all containment penetrations providing direct access from containment atmosphere to outside atmosphere. Note that the Completion Times for the three new Required Actions are not changing (i.e., they are the same as CTS 3.9.5 Required Action C.3 Completion Time).

This change is acceptable because establishing containment closure prevents fission products from being released from the containment during a loss of shutdown cooling event. The description given in ITS 3.9.5 Required Actions B.3, B.4, and B.5 are easily understood and controlled methods which are routinely used during a refueling outage. This change is designated as administrative because the requirements have not changed and it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 ITS SR 3.9.5.2 requires verification of the correct breaker alignment and indication that power is available to the required SDC pump that is not in operation. This SR also includes a Note that states the SR is not required to be performed until 24 hours after a required pump is not in operation. CTS 3.9.5 does not contain this Surveillance Requirement. This changes the CTS by adding a new Surveillance Requirement.

The purpose of the proposed Surveillance Requirement is to verify that the required pump is OPERABLE ensures that an additional SDC pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. This verification is performed by verifying that the breaker alignment is correct and that power is available to the required pump. This change is designated as more restrictive because additional requirements are being added that were not required in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS LCO 3.9.5 contains a Note which states that a

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containment spray pump may be used in place of a low pressure safety injection pump in either or both shutdown cooling loops to provide shutdown cooling flow. ITS LCO 3.9.5 does not contain this Note. This changes the CTS by moving the details of what constitutes a shutdown cooling loop to the Bases.

The removal of these details 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 a shutdown cooling loop be OPERABLE and in operation. 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.

LA02 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program)* CTS SR 3.9.5.1 requires verification that the required SDC loops are OPERABLE and one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ 2200 gpm every 12 hours. ITS SR 3.9.5.1 requires verification that the required SDC loops are OPERABLE and one SDC loop is in operation, but specifies the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." See Discussion of Change L02 for additional changes made to the Surveillance Requirement. This changes the CTS by moving the specified Frequency for the SRs and the Bases for the frequencies to the Surveillance Frequency Control Program.

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. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance

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DISCUSSION OF CHANGES
ITS 3.9.5, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;

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- Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;

- System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);

- Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;

- Independence of barriers is not degraded;

- Defenses against human errors are preserved; and

- The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

3. The proposed change maintains sufficient safety margins.

Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

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DISCUSSION OF CHANGES
ITS 3.9.5, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

This change is designated as a less restrictive removal of detail change because a Surveillance Frequency is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirements)* CTS LCO 3.9.5, in part, requires two SDC loops to be OPERABLE. ITS LCO 3.9.5 includes this requirement, but also allows one required SDC loop to be inoperable for up to 2 hours for surveillance testing provided that the other SDC loop is OPERABLE and in operation. This changes the CTS by providing an allowance for one of the SDC loops to be inoperable for a limited period of time to perform Surveillance testing.

The purpose of the Note is to permit periodic Surveillance tests to be performed on the inoperable loop during the only time when such testing is safe and possible. This change is designated as less restrictive because a new allowance that one SDC loop can be inoperable for a short period of time has been added to the ITS that is not in the CTS.

L02 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS SR 3.9.5.1 requires the verification that the required SDC loops are OPERABLE and one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ 2200 gpm. ITS SR 3.9.5.1 requires the verification that the required SDC loops are OPERABLE and one SDC loop is in operation. This changes the CTS by not requiring the verification that the SDC Loop is circulating reactor coolant at a flow rate of ≥ 2200 gpm.

The purpose of the flow rate requirement is to ensure adequate flow for decay heat removal. However, this specific flow rate is variable, depending upon the time after shutdown and the decay heat in the core. Thus, specifying a flow rate value may not always be the necessary value to remove the decay heat and control the reactor coolant temperature necessary for the plant condition.

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DISCUSSION OF CHANGES
ITS 3.9.5, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

Therefore, this specific value has been deleted, since it is more appropriately controlled by the unit operators. The ITS still maintains requirements for the SDC loop to be OPERABLE and in operation. Therefore, this change is acceptable. The change is also consistent with the NUREG-1432, which allows the flow rate value to be controlled by the licensee. This change is designated as less restrictive because the verification of the flow rate requirement is no longer required.

