ATTACHMENT 1

VOLUME 8

SAN ONOFRE NUCLEAR GENERATING STATION

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

LIST OF ATTACHMENTS

1. **ITS 3.5.1 – Safety Injection Tanks (SITs)**
2. **ITS 3.5.2 – Emergency Core Cooling System (ECCS) - Operating**
3. **ITS 3.5.3 – Emergency Core Cooling System (ECCS) - Shutdown**
4. **ITS 3.5.4 – Refueling Water Storage Tank (RWST)**
5. **ITS 3.5.5 – Trisodium Phosphate (TSP)**

ATTACHMENT 1

ITS 3.5.1, SAFETY INJECTION TANKS (SITs)

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

ITS

A01

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Safety Injection Tanks (SITs)

LCO 3.5.1 LCO 3.5.1 Four SITs shall be OPERABLE.

Applicability APPLICABILITY: MODES 1 and 2,
MODE 3 with pressurizer pressure ≥ 715 psia.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One SIT inoperable due to boron concentration not within limits.	~~A.1 Restore boron concentration to within limits.~~	~~72 hours~~
	OR		
ACTION A	~~B.~~ One SIT inoperable due to inability to verify level or pressure.	~~B~~.1 Restore SIT to OPERABLE status. (A)	72 hours
ACTION B	~~C~~. One SIT inoperable for reasons other than Condition A ~~or B~~. (B)	~~C~~.1 Restore SIT to OPERABLE status. (B)	24 hours
ACTION C	~~D~~. Required Action and associated Completion Time of Condition A~~,~~ ~~B,~~ or ~~C~~ not met. (C, B)	~~D~~.1 Be in MODE 3. (C) AND ~~D~~.2 Reduce pressurizer pressure to < 715 psia. (C)	6 hours 12 hours
ACTION D	~~E~~. Two or more SITs inoperable. (D)	~~E~~.1 Enter LCO 3.0.3. (D)	Immediately

A02

Attachment 1, Volume 8, Rev. 0, Page 5 of 139

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
SR 3.5.1.1	SR 3.5.1.1	Verify each SIT isolation valve is fully open.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program LA01
SR 3.5.1.2	SR 3.5.1.2	Verify borated water volume in each SIT is ≥ 1680 cubic feet and ≤ 1807 cubic feet.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program LA01
SR 3.5.1.3	SR 3.5.1.3	Verify nitrogen cover pressure in each SIT is ≥ 615 psia and ≤ 655 psia.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program LA01
SR 3.5.1.4	SR 3.5.1.4	Verify boron concentration in each SIT is ≥ 2200 ppm and ≤ 2800 ppm.	~~31 days~~ In accordance with the Surveillance Frequency Control Program LA01 AND -----NOTE------ Only required to be performed for affected SIT --------------- Once within 6 hours after each solution volume increase of ≥ 1% of tank volume that is not the result of addition from the refueling water storage tank

(continued)

ITS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE			FREQUENCY
SR 3.5.1.5	SR 3.5.1.5	Verify power is removed from each SIT isolation valve operator when pressurizer pressure is ≥ 715 psia.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

SR 3.5.1.5

LA01

Attachment 1, Volume 8, Rev. 0, Page 7 of 139

ITS

SITs
3.5.1

A01

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Safety Injection Tanks (SITs)

LCO 3.5.1

LCO 3.5.1 Four SITs shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1 and 2,
MODE 3 with pressurizer pressure ≥ 715 psia.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One SIT inoperable due to boron concentration not within limits.	~~A.1~~ ~~Restore boron concentration to within limits.~~	~~72 hours~~
OR ACTION A ~~B.~~ One SIT inoperable due to inability to verify level or pressure.	~~B~~.1 Restore SIT to OPERABLE status. A	72 hours
ACTION B ~~C~~. One SIT inoperable for reasons other than Condition A ~~or B~~. B	~~C~~.1 Restore SIT to OPERABLE status. B	24 hours
ACTION C ~~D~~. Required Action and associated Completion Time of Condition A~~,~~ ~~B,~~ or ~~C~~ not met. C, B	~~D~~.1 Be in MODE 3. C AND ~~D~~.2 Reduce pressurizer pressure to < 715 psia. C	6 hours 12 hours
ACTION D ~~E~~. Two or more SITs inoperable. D	~~E~~.1 Enter LCO 3.0.3. D	Immediately

A02

Attachment 1, Volume 8, Rev. 0, Page 8 of 139

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.5.1.1	SR 3.5.1.1	Verify each SIT isolation valve is fully open.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.5.1.2	SR 3.5.1.2	Verify borated water volume in each SIT is ≥ 1680 cubic feet and ≤ 1807 cubic feet.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.5.1.3	SR 3.5.1.3	Verify nitrogen cover pressure in each SIT is ≥ 615 psia and ≤ 655 psia.	~~12 hours~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.5.1.4	SR 3.5.1.4	Verify boron concentration in each SIT is ≥ 2200 ppm and ≤ 2800 ppm.	~~31 days~~ In accordance with the Surveillance Frequency Control Program AND -----NOTE------ Only required to be performed for affected SIT --------------- Once within 6 hours after each solution volume increase of ≥ 1% of tank volume that is not the result of addition from the refueling water storage tank	LA01

(continued)

ITS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.5.1.5 SR 3.5.1.5	Verify power is removed from each SIT isolation valve operator when pressurizer pressure is ≥ 715 psia.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

LA01

Attachment 1, Volume 8, Rev. 0, Page 10 of 139

DISCUSSION OF CHANGES
ITS 3.5.1, SAFETY INJECTION TANKS (SITs)

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 3.5.1 ACTIONS A and B are for the conditions when one SIT is inoperable due to boron concentration not within limits and when one SIT is inoperable due to inability to verify level or pressure, respectively. ITS 3.5.1 ACTION A is for the conditions when one SIT is inoperable due to boron concentration not within limits or one SIT inoperable due to inability to verify level or pressure. ITS 3.5.1 ACTION A contains both conditions in one ACTION. This changes the CTS by consolidating existing CTS ACTIONS A and B into one ACTION (ACTION A), by deleting Required Action A.1 and by renumbering the subsequent ACTIONS.

This proposed change reorganizes CTS ACTIONS A and B into one ACTION and renumbers the remaining ACTIONS without changing the technical requirements of any of the current ACTIONS. Both CTS ACTIONS have the same Required Action and Completion Time (i.e., both require the SIT to be restored within 72 hours). Therefore, this change is acceptable since ITS 3.5.1 ACTION A covers the same conditions for the same inoperabilities and provides the same time for restoration. This change is considered administrative because it reorganizes the CTS ACTIONS without changing the intent or technical requirements.

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 3.5.1.1 requires verification that each SIT isolation valve is fully open every 12 hours. CTS SR 3.5.1.2 requires verification of the borated water volume in each SIT every 12 hours. CTS SR 3.5.1.3 requires verification of the nitrogen cover pressure in each SIT every 12 hours.