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

3.9 REFUELING OPERATIONS

3.9.5 Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level

LCO 3.9.5

LCO 3.9.5 Two SDC loops shall be OPERABLE, and one SDC loop shall be in operation.

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

1. All SDC 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,

   b. 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, and

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

2

LCO Note 1

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

2

LCO Note 2

INSERT 1 →

3

---

20 ↓

Applicability

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

4

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One SDC loop inoperable.	A.1 Initiate action to restore SDC loop to OPERABLE status. OR A.2 Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange. 20 →	Immediately Immediately

4

3

INSERT 1

2. One SDC loop may be inoperable for an unlimited period of time provided:

   a. The reactor has been shutdown for at least 6 days;

   b. The water level above the reactor vessel flange is 12 feet or greater;

   c. The associated loop of Salt Water Cooling (SWC) is OPERABLE and operating;

   d. The associated Component Cooling Water (CCW) pump and the CCW swing pump are OPERABLE, and the associated CCW loop is OPERABLE and operating;

   e. The Shutdown Cooling System is operating using the containment spray pump, and the associated high pressure safety injection pump and the low pressure safety injection pump are OPERABLE and at ambient temperature, available for injection from the RWST;

   f. The RWST contains the volume of water required to raise the level to 20 feet above the reactor vessel flange;

   g. The associated Emergency Diesel Generator is OPERABLE; and

   h. The water temperature of the SDC System is maintained less than 120°F.

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION C B. No SDC loop OPERABLE or 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	
	B.2 Initiate action to restore one SDC loop to OPERABLE status and to operation.	Immediately
	AND	
	B.3 Close equipment hatch and secure with [four] bolts.	4 hours
	AND	
	B.4 Close one door in each air lock.	4 hours
	AND	
	Verify 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
	is either closed ; or OR	
	B.5.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.	4 hours

or within the calculated time to boil, whichever is less

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
SR 3.9.5.1	SR 3.9.5.1	Verify required SDC loops are OPERABLE and one SDC loop is in operation.	12 hours
DOC M01	SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	7 days

----------NOTE----------
Not required to be performed until 24 hours after a required pump is not in operation.

In accordance with the Surveillance Frequency Control Program

TSTF-425-A

7

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.5, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

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

2. ISTS 3.9.5 Note 1 has not been retained since SONGS can switch between trains without turning off both loops. Due to this change, Note 2 has been renumbered as Note 1.

3. CTS LCO 3.9.5 contains an option that allows one loop of shutdown cooling to be inoperable for an unlimited period of time provided: the reactor has been shutdown for at least 6 days; the water level above the reactor vessel flange is 12 feet or greater; the associated loop of Salt Water Cooling (SWC) is OPERABLE and operating; the associated Component Cooling Water (CCW) pump and the CCW swing pump are OPERABLE, and the associated CCW loop is OPERABLE and operating; the Shutdown Cooling system is operating using the containment spray pump, and the associated high pressure safety injection pump and the low pressure safety injection pump are OPERABLE and at ambient temperature, available for injection from the RWST; the RWST contains the volume of water required to raise the level to 20 feet above the reactor vessel flange; the associated Emergency Diesel Generator is OPERABLE; and the water temperature of the SDC system is maintained less than 120°F. This allowance was approved in the NRC Safety Evaluation for SONGS Units 2 and 3 License Amendments 153 and 144, respectively, dated May 13, 1999 (ADAMS Accession No. ML022000420). SONGS will maintain this current licensing option as ITS LCO 3.9.5 Note 2.

4. ISTS 3.9.5 states that the Applicability of the SDC and Coolant Circulation - Low Water Level LCO is MODE 6 with the water level < 23 ft above the top of the reactor vessel flange. CTS 3.9.5 states that the Applicability of the SDC and Coolant Circulation - Low Water Level LCO is MODE 6 with the water level < 20 ft above the top of the reactor vessel flange. SONGS will maintain the current Applicability of < 20 ft above the top of the reactor vessel flange. In addition, ISTS 3.9.5 Required Action A.2 has been modified to require restoration to ≥ 20 ft, in lieu of the 23 ft requirement. The 20 foot limit was also approved in the NRC Safety Evaluation for SONGS Units 2 and 3 License Amendments 153 and 144, respectively, dated May 13, 1999 (ADAMS Accession No. ML022000420). In addition, as part of this approved change, SONGS modified the Completion Time of CTS 3.9.5 Required Action C.3. The time was modified to be "4 hours or within the calculated time to boil, whichever is less." This was to ensure that the Required Action would be completed before the calculated time to boil was reached since water level was lowered down to 20 feet. This requirement has also been maintained in ITS 3.9.5 Required Actions B.3, B.4, and B.5.

5. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

6. ISTS 3.9.5 Required Action B.5.1 and B.5.2 are connected by an "OR" logical connector, such that either one can be performed to meet the requirements of the ACTION. However, the two Required Actions are applicable to all the penetrations;

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.5, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

either Required Action B.5.1 or Required Action B.5.2 must be performed for all the penetrations. Thus, this will not allow one penetration to be isolated by use of a manual valve and another penetration to be capable of being closed by an OPERABLE Containment Purge Isolation System. This is not the intent of the requirement. The requirement is based on ISTS LCO 3.9.3, which requires each penetration to be either: a) closed by a manual or automatic isolation valve, blind flange, or equivalent; or b) capable of being closed by an OPERABLE Containment Purge Isolation System. For consistency with the actual LCO requirement, ISTS 3.9.5 Required Actions B.5.1 and B.5.2 have been combined into a single Required Action in ITS 3.9.5 Required Action B.5.

7. TSTF-265 was previously approved and incorporated in NUREG-1432, Rev. 2, in similar SRs (e.g., ISTS SRs 3.4.5.3, 3.4.6.3, 3.4.7.3, and 3.4.8.2). Consistent with TSTF-265, a Note is added to ITS SR 3.9.5.2 that permits the performance of the SR to verify correct breaker alignment and power availability to be delayed until 24 hours after a required SDC pump is not in operation. This provision is required because when SDC pumps are swapped under the current requirements, the Surveillance is immediately not met on the SDC pump taken out of operation. This change avoids entering an Action for a routine operational occurrence. The change is acceptable because adequate assurance exists that the SDC pump is aligned to the correct breaker with power available because, prior to being removed from operation, the applicable pump had been in operation. Allowing 24 hours to perform the breaker alignment verification is acceptable because the SDC pump was in operation, which demonstrated OPERABILITY, and because 24 hours is allowed in the ISTS by invoking SR 3.0.3. This is also a new Surveillance Requirement not required in CTS 3.9.5.

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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 Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level

BASES

BACKGROUND

The purposes of the SDC System in MODE 6 are to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by GDC 34, to provide mixing of borated coolant, to provide sufficient coolant circulation to minimize the effects of a boron dilution accident, and to prevent boron stratification (Ref. 1). Heat is removed from the RCS by circulating reactor coolant through the SDC heat exchanger(s), where the heat is transferred to the Component Cooling Water System via the SDC heat exchanger(s). The coolant is then returned to the RCS via the RCS cold leg(s). Operation of the SDC 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 SDC heat exchanger(s) and bypassing the heat exchanger(s). Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the SDC System.

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 inadequate cooling of the reactor fuel due to the resulting 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, and because of the possible addition of water to the reactor vessel with a lower boron concentration than is required to keep the reactor subcritical. 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. Two trains of the SDC System are required to be OPERABLE, and one train is required to be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to prevent this challenge.

loops
loop
20
2

SDC and Coolant Circulation - Low Water Level satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

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

2

a. Removal of decay heat,

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

BASES

LCO (continued)

c. Indication of reactor coolant temperature.

This LCO is modified by two Notes. Note 1 permits the SDC pumps to be removed from operation for ≤ 15 minutes when switching from one train to another. The circumstances for stopping both SDC pumps are to be limited to situations when the outage time is short [and the core outlet temperature is maintained > 10 degrees F below saturation temperature]. The Note prohibits boron dilution by introduction of coolant into the RCS with boron concentration less than that required to meet the minimum boron concentration of LCO 3.9.1, or draining operations when SDC forced flow is stopped.