Attachment 1, Volume 8, Rev. 0, Page 11 of 139

DISCUSSION OF CHANGES
ITS 3.5.1, SAFETY INJECTION TANKS (SITs)

CTS SR 3.5.1.4 requires verification of the boron concentration in each SIT every 31 days. CTS 3.5.1.5 requires verification that power is removed from each SIT isolation valve operator every 31 days. ITS SR 3.5.1.1, ITS SR 3.5.1.2, ITS SR 3.5.1.3, ITS SR 3.5.1.4, and ITS SR 3.5.1.5 require similar Surveillances, respectively, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified frequencies for the SRs 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 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:

Attachment 1, Volume 8, Rev. 0, Page 12 of 139

DISCUSSION OF CHANGES
ITS 3.5.1, SAFETY INJECTION TANKS (SITs)

"(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;
   - 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

Attachment 1, Volume 8, Rev. 0, Page 13 of 139

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.

LESS RESTRICTIVE CHANGES

None

Attachment 1, Volume 8, Rev. 0, Page 14 of 139

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

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.1 Safety Injection Tanks (SITs)

LCO 3.5.1

LCO 3.5.1 [Four] SITs shall be OPERABLE. (2)

Applicability

APPLICABILITY: MODES 1 and 2,
MODE 3 with pressurizer pressure ≥ [700] psia. (715) (2)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A, ACTION B A. One SIT inoperable due to boron concentration not within limits. OR One SIT inoperable due to the inability to verify level or pressure.	A.1 Restore SIT to OPERABLE status.	72 hours
ACTION C B. One SIT inoperable for reasons other than Condition A.	B.1 Restore SIT to OPERABLE status.	24 hours
ACTION D C. Required Action and associated Completion Time of Condition A or B not met.	C.1 Be in MODE 3. AND C.2 Reduce pressurizer pressure to < [700] psia. (715)	6 hours (12) 2 hours (3) (2)
ACTION E D. Two or more SITs inoperable.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
SR 3.5.1.1	SR 3.5.1.1	Verify each SIT isolation valve is fully open.	12 hours
SR 3.5.1.2	SR 3.5.1.2	Verify borated water volume in each SIT is ≥ [28% narrow range (1802 cubic feet)] and ≤ 72% narrow range (1914 cubic feet)]. (1680, 1807)	12 hours (2)
SR 3.5.1.3	SR 3.5.1.3	Verify nitrogen cover pressure in each SIT is ≥ [615] psig and ≤ [655] psig. (psia)	12 hours (2)
SR 3.5.1.4	SR 3.5.1.4	Verify boron concentration in each SIT is ≥ [1500] ppm and ≤ [2800] ppm. (2200)	31 days (2) AND --------NOTE-------- Only required to be performed for affected SIT ---------- Once within 6 hours after each solution volume increase of ≥ [1]% of tank volume that is not the result of addition from the refueling water tank (storage) (2) (1)
SR 3.5.1.5	SR 3.5.1.5	Verify power is removed from each SIT isolation valve operator when pressurizer pressure is ≥ [2000] psia. (715)	31 days (2)

TSTF-425-A

In accordance with the Surveillance Frequency Control Program

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.1, SAFETY INJECTION TANKS (SITs)

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 revised to reflect the current licensing basis.

3. A typographical error in the Completion Time for ISTS 3.5.1 Required Action C.2 has been corrected. The Completion Time should be 12 hours (as described in the ISTS Bases), not 2 hours. The 12 hour time is also consistent with the CTS Completion Time.

Attachment 1, Volume 8, Rev. 0, Page 18 of 139

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

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.1 Safety Injection Tanks (SITs)

BASES

BACKGROUND

The functions of the [four] SITs are to supply water to the reactor vessel during the blowdown phase of a loss of coolant accident (LOCA), to provide inventory to help accomplish the refill phase that follows thereafter, and to provide Reactor Coolant System (RCS) makeup for a small break LOCA. (2)

The blowdown phase of a large break LOCA is the initial period of the transient during which the RCS departs from equilibrium conditions, and heat from fission product decay, hot internals, and the vessel continues to be transferred to the reactor coolant. The blowdown phase of the transient ends when the RCS pressure falls to a value approaching that of the containment atmosphere.

The refill phase of a LOCA follows immediately where reactor coolant inventory has vacated the core through steam flashing and ejection out through the break. The core is essentially in adiabatic heatup. The balance of the SITs' inventory is then available to help fill voids in the lower plenum and reactor vessel downcomer to establish a recovery level at the bottom of the core and ongoing reflood of the core with the addition of safety injection (SI) water.

The SITs are pressure vessels partially filled with borated water and pressurized with nitrogen gas. The SITs are passive components, since no operator or control action is required for them to perform their function. Internal tank pressure is sufficient to discharge the contents to the RCS, if RCS pressure decreases below the SIT pressure.

Each SIT is piped into one RCS cold leg via the injection lines utilized by the High Pressure Safety Injection and Low Pressure Safety Injection (HPSI and LPSI) systems. Each SIT is isolated from the RCS by a motor operated isolation valve and two check valves in series. The motor operated isolation valves are normally open, with power removed from the valve motor to prevent inadvertent closure prior to or during an accident.

The SIT gas and water volumes, gas pressure, and outlet pipe size are selected to allow three of the four SITs to partially recover the core before significant clad melting or zirconium water reaction can occur following a LOCA. The need to ensure that three SITs are adequate for this function is consistent with the LOCA assumption that the entire contents of one SIT will be lost via the break during the blowdown phase of a LOCA.

BASES

APPLICABLE SAFETY ANALYSES

The SITs are taken credit for in both the large and small break LOCA analyses at full power (Ref. 1). These are the Design Basis Accidents (DBAs) that establish the acceptance limits for the SITs. Reference to the analyses for these DBAs is used to assess changes to the SITs as they relate to the acceptance limits.

In performing the LOCA calculations, conservative assumptions are made concerning the availability of SI flow. These assumptions include signal generation time, equipment starting times, and delivery time due to system piping. In the early stages of a LOCA with a loss of offsite power, the SITs provide the sole source of makeup water to the RCS. (The assumption of a loss of offsite power is required by regulations.) This is because the LPSI pumps, HPSI pumps, and charging pumps cannot deliver flow until the diesel generators (DGs) start, come to rated speed, and go through their timed loading sequence. In cold leg breaks, the entire contents of one SIT are assumed to be lost through the break during the blowdown and reflood phases.

The limiting large break LOCA is a double ended guillotine cold leg break at the discharge of the reactor coolant pump.

During this event, the SITs discharge to the RCS as soon as RCS pressure decreases to below SIT pressure. As a conservative estimate, no credit is taken for SI pump flow until the SITs are empty. This results in a minimum effective delay of over 60 seconds, during which the SITs must provide the core cooling function. The actual delay time does not exceed 30 seconds. No operator action is assumed during the blowdown stage of a large break LOCA.