2

1

Note 2 allows one SDC 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.

2

INSERT 1

2

An OPERABLE SDC loop consists of an SDC 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.

An SDC pump is either a low pressure safety injection pump or a containment spray pump.

1

Both SDC 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

20

Two SDC loops are required to be OPERABLE, and one SDC 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 SDC System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System. MODE 6 requirements, with a water level ≥ 23 ft above the reactor vessel flange, are covered in LCO 3.9.4, "Shutdown Cooling and Coolant Circulation - High Water Level."

2

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2

ACTIONS

A.1 and A.2

If one SDC loop is inoperable, action shall be immediately initiated and continued until the SDC 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 established at ≥ 23 ft above the

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2

20

(2) **INSERT 1**

Note 2 allows one of the required SDC loops to be inoperable for an unlimited period of time, provided: 1) the reactor has been shutdown for at least 6 days; 2) the water level above the reactor vessel flange is 12 feet or greater; 3) the associated loop of Salt Water Cooling (SWC) is OPERABLE and operating; 4) the associated Component Cooling Water (CCW) pump and the CCW swing pump are OPERABLE, and the associated CCW loop is OPERABLE and operating; 5) the Shutdown Cooling System is operating using the containment spray pump, and the associated high pressure safety injection pump and the low pressure safety injection pump are OPERABLE and at ambient temperature, available for injection from the RWST; 6) the RWST contains the volume of water required to raise the level to 20 feet above the reactor vessel flange; 7) the associated Emergency Diesel Generator is OPERABLE; and 8) the water temperature of the SDC System is maintained less than 120°F.

BASES

ACTIONS (continued)

reactor vessel flange, the Applicability will change to that of LCO 3.9.4, "Shutdown Cooling and Coolant Circulation - High Water Level," and only one SDC loop is required to be OPERABLE and in operation. An immediate Completion Time is necessary for an operator to initiate corrective actions.

B.1

If no SDC loop is in operation or no SDC loops are OPERABLE, 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 SDC loop is in operation or no SDC loops are OPERABLE, action shall be initiated immediately and continued without interruption to restore one SDC loop to OPERABLE status and operation. Since the unit is in Conditions A and B concurrently, the restoration of two OPERABLE SDC loops and one operating SDC loop should be accomplished expeditiously.

ACTION C

B.3, B.4, B.5.1, and B.5.2 (2)

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

a. The equipment hatch must be closed and secured with four bolts, (3)

b. One door in each air lock must be closed, and

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. (1)

.

BASES

ACTIONS (continued)

With SDC 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.

or within the calculated time to boil, whichever is less,

2

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

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that one SDC loop is operating 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, this Surveillance demonstrates that the other SDC loop is OPERABLE.

In addition, during operation of the SDC loop with the water level in the vicinity of the reactor vessel nozzles, the SDC loop flow rate determination must also consider the SDC pump suction requirements.

INSERT 2

The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator to monitor the SDC System in the control room.

Verification that the required loops are OPERABLE and in operation ensures that loops can be placed in operation as needed, to maintain decay heat and retain forced circulation. The Frequency of 12 hours is considered reasonable, since other administrative controls are available and have proven to be acceptable by operating experience.

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SR 3.9.5.2

Verification that the required pump is OPERABLE ensures that an additional SDC 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.

INSERT 2

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.

INSERT 3

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2

REFERENCES 1. FSAR, Section [ ].

1 3

U

5.4.7

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INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program. 4

---------- Reviewer's Note ----------
Plants controlling Surveillance Frequencies under the Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 6
---

2 **INSERT 3**

This SR is modified by a Note that states the SR is not required to be performed until 24 hours after a required pump is not in operation.

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.5 BASES, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

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

2. Changes have been made to be consistent with changes made to the Specification.

3. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

4. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk are not always true for each of the Frequencies.