The worst case small break LOCA also assumes a time delay before pumped flow reaches the core. For the larger range of small breaks, the rate of blowdown is such that the increase in fuel clad temperature is terminated solely by the SITs, with pumped flow then providing continued cooling. As break size decreases, the SITs and HPSI pumps both play a part in terminating the rise in clad temperature. As break size continues to decrease, the role of the SITs continues to decrease until they are not required, and the HPSI pumps become solely responsible for terminating the temperature increase.

This LCO helps to ensure that the following acceptance criteria, established by 10 CFR 50.46 (Ref. 2) for the ECCS, will be met following a LOCA:

BASES

APPLICABLE SAFETY ANALYSES (continued)

a. Maximum fuel element cladding temperature is ≤ 2200°F; and

b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation; and

c. Maximum hydrogen generation from a zirconium water reaction is ≤ 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react; and

d. The core is maintained in a coolable geometry.

3

Since the SITs discharge during the blowdown phase of a LOCA, they do not contribute to the long term cooling requirements of 10 CFR 50.46.

Since the SITs are passive components, single active failures are not applicable to their operation. The SIT isolation valves, however, are not single failure proof; therefore, whenever the valves are open, power is removed from their operators and the switch is key locked open.

These precautions ensure that the SITs are available during an accident (Ref. 3). With power supplied to the valves, a single active failure could result in a valve closure, which would render one SIT unavailable for injection. If a second SIT is lost through the break, only two SITs would reach the core. Since ~~the only~~ active failure that could affect the SITs would be the closure of a motor operated outlet valve, the requirement to remove power from these eliminates this failure mode.

one

1

1

Furthermore, with power supplied to the SIT vent valves, a single active failure could result in a valve opening, which would also render one SIT unavailable for injection. Therefore, the SIT vent valves also have power removed to eliminate this failure mode.

The minimum volume requirement for the SITs ensures that three SITs can provide adequate inventory to reflood the core and downcomer following a LOCA. The downcomer then remains flooded until the HPSI and LPSI systems start to deliver flow.

The maximum volume limit is based on maintaining an adequate gas volume to ensure proper injection and the ability of the SITs to fully discharge, as well as limiting the maximum amount of boron inventory in the SITs.

1

BASES

APPLICABLE SAFETY ANALYSES (continued)

A minimum of 25% narrow range level, corresponding to [1790] cubic feet of borated water, and a maximum of 75% narrow range level, corresponding to [1927] cubic feet of borated water, are used in the safety analyses as the volume in the SITs. To allow for instrument inaccuracy, a [28]% narrow range (corresponding to [1802] cubic feet) and a [72]% narrow range (corresponding to [1914] cubic feet) are specified. The analyses are based upon the cubic feet requirements; the percentage figures are provided for operator use because the level indicator provided in the control room is marked in percentages, not in cubic feet.

The minimum nitrogen cover pressure requirement ensures that the contained gas volume will generate discharge flow rates during injection that are consistent with those assumed in the safety analyses.

The maximum nitrogen cover pressure limit ensures that excessive amounts of gas will not be injected into the RCS after the SITs have emptied.

A minimum pressure of [593] psig and a maximum pressure of [632] psig are used in the analyses. To allow for instrument accuracy, a [615] psig minimum and [655] psig maximum are specified. The maximum allowable boron concentration of [2800] ppm is based upon boron precipitation limits in the core following a LOCA. Establishing a maximum limit for boron is necessary since the time at which boron precipitation would occur in the core following a LOCA is a function of break location, break size, the amount of boron injected into the core, and the point of ECCS injection. Post LOCA emergency procedures directing the operator to establish simultaneous hot and cold leg injection are based on the worst case minimum boron precipitation time. Maintaining the maximum SIT boron concentration within the upper limit ensures that the SITs do not invalidate this calculation. An excessive boron concentration in any of the borated water sources used for injection during a LOCA could result in boron precipitation earlier than predicted.

The minimum boron requirements of [1500] ppm are based on beginning of life reactivity values and are selected to ensure that the reactor will remain subcritical during the reflood stage of a large break LOCA. During a large break LOCA, all control element assemblies (CEAs) are assumed not to insert into the core, and the initial reactor shutdown is

BASES

APPLICABLE SAFETY ANALYSES (continued)

accomplished by void formation during blowdown. Sufficient boron concentration must be maintained in the SITs to prevent a return to criticality during reflood. Although this requirement is similar to the basis for the minimum boron concentration of the refueling water tank (RWT), the minimum SIT concentration is lower than that of the RWT since the SITs need not account for dilution by the RCS.

storage
S
S
1

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

LCO

The LCO establishes the minimum conditions required to ensure that the SITs are available to accomplish their core cooling safety function following a LOCA. [Four] SITs are required to be OPERABLE to ensure that 100% of the contents of [three] of the SITs will reach the core during a LOCA.

2

This is consistent with the assumption that the contents of one tank spill through the break. If the contents of fewer than three tanks are injected during the blowdown phase of a LOCA, the ECCS acceptance criteria of 10 CFR 50.46 (Ref. 2) could be violated.

at pressures ≥ 715 psia

For an SIT to be considered OPERABLE, the isolation valve must be fully open, power removed above [2000] psig, and the limits established in the SR for contained volume, boron concentration, and nitrogen cover pressure must be met.

1 2

APPLICABILITY

715

In MODES 1 and 2, and MODE 3 with RCS pressure ≥ 700 psia, the SIT OPERABILITY requirements are based on an assumption of full power operation. Although cooling requirements decrease as power decreases, the SITs are still required to provide core cooling as long as elevated RCS pressures and temperatures exist.

715 715

This LCO is only applicable at pressures ≥ 700 psia. Below 700 psia, the rate of RCS blowdown is such that the ECCS pumps can provide adequate injection to ensure that peak clad temperature remains below the 10 CFR 50.46 (Ref. 2) limit of 2200°F.

715

In MODE 3, at pressures < 700 psia, and in MODES 4, 5, and 6, the SIT motor operated isolation valves are closed to isolate the SITs from the RCS. This allows RCS cooldown and depressurization without discharging the SITs into the RCS or requiring depressurization of the SITs.

7

BASES

ACTIONS

A.1

If the boron concentration of one SIT is not within limits, it must be returned to within the limits within 72 hours. In this condition, ability to maintain subcriticality or minimum boron precipitation time may be reduced, but the reduced concentration effects on core subcriticality during reflood are minor. Boiling of the ECCS water in the core during reflood concentrates the boron in the saturated liquid that remains in the core. In addition, the volume of the SIT is still available for injection. Since the boron requirements are based on the average boron concentration of the total volume of three SITs, the consequences are less severe than they would be if an SIT were not available for injection. Thus, 72 hours is allowed to return the boron concentration to within limits.

The combination of redundant level and pressure instrumentation for any single SIT provides sufficient information so that it is not worthwhile to always attempt to correct drift associated with one instrument, with the resulting radiation exposures during entry into containment, as there is sufficient time to repair one in the event that a second one became inoperable. Because these instruments do not initiate a safety action, it is reasonable to extend the allowable outage time for them. While technically inoperable, the SIT will be available to fulfill its safety function during this time and, thus, this Completion Time results in a negligible increase in risk.

B.1

If one SIT is inoperable, for reasons other than boron concentration or the inability to verify level or pressure, the SIT must be returned to OPERABLE status within 24 hours. In this Condition, the required contents of three SITs cannot be assumed to reach the core during a LOCA as is assumed in Appendix K (Ref. 5). 1

CE NPSD-994 (Ref. 6) provides a series of deterministic and probabilistic findings that support the 24 hour Completion Time as having no affect on risk as compared to shorter periods for restoring the SIT to OPERABLE status. 1

1

BASES

ACTIONS (continued)

C.1 and C.2

If the SIT cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and pressurizer pressure reduced to < 700 psia within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

715

7

D.1

If more than one SIT is inoperable, the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.1.1

Verification every 12 hours that each SIT isolation valve is fully open, as indicated in the control room, ensures that SITs are available for injection and ensures timely discovery if a valve should be partially closed. If an isolation valve is not fully open, the rate of injection to the RCS would be reduced. Although a motor operated valve should not change position with power removed, a closed valve could result in not meeting accident analysis assumptions. A 12 hour Frequency is considered reasonable in view of other administrative controls that ensure the unlikelihood of a mispositioned isolation valve.

INSERT 1

TSTF-425-A

TSTF-425-A

SR 3.5.1.2 and SR 3.5.1.3

SIT borated water volume and nitrogen cover pressure should be verified to be within specified limits every 12 hours in order to ensure adequate injection during a LOCA. Due to the static design of the SITs, a 12 hour Frequency usually allows the operator sufficient time to identify changes before the limits are reached. Operating experience has shown this Frequency to be appropriate for early detection and correction of off normal trends.

INSERT 1

TSTF-425-A

TSTF-425-A

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 8

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

Attachment 1, Volume 8, Rev. 0, Page 27 of 139

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.1.4

Thirty-one days is reasonable for verification to determine that each SIT's boron concentration is within the required limits, because the static design of the SITs limits the ways in which the concentration can be changed. ensures that

1 5

The 31 day Frequency is adequate to identify changes that could occur from mechanisms such as stratification or inleakage. Sampling the affected SIT within 6 hours after a 1% volume increase will identify whether inleakage has caused a reduction in boron concentration to below the required limit. It is not necessary to verify boron concentration if the added water is from the RWT, because the water contained in the RWT is within the SIT boron concentration requirements. This is consistent with the recommendations of NUREG-1366 (Ref. 4).

TSTF-425-A

INSERT 1

SR 3.5.1.5

Verification every 31 days that power is removed from each SIT isolation valve operator when the pressurizer pressure is ≥ 2000 psia ensures that an active failure could not result in the undetected closure of an SIT motor operated isolation valve. If this were to occur, only two SITs would be available for injection, given a single failure coincident with a LOCA.

715

7

TSTF-425-A

Since installation and removal of power to the SIT isolation valve operators is conducted under administrative control, the 31 day Frequency was chosen to provide additional assurance that power is removed.

TSTF-425-A

INSERT 1

This SR allows power to be supplied to the motor operated isolation valves when RCS pressure is < 2000 psia, thus allowing operational flexibility by avoiding unnecessary delays to manipulate the breakers during unit startups or shutdowns.

715

7

REFERENCES

1. FSAR, Section [6.3].

U

2

2. 10 CFR 50.46.

3. FSAR, Chapter [15].

U

2

4. Draft NUREG-1366, February 1990.

4 → 5. 10 CFR 50 Appendix K.

5 → 6. CE NPSD-994, "CEOG Joint Applications Report for Safety Injection Tank AOT/STI Extension," May 1995.

April

1

1

TSTF-425-A

INSERT 1

The Frequency is controlled under the Surveillance Frequency Control Program. 8

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

Attachment 1, Volume 8, Rev. 0, Page 29 of 139

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.1 BASES, SAFETY INJECTION TANKS (SITs)

1. Changes are made (additions, deletions, and/or changes) to the Improved Standard Technical Specification (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 revised to reflect the current licensing basis.

3. Changes are made to use correct punctuation, correct typographical errors or to make corrections consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

4. Changes are made to the Bases to be consistent with the Specifications.

5. Reference to the Completion Time for the SR is being deleted consistent with TSTF-425. TSTF-425 relocates applicable Surveillance Frequencies to a Surveillance Frequency Control Program. This change was missed when the TSTF was marked up.

6. 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.

7. Changes are made to the Bases to be consistent with similar changes made to the actual Specification.

8. 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 is not always true for each of the Frequencies.

Attachment 1, Volume 8, Rev. 0, Page 30 of 139

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.1, SAFETY INJECTION TANKS (SITs)

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

Attachment 1, Volume 8, Rev. 0, Page 32 of 139

ATTACHMENT 2

ITS 3.5.2, ECCS - OPERATING

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

ITS

3.5.2 ECCS — Operating

A01

LCO 3.5.2 LCO 3.5.2 Two ECCS trains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1 and 2,
MODE 3 with pressurizer pressure ≥ 400 psia.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. One LPSI ~~subtrain~~ subsystem inoperable.	A.1 Restore ~~subtrain~~ subsystem to OPERABLE status.	7 days
ACTION B B. One or more ECCS trains inoperable due to reason(s) other than Condition A. ~~AND~~	B.1 Restore ECCS train(s) to OPERABLE status.	72 hours
ACTION D D. ~~At least~~ 100% of the ECCS flow equivalent to a single OPERABLE ~~ECCS~~ train available.	D.1 Enter LCO 3.0.3	Immediately
ACTION C C. Required Action and associated Completion Time ~~of Condition A or B~~ not met.	C.1 Be in MODE 3. AND C.2 Reduce pressurizer pressure to < 400 psia.	6 hours 12 hours

A02 A03 A04

Less than

Attachment 1, Volume 8, Rev. 0, Page 35 of 139

ITS

A01

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	Verify the following valves are in the listed position with power to the valve operators removed. ----------NOTE---------- Valves HV-8150, HV-8151, HV-8152, HV-8153, and HV-0396 may be open with power to the valve operators not removed, provided the associated flow path is isolated with a locked closed manual valve(s). ---------- Valve Number / Position / Function HV-9353 Closed SDC Warmup HV-9359 Closed SDC Warmup HV-8150 Closed SDC HX Isolation HV-8151 Closed SDC HX Isolation HV-8152 Closed SDC HX Isolation HV-8153 Closed SDC HX Isolation HV-0396 Closed SDC Bypass Flow Control HV-8161 Open SDC HX Bypass Flow Isolation HV-9420 Closed Hot Leg Injection Isolation HV-9434 Closed Hot Leg Injection Isolation HV-8160 Open SDC Bypass Flow Control HV-8162 Open LPSI Miniflow Isolation HV-8163 Open LPSI Miniflow Isolation	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.2.2	~~Verify the following valves are in the listed position with power available to the valve operators.~~ Not used. ~~Valve Number / Position / Function~~ ~~HV-9302 Closed CES Isolation~~ ~~HV-9303 Closed CES Isolation~~ ~~HV-9304 Closed CES Isolation~~ ~~HV-9305 Closed CES Isolation~~ ~~HV-9306 Open ECCS Train Miniflow~~ ~~HV-9307 Open ECCS Train Miniflow~~ ~~HV-9347 Open ECCS Train Miniflow~~ ~~HV-9348 Open ECCS Train Miniflow~~	~~12 hours~~
SR 3.5.2.3	Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