5. Changes are made to be consistent with the actual Specification.

6. The "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.5, SHUTDOWN COOLING (SDC) AND COOLANT CIRCULATION – LOW WATER LEVEL

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 6

ITS 3.9.6, REFUELING WATER LEVEL

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

ITS

A01

3.9 REFUELING OPERATIONS

3.9.6 Refueling Water Level

LCO 3.9.6

LCO 3.9.6 Refueling water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

~~NOTE~~
~~Water level may be lowered to a minimum of 23 feet above the top of the fuel for movement of four finger CEAs, coupling and uncoupling of CEA extension shafts or for verifying the coupling and uncoupling.~~

L01

Applicability

APPLICABILITY: ~~During movement of fuel assemblies or CEAs within the reactor pressure vessel when either the fuel assemblies being moved or the fuel assemblies seated within the reactor pressure vessel are irradiated.~~
During movement of irradiated fuel assemblies within containment.

L01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. Refueling water level not within limit.	~~A.1 Suspend CORE ALTERATIONS.~~	~~Immediately~~
	~~AND~~ 1	
	A.~~2~~ Suspend movement of irradiated fuel assemblies within containment.	Immediately

L01

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 SR 3.9.6.1 ~~The refueling water level shall be determined to be at least its minimum required depth.~~ Verify refueling water level is > 23 ft above the top of the reactor vessel flange.	~~24 hours~~ In accordance with the Surveillance Frequency Control Program

LA01

A02

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ITS

A01

3.9 REFUELING OPERATIONS

3.9.6 Refueling Water Level

LCO 3.9.6

LCO 3.9.6 Refueling water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

~~NOTE~~
~~Water level may be lowered to a minimum of 23 feet above the top of the fuel for movement of four finger CEAs, coupling and uncoupling of CEA extension shafts or for verifying the coupling and uncoupling.~~

L01

Applicability

APPLICABILITY: ~~During movement of fuel assemblies or CEAs within the reactor pressure vessel when either the fuel assemblies being moved or the fuel assemblies seated within the reactor pressure vessel are irradiated.~~
During movement of irradiated fuel assemblies within containment.

L01

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Refueling water level not within limit.	~~A.1 Suspend CORE ALTERATIONS.~~	~~Immediately~~
	~~AND~~	
	A.~~2~~ Suspend movement of irradiated fuel assemblies within containment.	Immediately

ACTION A

1

L01

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 ~~The refueling water level shall be determined to be at least its minimum required depth.~~	~~24 hours~~

SR 3.9.6.1

Verify refueling water level is ≥ 23 ft above the top of the reactor vessel flange.

In accordance with the Surveillance Frequency Control Program

LA01

A02

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DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING WATER LEVEL

ADMINISTRATIVE CHANGES

A01 In the conversion of the San Onofre Nuclear Generating Station (SONGS) 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-1432, Rev. 3.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS) and additional approved 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 SR 3.9.6.1 requires determining that the refueling water level is at least the minimum required depth. ITS SR 3.9.6.1 requires verifying that the refueling water level is ≥ 23 ft feet above the top of the reactor vessel flange. This changes the CTS by editorially rewording the SR.

The purpose of the Surveillance is to verify that the minimum water level is within the required limit (≥ 23 feet above the top of the reactor vessel flange) to ensure that the design basis for the postulated fuel handling analysis during operations is met. The CTS and the ITS wording mean the same thing. Both require a verification that the refueling water is greater than or equal to the limits specified in the LCO. Therefore, this change is a wording preference change and is designated as administrative since it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 (*Type 4 – Removal of LCO, SR, or other TS requirement to the LCS, UFSAR, ODCM, QAP, CLRT Program, IST Program, ISI Program, or Surveillance Frequency Control Program*) CTS SR 3.9.6.1 requires determining that the refueling water level is at least the minimum required depth every 24 hours. ITS SR 3.9.6.1 requires verifying that the refueling water level is within limits and specifies the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." See DOC A02 for changes to the description of the Surveillance Requirement. This changes the CTS by moving the specified frequency for the SR and the Bases for the frequency to the Surveillance Frequency Control Program.

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DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING WATER LEVEL

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. In addition:

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program;

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," Revision 1; and

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

The referenced document, NEI 04-10, Rev. 1, provides a detailed description of the process to be followed when considering changes to a Surveillance Frequency. NEI 04-10, Rev. 1, has been reviewed and approved by the NRC. Therefore, the process will not be discussed further here.