LA01 L01 L02 LA01

(continued)

Attachment 1, Volume 8, Rev. 0, Page 36 of 139

A01

ITS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
SR 3.5.2.4	SR 3.5.2.4	Verify ECCS piping is full of water.	~~31 days~~ In accordance with the Surveillance Frequency Control Program LA01
SR 3.5.2.5	SR 3.5.2.5	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.2.6	SR 3.5.2.6	Deleted	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	SR 3.5.2.7	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~24 months~~ LA01 L03
SR 3.5.2.8	SR 3.5.2.8	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	~~24 months~~ In accordance with the Surveillance Frequency Control Program LA01
SR 3.5.2.9	SR 3.5.2.9	Verify each LPSI pump stops on an actual or simulated actuation signal.	~~24 months~~ LA01

(continued)

In accordance with the Surveillance Frequency Control Program

Attachment 1, Volume 8, Rev. 0, Page 37 of 139

A01

ITS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE			FREQUENCY
SR 3.5.2.10	SR 3.5.2.10	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	~~24 months~~ In accordance with the Surveillance Frequency Control Program

LA01

Attachment 1, Volume 8, Rev. 0, Page 38 of 139

3.5.2 ECCS — Operating

A01

LCO 3.5.2 LCO 3.5.2 Two ECCS trains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1 and 2,
MODE 3 with pressurizer pressure ≥ 400 psia.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. One LPSI ~~subtrain~~ subsystem inoperable.	A.1 Restore ~~subtrain~~ subsystem to OPERABLE status.	7 days
ACTION B	B. One or more ECCS trains inoperable due to reason(s) other than Condition A.	B.1 Restore ECCS train(s) to OPERABLE status.	72 hours
	~~AND~~		
ACTION D	D. ~~At least~~ 100% of the ECCS flow equivalent to a single OPERABLE ~~ECCS~~ train available.	D.1 Enter LCO 3.0.3	Immediately
ACTION C	C. Required Action and associated Completion Time ~~of Condition A or B~~ not met.	C.1 Be in MODE 3. AND C.2 Reduce pressurizer pressure to < 400 psia.	6 hours 12 hours

A04 A02 A03

Less than

A01

ITS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.2.1	SR 3.5.2.1 Verify the following valves are in the listed position with power to the valve operators removed. ----------NOTE---------- Valves HV-8150, HV-8151, HV-8152, HV-8153, and HV-0396 may be open with power to the valve operators not removed, provided the associated flow path is isolated with a locked closed manual valve(s). ---------- Valve Number / Position / Function: HV-9353 Closed SDC Warmup HV-9359 Closed SDC Warmup HV-8150 Closed SDC HX Isolation HV-8151 Closed SDC HX Isolation HV-8152 Closed SDC HX Isolation HV-8153 Closed SDC HX Isolation HV-0396 Closed SDC Bypass Flow Control HV-8161 Open SDC HX Bypass Flow Isolation HV-9420 Closed Hot Leg Injection Isolation HV-9434 Closed Hot Leg Injection Isolation HV-8160 Open SDC Bypass Flow Control HV-8162 Open LPSI Miniflow Isolation HV-8163 Open LPSI Miniflow Isolation	~~12 hours~~ In accordance with the Surveillance Frequency Control Program
SR 3.5.2.2	SR 3.5.2.2 ~~Verify the following valves are in the listed position with power available to the valve operators.~~ Not used. ~~Valve Number / Position / Function:~~ ~~HV-9302 Closed CES Isolation~~ ~~HV-9303 Closed CES Isolation~~ ~~HV-9304 Closed CES Isolation~~ ~~HV-9305 Closed CES Isolation~~ ~~HV-9306 Open ECCS Train Miniflow~~ ~~HV-9307 Open ECCS Train Miniflow~~ ~~HV-9347 Open ECCS Train Miniflow~~ ~~HV-9348 Open ECCS Train Miniflow~~	~~12 hours~~
SR 3.5.2.3	SR 3.5.2.3 Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31 days~~ In accordance with the Surveillance Frequency Control Program

LA01 LA01 L01 L02

(continued)

A01

ITS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
SR 3.5.2.4	SR 3.5.2.4	Verify ECCS piping is full of water.	~~31 days~~ In accordance with the Surveillance Frequency Control Program LA01
SR 3.5.2.5	SR 3.5.2.5	Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program
SR 3.5.2.6	SR 3.5.2.6	Deleted	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7	SR 3.5.2.7	Verify each ECCS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~24 months~~ LA01 L03
SR 3.5.2.8	SR 3.5.2.8	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	~~24 months~~ In accordance with the Surveillance Frequency Control Program LA01
SR 3.5.2.9	SR 3.5.2.9	Verify each LPSI pump stops on an actual or simulated actuation signal.	~~24 months~~ LA01

(continued)

In accordance with the Surveillance Frequency Control Program

Attachment 1, Volume 8, Rev. 0, Page 41 of 139

A01

ITS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE			FREQUENCY
SR 3.5.2.10	SR 3.5.2.10	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	~~24 months~~ In accordance with the Surveillance Frequency Control Program

LA01

Attachment 1, Volume 8, Rev. 0, Page 42 of 139

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

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 3.5.2 ACTION B is for the condition when one or more ECCS trains are inoperable due to reason(s) other than when one LPSI subtrain is inoperable and at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available. ITS 3.5.2 ACTION B, consistent with TSTF-325, is for the condition when one or more trains are inoperable due to reasons other than when one LPSI subsystem is inoperable. ITS 3.5.2 also contains ACTION D which is for the condition when less than 100% of the flow equivalent to a single Operable train is available and requires entry into LCO 3.0.3 immediately. This changes the CTS by deleting the second condition of ACTION B for at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train to be available and essentially replacing this condition with a new ACTION D for the condition when less than 100% of the ECCS flow equivalent to a single OPERABLE train is available with a Required Action to enter LCO 3.0.3 immediately.