The relocation of the specified Surveillance Frequencies to licensee control is consistent with Regulatory Guides 1.174 and 1.177. Regulatory Guide 1.177 provides guidance for changing Surveillance Frequencies and Completion Times. However, for allowable risk changes associated with Surveillance Frequency extensions, it refers to Regulatory Guide 1.174, which provides quantitative risk acceptance guidelines for changes to core damage frequency (CDF) and large early release frequency (LERF). Regulatory Guide 1.174 provides additional guidelines that have been adapted in the risk-informed methodology for controlling changes to Surveillance Frequencies.

Regulatory Guide 1.174 identifies five key safety principles to be met for all risk-informed applications and to be explicitly addressed in risk-informed plant program change applications.

1. **The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.**

   10 CFR 50.36(c) provides that TS will include items in the following categories:

   "(3) *Surveillance requirements*. Surveillance requirements are requirements relating to test, calibration, or inspection to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met."

   This change proposes to relocate various Frequencies for the performance of the Surveillance Requirements to a licensee-controlled program using an NRC approved methodology for control of the Surveillance Frequencies. The

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DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING WATER LEVEL

Surveillance Requirements themselves will remain in TS. This is consistent with other NRC approved TS changes in which the Surveillance Frequencies are not under NRC control, such as Surveillances that are performed in accordance with the Inservice Testing Program or the Containment Leakage Rate Testing Program, where the Frequencies vary based on the past performance of the subject components. Thus, this proposed change meets criterion 1 above.

2. **The proposed change is consistent with the defense-in-depth philosophy.**

   As described in Position 2.2.1.1 of Regulatory Guide 1.174, consistency with the defense-in-depth philosophy is maintained if:

   - A reasonable balance is preserved among prevention of core damage, prevention of containment failure, and consequence mitigation;
   - Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided;
   - System redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties (e.g., no risk outliers);
   - Defenses against potential common cause failures are preserved, and the potential for the introduction of new common cause failure mechanisms is assessed;
   - Independence of barriers is not degraded;
   - Defenses against human errors are preserved; and
   - The intent of the General Design Criteria in 10 CFR Part 50, Appendix A is maintained.

   These defense-in-depth objectives apply to all risk-informed applications, and for some of the issues involved (e.g., no over-reliance on programmatic activities and defense against human errors), it is fairly straightforward to apply them to this proposed change. The use of the multiple risk metrics of CDF and LERF and controlling the change resulting from the implementation of this initiative would maintain a balance between prevention of core damage, prevention of containment failure, and consequence mitigation. Redundancy, diversity, and independence of safety systems are considered as part of the risk categorization to ensure that these qualities are not adversely affected. Independence of barriers and defense against common cause failures are also considered in the categorization. The improved understanding of the relative importance of plant components to risk resulting from the development of this program promotes an improved overall understanding of how the SSCs contribute to the plant's defense-in-depth.

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DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING WATER LEVEL

3. **The proposed change maintains sufficient safety margins.**

   Conformance with this principle is assured since SSC design, operation, testing methods and acceptance criteria specified in the Codes and Standards or alternatives approved for use by the NRC, will continue to be met as described in the plant licensing basis (e.g., UFSAR, or Technical Specifications Bases). Also, the safety analysis acceptance criteria in the licensing basis (e.g., UFSAR, supporting analyses, etc.) are met with the proposed change.

4. **When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.**

   NEI 04-10, "Risk-Informed Method for Control of Surveillance Frequencies," will require that changes in core damage frequency or risk are small and consistent with the intent of the Commission's Safety Goal Policy.

5. **The impact of the proposed change should be monitored using performance measurement strategies.**

   NEI 04-10 will require that changes in Surveillance Frequencies be monitored using performance management strategies.

Therefore, the proposed change is consistent with the guidance in Regulatory Guide 1.174.

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 2 – Relaxation of Applicability*) CTS LCO 3.9.6 contains a Note that allows the water level to be lowered to a minimum of 23 feet above the top of the fuel for movement of four finger CEAs, coupling and uncoupling of CEA extension shafts, or for verifying the coupling and uncoupling. CTS 3.9.6 Applicability is required, in part, during movement of fuel assemblies or CEAs within the reactor pressure vessel. CTS 3.9.6 ACTION A provides the actions when the refueling water level is not within limits. CTS 3.9.6 Required Action A.1 requires immediate suspension of CORE ALTERATIONS, which includes suspension of CEA movement. ITS 3.9.6 Applicability does not include CEA movement, but continues to include movement of fuel assemblies in containment (which includes the reactor pressure vessel). ITS LCO 3.9.6 does not contain a Note allowing the water level to be lowered to a minimum of 23 feet above the top of the fuel for movement of four finger CEAs, coupling and uncoupling of CEA extension shafts, or for verifying the coupling and uncoupling. ITS 3.9.6 ACTION A does not contain a Required Action to suspend CORE ALTERATIONS, but does contain a requirement to immediately suspend

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DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING WATER LEVEL

movement of irradiated fuel assemblies within containment. This changes the CTS by deleting the Applicability of CEA movement, and due to this change, the LCO Note allowance to move CEAs under certain circumstances has been deleted, as well as the Required Action to suspend CORE ALTERATIONS.

The purpose of CTS 3.9.6 is to ensure that a fuel handling accident cannot occur. The proposed change deletes the CEAs from the Applicability and removes the allowance in the LCO that the water level may be lowered to a minimum of 23 feet above the top of the fuel for movement of four finger CEAs, coupling and uncoupling of CEA extension shafts, or for verifying the coupling and uncoupling. This change is acceptable because a dropped CEA (by itself) is not assumed in the SONGS accident analysis for fuel handling accidents. Additionally, this proposed change deletes the Required Action to suspend CORE ALTERATIONS. This change is acceptable because suspending CORE ALTERATIONS has no effect on the initial conditions or mitigation of any DBA or transient. The requirement to suspend CORE ALTERATIONS applies an operational burden with no corresponding safety benefit. Furthermore, the requirement to suspend movement of irradiated fuel assemblies basically ensures that CORE ALTERATIONS is suspended, since the main contributor to reactivity changes is fuel movement. Therefore the use of the defined term CORE ALTERATIONS is being removed from Technical Specifications per TSTF-471.

The term “core alteration” does not appear in the Standard Review Plan or in Title 10 of the Code of Federal Regulations. Since CORE ALTERATIONS only occur when the reactor vessel head is removed, it only applies in MODE 6. There are only two accidents considered during MODE 6 for PWRs: a fuel handling accident and a boron dilution accident. According to the Standard Review Plan, a fuel handling accident is initiated by the dropping of an irradiated fuel assembly, either in the containment or in the fuel building. There are no mitigation actions, except some plants credit ventilation systems to reduce the dose consequences. Suspension of CORE ALTERATIONS, except for suspension of movement of irradiated fuel assemblies, will not prevent or impair the mitigation of a fuel handling accident.

The second analyzed event is a boron dilution accident. A boron dilution accident is initiated by a dilution source which results in the boron concentration dropping below that required to maintain the SHUTDOWN MARGIN. As described in the Bases of Specification 3.9.1, "Boron Concentration," (which applies in MODE 6), "The refueling boron concentration limit is specified in the COLR. Unit 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 element assemblies (CEAs) and fuel assemblies assumed to be in the most adverse configuration (least negative reactivity) allowed by unit procedures." The accident is mitigated by stopping the dilution. Suspension of CORE ALTERATIONS has no effect on the mitigation of a boron dilution accident. Movement of control rods or fuel do not affect the initial conditions of a boron dilution accident as it is assumed that the control rods and fuel are in the most adverse conditions with a large safety margin ($k_{eff} \leq 0.95$). To address the possibility of a misloaded fuel assembly for the Nuclear Instrumentation TS during refueling, a Required Action is added to CTS 3.9.2 (ITS 3.9.2) that

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DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING WATER LEVEL

suspends positive reactivity additions if nuclear instrumentation is not available. This precludes movement of fuel assemblies which could add reactivity to the core.