This proposed change is to remove the "AND at least 100% ECCS flow equivalent to a single OPERABLE ECCS train available" from Condition B of CTS 3.5.2 and create a new ITS 3.5.2 Condition D which states, "Less than 100% ECCS flow equivalent to a single OPERABLE train available." ITS 3.5.2 Required Action D.1 will require the unit to enter LCO 3.0.3 immediately. CTS 3.5.2 Condition B deals with "One or more trains of ECCS inoperable AND at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available." This allows inoperabilities to be present in both trains, as long as 100% equivalent flow is available; for example, high pressure injection inoperable in Train A and low pressure injection inoperable in Train B. If a situation were to occur which resulted in less than 100% ECCS flow (such as both low pressure injection pumps inoperable), then LCO 3.0.3 would be entered, since there is no specified Condition in the CTS ACTIONS. However, for clarity and human factor considerations, a specific Condition (ITS 3.5.2 Condition D) has been added which covers the case of less than 100% ECCS flow. This change is considered acceptable and administrative because it does not result in any technical changes

A03 CTS 3.5.2 ACTION C is for the condition when the Required Action and Associated Completion Time of Condition A or B not met. ITS 3.5.2 ACTION C is for the condition when Required Action and associated Completion Time not met. This changes the CTS by deleting the specific reference to Condition A and B.

Attachment 1, Volume 8, Rev. 0, Page 43 of 139

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

The proposed deletion of the wording in the CTS Condition C that specifies it is for the condition when the Required Action and associated Completion Time of Condition A or B not met is acceptable because it is not needed for the condition to apply to the above ACTIONS. Unless specifically specified, the condition when Required Actions and associated Completion Times are not met is applicable to all preceding Conditions. This change is considered administrative because it deletes wording that does not contribute to the clarification of the Condition.

A04 CTS 3.5.2 ACTION A states that with one LPSI "subtrain" inoperable, to restore the "subtrain" to OPERABLE status within 7 days. ISTS 3.5.2 ACTION A states that with one LPSI "subsystem" inoperable, to restore the "subsystem" to OPERABLE status within 7 days. This changes the CTS by changing the term "subtrain" to "subsystem."

The changing of the term "subtrain" to "subsystem" is acceptable because they mean the same thing. The CTS uses the term subsystem in the discussion of the LPSI in the LCO section of the Bases. Therefore the terms mean the same the thing. This change is considered 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 3.5.2.1 requires verification that specified valves in the ECCS system are in a specified position and have power to the valve operators removed every 12 hours. CTS SR 3.5.2.3 requires verification that each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed or otherwise secured in position, is in the correct position every 31 days. CTS SR 3.5.2.4 requires verification that ECCS piping is full of water every 31 days. CTS SR 3.5.2.7 requires verification that each automatic valve in the flow path actuates to the correct position on an actual or simulated actuation signal every 24 months. CTS SR 3.5.2.8 requires verification that each ECCS pump starts automatically on an actual or simulated actuation signal every 24 months. CTS SR 3.5.2.9 requires verification that each LPSI pump stops on an actual or simulated actuation signal every 24 months. CTS SR 3.5.2.10 requires verification, by visual inspection, that each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal

Attachment 1, Volume 8, Rev. 0, Page 44 of 139

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

corrosion every 24 months. ITS SR 3.5.2.1, ITS SR 3.5.2.3, ITS SR 3.5.2.4, ITS SR 3.5.2.7, ITS SR 3.5.2.8, ITS SR 3.5.2.9 and ITS SR 3.5.2.10 require similar Surveillances, respectively, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs 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 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:

Attachment 1, Volume 8, Rev. 0, Page 45 of 139

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

"(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;
   - 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

Attachment 1, Volume 8, Rev. 0, Page 46 of 139

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.

LESS RESTRICTIVE CHANGES

L01 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS SR 3.5.2.1 requires various valves to be in the required position with power to the valve operators removed. ITS SR 3.5.2.1 includes the same Surveillance, but includes a Note that allows valves HV-8150, HV-8151, HV-8152, HV-8183, and HV-0396 to be open with power to the valve operators not removed, provided the associated flow path is isolated with a locked closed manual valve(s). This changes the CTS by allowing some valves that required to be closed to be open if the associated flow path is isolated with locked closed manual valve(s).

Attachment 1, Volume 8, Rev. 0, Page 47 of 139

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

The purpose of CTS SR 3.5.2.1 for valves HV-8150, HV-8151, HV-8152, HV-8183, and HV-0396 is to ensure a single active failure will not result in flow from the LPSI System being bypassed and not reaching the RCS. However, the specified valves all have a manual isolation valve (or valves) that can be closed and locked to perform the same function - isolate the affected flow path. With the manual valve(s) locked closed, a single failure that results in the LPSI flow bypassing the RCS is not possible. These remote, power-operated valves are periodically required to be cycled in accordance with the Inservice Testing (IST) Program requirements. Energizing the valve operators and opening these valves to perform the IST testing results in SR 3.5.2.1 not being met and a resultant failure to meet LCO 3.5.2 requirements. This change is acceptable because allowing the valves to be re-energized and opened, while ensuring the flow path is isolated using an installed locked manual valve(s), continues to ensure the purpose of the requirement to maintain the ECCS flow path from the LPSI pump to the RCS is met. This change is designated as less restrictive since the ITS will allow the SR to be met in an alternative method that is not allowed in the CTS.

L02 *(Category 5 – Deletion of Surveillance Requirement)* CTS SR 3.5.2.2 requires a verification that certain valves are in the listed position with power available to the valve operators every 12 hours. The ITS does not include the specific Surveillance Requirement. This changes the CTS by deleting CTS SR 3.5.2.2.

The valves being tested by CTS SR 3.5.2.2 are the Containment Emergency Sump isolation valves and ECCS pumps and containment spray pumps minifow valves. The purpose of CTS SR 3.5.2.2 is to ensure that ECCS OPERABILITY and containment integrity are maintained. However, these valves are already required to be verified in the correct position by CTS SR 3.5.2.3. CTS SR 3.5.2.3 requires verifying ECCS valves in the flow path (which all of these valves are) to be verified in the correct position every 31 days. These valves are all automatic valves. Furthermore, power is not required to be removed like the valves listed in CTS SR 3.5.2.1. Also, there is an annunciator that provides an alarm to alert the Operators when the valves are out of position. Thus, verifying valve position and power available every 12 hours is not necessary; it is acceptable to verify these valves are in the correct position on the same periodicity as other ECCS flow path valves. Furthermore, these valves are not operated except by plant procedures. Thus, control of the position of the valves is not affected by the deletion of this SR. In addition, NUREG-1432 does not include this type of SR for these valves. They are tested as required consistent with CTS SR 3.5.2.3, which is being maintained in the ITS as ITS SR 3.5.2.3. Therefore, deletion of this additional SR is acceptable. This change is designated as less restrictive since an SR in the CTS is not being maintained in the ITS.

L03 *(Category 5 – Deletion of Surveillance Requirement)* CTS SR 3.5.2.7 requires verification that each automatic ECCS valve in the flow path actuates to its correct position. ITS SR 3.5.2.7 requires verification that each automatic ECCS valve in the flow path "that is not locked, sealed, or otherwise secured in position" actuates to the correct position. This changes the CTS by excluding those valves that are locked, sealed, or otherwise secured in position from the verification.

Attachment 1, Volume 8, Rev. 0, Page 48 of 139

DISCUSSION OF CHANGES
ITS 3.5.2, ECCS - OPERATING

The purpose of CTS SR 3.5.2.7 is to provide assurance that if an event occurred requiring ECCS valves to be in their correct position, then those requiring automatic actuation would actuate to their correct position. This change is acceptable because the deleted Surveillance is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to provide confidence that the equipment can perform its assumed safety function. Those automatic valves that are locked, sealed, or otherwise secured in position are not required to actuate on a safety injection actuation signal or a recirculation actuation signal in order to perform their safety function because they are already in the required position. Testing such valves would not provide any additional assurance of OPERABILITY. Valves that are required to actuate will continue to be tested. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

Attachment 1, Volume 8, Rev. 0, Page 49 of 139

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

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

Applicability

APPLICABILITY: MODES 1 and 2,
MODE 3 with pressurizer pressure ≥ [1700] psia. 2

400

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
-----REVIEWER'S NOTE----- The adoption of this Condition is contingent upon implementation of a program to perform a contemporaneous assessment of the overall impact on safety of proposed plant configurations prior to performing and during performance of maintenance activities that remove equipment from service. ---------- 3		
ACTION A A. One LPSI subsystem inoperable.	A.1 Restore subsystem to OPERABLE status.	7 days
ACTION B B. One or more trains inoperable for reasons other than Condition A.	B.1 Restore train(s) to OPERABLE status.	72 hours
ACTION C C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Reduce pressurizer pressure to < [1700] psia. 2 400	6 hours 12 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION B D. Less than 100% of the ECCS flow equivalent to a single OPERABLE train available.	D.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.2.1	SR 3.5.2.1 INSERT 1A [Verify the following valves are in the listed position with power to the valve operator removed [and key locked in position]. Valve Number / Position / Function INSERT 1 [ ] [ ] [ ]	12 hours] (7, TSTF-425-A; 2) (2)
SR 3.5.2.3	INSERT 2 SR 3.5.2.2 (3) Verify each ECCS manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days (4, TSTF-425-A; 4)
SR 3.5.2.4	SR 3.5.2.3 (4) [Verify ECCS piping is full of water.	31 days] (4, TSTF-425-A; 4; 2)
SR 3.5.2.5	SR 3.5.2.4 (5) Verify each ECCS pump's developed head at the test flow point is greater than or equal to the required developed head.	In accordance with the Inservice Testing Program (4)
	SR 3.5.2.5 [Verify each charging pump develops a flow of ≥ [36] gpm at a discharge pressure of ≥ [2200] psig.	In accordance with the Inservice Testing Program] (5)

INSERT 3

(4) In accordance with the Surveillance Frequency Control Program

7 **INSERT 1A**

----------NOTE----------
Valves HV-8150, HV-8151, HV-8152, HV-8153, and HV-0396 may be open with power to the valve operators not removed, provided the associated flow path is isolated with a locked closed manual valve(s).
---

2 **INSERT 1**

HV-9353	Closed	SDC Warmup
HV-9359	Closed	SDC Warmup
HV-8150	Closed	SDC HX Isolation
HV-8151	Closed	SDC HX Isolation
HV-8152	Closed	SDC HX Isolation
HV-8153	Closed	SDC HX Isolation
HV-0396	Closed	SDC Bypass Flow Control
HV-8161	Open	SDC HX Bypass Flow Isolation
HV-9420	Closed	Hot Leg Injection Isolation
HV-9434	Closed	Hot Leg Injection Isolation
HV-8160	Open	SDC Bypass Flow Control
HV-8162	Open	LPSI Miniflow Isolation
HV-8163	Open	LPSI Miniflow Isolation

4 **INSERT 2**

SR 3.5.2.2 SR 3.5.2.2 Not used.

4 **INSERT 3**

SR 3.5.2.6 SR 3.5.2.6 Not used.

Attachment 1, Volume 8, Rev. 0, Page 53 of 139

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
SR 3.5.2.7	SR 3.5.2.6 (7)	Verify each ECCS automatic valve that is not locked, sealed, or otherwise secured in position, in the flow path actuates to the correct position on an actual or simulated actuation signal.	[18] months (4) TSTF-425-A (8)
SR 3.5.2.8	SR 3.5.2.7 (8)	Verify each ECCS pump starts automatically on an actual or simulated actuation signal.	[18] months (4) TSTF-425-A
SR 3.5.2.9	SR 3.5.2.8 (9)	Verify each LPSI pump stops on an actual or simulated actuation signal.	[18] months (4) TSTF-425-A
	SR 3.5.2.9	[Verify, for each ECCS throttle valve listed below, each position stop is in the correct position. Valve Number [ ] [ ]	[18] months] (6)
SR 3.5.2.10	SR 3.5.2.10	Verify, by visual inspection, each ECCS train containment sump suction inlet is not restricted by debris and the suction inlet trash racks and screens show no evidence of structural distress or abnormal corrosion.	[18] months TSTF-425-A

In accordance with the Surveillance Frequency Control Program

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.2, ECCS - OPERATING

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 revised to reflect the current licensing basis.

3. 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.

4. The SR number has been changed to be consistent with the SR number in the SONGS CTS. SCE has decided not to renumber the CTS to be consistent with the ISTS because by doing so would result in the unnecessary administrative burden of changing TS numbers in plant procedures. For this reason, "Not used" SR numbers are also maintained in the ITS.

5. The bracketed ITS SR 3.5.2.5 is being deleted. The charging pumps are not part of the ECCS at SONGS. They were removed from the Technical Specifications as approved by the NRC in Amendments 163 and 154, dated 2/22/2000 (ADAMS Accession No. ML003687171).

6. The bracketed ITS SR 3.5.2.9 is being deleted. SONGS does not have position stops for the ECCS. Orifices are set to balance the flow to the RCS. This flow balance directs sufficient flow to the core to meet the analysis assumptions.

7. ISTS SR 3.5.2.1 requires various valves to be in the required position with power to the valve operators removed. SCE has modified the SR by including the SONGS-specific valves. A Note has also been added that allows valves HV-8150, HV-8151, HV-8152, HV-8183, and HV-0396 to be open with power to the valve operators not removed, provided the associated flow path is isolated with a locked closed manual valve(s). As stated in the ISTS Bases, the purpose of the SR is to ensure a single active failure will not result in flow from the ECCS being bypassed and not reaching the RCS. However, the specified valves all have a manual isolation valve that can be closed and locked to perform the same function - isolate the affected flow path. With the manual valve locked closed, a single failure that results in the LPSI flow bypassing the RCS is not possible. This change is more fully described in Discussion of Change L01.

8. The placement of the phrase "that is not locked, sealed, or otherwise secured in position," is incorrect. The phrase should come after "in the flow path," just like it does in ISTS SR 3.5.2.2. Furthermore, the proposed placement is also consistent with the placement of the phrase in the other PWR NUREGs, NUREG-1430 and NUREG-1431.