In summary, with the exception of suspending movement of irradiated fuel assemblies, there are no DBAs or transients that are initiated by, or mitigation affected by, suspension of CORE ALTERATIONS. Therefore, if all Required Actions that require suspension of CORE ALTERATIONS also require suspension of movement of irradiated fuel assemblies, suspension of CORE ALTERATIONS provides no safety benefit. ITS 3.9.6 Required Action A.1 continues to require suspension of irradiated fuel assembly movement in the containment, which includes the reactor pressure vessel.

This change is designated as less restrictive because the Required Actions of the ITS are being relaxed from what is currently in the CTS.

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

U2/U3 CTS

3.9 REFUELING OPERATIONS

3.9.6 Refueling Water Level

LCO 3.9.6

LCO 3.9.6 Refueling water level shall be maintained ≥ 23 ft above the top of reactor vessel flange.

Applicability

APPLICABILITY: During movement of [recently] irradiated fuel assemblies within containment. 2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. Refueling water level not within limit.	A.1 Suspend movement of [recently] irradiated fuel assemblies within containment. 2	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 SR 3.9.6.1 Verify refueling water level is ≥ 23 ft above the top of reactor vessel flange.	24 hours In accordance with the Surveillance Frequency Control Program TSTF-425-A

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.6, REFUELING WATER LEVEL

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

2. The ISTS contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed 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 3.9.6 Refueling 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, the refueling canal, the fuel transfer canal, the refueling cavity, and the 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.

reactor vessel,
transfer pool, transfer tube
to within the guideline values
s
and 4)
50.67 and NUREG-0800 (
1

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies, the water level in the refueling canal and refueling cavity is an initial condition design parameter in the analysis of the fuel handling accident in containment 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).

within containment
reactor vessel, transfer pool, transfer tube,
Appendix B
200 (Appendix B
183
99.5
8
Iodine-131 inventory and 5% of the total fuel rod inventory of other iodine isotopes
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 (Ref. 4).

72
2
the guideline values of 10 CFR 50.67 and NUREG-0800 (References 3 and
1

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

LCO

A minimum refueling 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.

5
1

BASES

irradiated

within containment

APPLICABILITY LCO 3.9.6 is applicable when moving fuel assemblies in the presence of irradiated fuel assemblies. The LCO minimizes the possibility of a fuel handling accident in containment that is beyond the assumptions of the safety analysis. If irradiated fuel is 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 3.7.10, "Fuel Storage Pool Water Level."

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3

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ACTIONS A.1

With a water level of < 23 ft above the top of the reactor vessel flange, all operations involving movement of irradiated fuel assemblies 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 3.9.6.1

Verification of a minimum water level of 23 ft above the top of the reactor vessel flange ensures that the design basis for the postulated fuel handling accident analysis 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).

INSERT 1

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.

TSTF-425-A

REFERENCES

1. Regulatory Guide 1.25, March 23, 1972.

183, July 2000

U

2. FSAR, Section [ ].

15.7.3.9

3. 10 CFR 50.67.

4

3. NUREG-0800, Section 15.7.4.

Standard Review Plan 15.0.1, Rev. 0, July 2000

4. 10 CFR 100.10.

5. NUREG-0712, Safety Evaluation Report related to the operation of San Onofre Nuclear Generating Station, Units 2 and 3, February 1981.

2

1

1

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 4

---------- Reviewer's Note ----------
Plants controlling Surveillance Frequencies under the Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement. 5

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.6 BASES, REFUELING WATER LEVEL

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

2. The ISTS Bases contains bracketed information and/or values that are generic to all Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is provided. This is acceptable since the information/value is changed to reflect the current licensing basis.

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

4. The Bases words changed by TSTF-425 have been modified to state "The Frequency is controlled under the Surveillance Frequency Control Program." The Surveillance Frequency Control Program provides the details for how to change the Frequencies, thus the TSTF-425 words concerning operating experience, equipment reliability, and plant risk are not always true for each of the Frequencies.

5. This "Reviewers Note" is being deleted. The Reviewers Note is for the NRC reviewer during the NRC review and will not be part of the plant specific SONGS ITS.

6. Changes made to be consistent with the actual Specification.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.6, REFUELING WATER LEVEL

There are no specific NSHC discussions for this Specification.

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