Attachment 1, Volume 8, Rev. 0, Page 55 of 139

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

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.2 ECCS - Operating

BASES

BACKGROUND

The function of the ECCS is to provide core cooling and negative reactivity to ensure that the reactor core is protected after any of the following accidents:

a. Loss of coolant accident (LOCA);

b. Control Element Assembly (CEA) ejection accident;

c. Loss of secondary coolant accident, including uncontrolled steam release or loss of feedwater, and;

d. Steam generator tube rupture (SGTR).

The addition of negative reactivity is designed primarily for the loss of secondary coolant accident where primary cooldown could add enough positive reactivity to achieve criticality and return to significant power.

There are two phases of ECCS operation: injection and recirculation. In the injection phase, all injection is initially added to the Reactor Coolant System (RCS) via the cold legs. After the blowdown stage of the LOCA stabilizes, injection flow is split equally between the hot and cold legs. After the refueling water tank (RWT) has been depleted, the ECCS recirculation phase is entered as the ECCS suction is automatically transferred to the containment sump.

Two redundant, 100% capacity trains are provided. In MODES 1, 2, and 3, with pressurizer pressure ≥ 1700 psia, each train consists of high pressure safety injection (HPSI), low pressure safety injection (LPSI), and charging subsystems. In MODES 1, 2, and 3, with pressurizer pressure ≥ 1700 psia, both trains must be OPERABLE. This ensures that 100% of the core cooling requirements can be provided in the event of a single active failure.

A suction header supplies water from the RWT or the containment sump to the ECCS pumps. Separate piping supplies each train. The discharge headers from each HPSI pump divide into four supply lines. Both HPSI trains feed into each of the four injection lines. The discharge header from each LPSI pump divides into two supply lines, each feeding the injection line to two RCS cold legs. Control valves or orifices are set to balance the flow to the RCS. This flow balance directs sufficient flow to the core to meet the analysis assumptions following a LOCA in one of the RCS cold legs.

BASES

BACKGROUND (continued)

For LOCAs that are too small to initially depressurize the RCS below the shutoff head of the HPSI pumps, the charging pumps supply water to maintain inventory until the RCS pressure decreases below the HPSI pump shutoff head. During this period, the steam generators (SGs) must provide the core cooling function. The charging pumps take suction from the RWT on a safety injection actuation signal (SIAS) and discharge directly to the RCS through a common header. The normal supply source for the charging pumps is isolated on an SIAS to prevent noncondensible gas (e.g., air, nitrogen, or hydrogen) from being entrained in the charging pumps.

During low temperature conditions in the RCS, limitations are placed on the maximum number of HPSI pumps that may be OPERABLE. Refer to the Bases for LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for the basis of these requirements.

During a large break LOCA, RCS pressure will decrease to < 200 psia in < 20 seconds. The safety injection (SI) systems are actuated upon receipt of an SIAS. The actuation of safeguard loads is accomplished in a programmed time sequence. If offsite power is available, the safeguard loads start immediately in the programmed sequence. If offsite power is not available, the Engineered Safety Feature (ESF) buses shed normal operating loads and are connected to the diesel generators (DGs). Safeguard loads are then actuated in the programmed time sequence. The time delay associated with diesel starting, sequenced loading, and pump starting determines the time required before pumped flow is available to the core following a LOCA.

The active ECCS components, along with the passive safety injection tanks (SITs) and the RWT, covered in LCO 3.5.1, "Safety Injection Tanks (SITs)," and LCO 3.5.4, "Refueling Water Tank (RWT)," provide the cooling water necessary to meet GDC 35 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The LCO helps to ensure that the following acceptance criteria, established by 10 CFR 50.46 (Ref. 2) for ECCSs, will be met following a LOCA:

a. Maximum fuel element cladding temperature is ≤ 2200°F;

b. Maximum cladding oxidation is ≤ 0.17 times the total cladding thickness before oxidation;

BASES

APPLICABLE SAFETY ANALYSES (continued)

c. Maximum hydrogen generation from a zirconium water reaction is ≤ 0.01 times the hypothetical amount generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react;

d. Core is maintained in a coolable geometry; and

e. Adequate long term core cooling capability is maintained.

The LCO also limits the potential for a post trip return to power following a steam line break (SLB) and ensures that containment temperature limits are met.

Both HPSI and LPSI subsystems are assumed to be OPERABLE in the large break LOCA analysis at full power (Ref. 3). This analysis establishes a minimum required runout flow for the HPSI and LPSI pumps, as well as the maximum required response time for their actuation. The HPSI pumps and charging pumps are credited in the small break LOCA analysis. This analysis establishes the flow and discharge head requirements at the design point for the HPSI pump. The SGTR and SLB analyses also credit the HPSI pumps, but are not limiting in their design.

The large break LOCA event with a loss of offsite power and a single failure (disabling one ECCS train) establishes the OPERABILITY requirements for the ECCS. During the blowdown stage of a LOCA, the RCS depressurizes as primary coolant is ejected through the break into the containment. The nuclear reaction is terminated either by moderator voiding during large breaks or control element assembly (CEA) insertion during small breaks. Following depressurization, emergency cooling water is injected into the cold legs, flows into the downcomer, fills the lower plenum, and refloods the core.

On smaller breaks, RCS pressure will stabilize at a value dependent upon break size, heat load, and injection flow. The smaller the break, the higher this equilibrium pressure. In all LOCA analyses, injection flow is not credited until RCS pressure drops below the shutoff head of the HPSI pumps.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The LCO ensures that an ECCS train will deliver sufficient water to match decay heat boiloff rates soon enough to minimize core uncovery for a large LOCA. It also ensures that the HPSI pump will deliver sufficient water during a small break LOCA and provide sufficient boron to maintain the core subcritical following an SLB. For smaller LOCAs, the charging pumps deliver sufficient fluid to maintain RCS inventory until the RCS can be depressurized below the HPSI pumps' shutoff head. During this period of a small break LOCA, the SGs continue to serve as the heat sink providing core cooling. (5) (5)

ECCS - Operating satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

In MODES 1, 2, and 3, with pressurizer pressure ≥ 1700 (400) psia, two independent (and redundant) ECCS trains are required to ensure that sufficient ECCS flow is available, assuming there is a single failure affecting either train. Additionally, individual components within the ECCS trains may be called upon to mitigate the consequences of other transients and accidents. (6)

In MODES 1 and 2, and in MODE 3 with pressurizer pressure ≥ 1700 (400) psia, an ECCS train consists of an HPSI subsystem, (and) an LPSI subsystem. and a charging pump. (6) (5) (5)

Each train includes the piping, instruments, and controls to ensure the availability of an OPERABLE flow path capable of taking suction from the RWT (S) on an SIAS and automatically transferring suction to the containment sump upon a recirculation actuation signal (RAS). (1)

During an event requiring ECCS actuation, a flow path is provided to (S) ensure an abundant supply of water from the RWT to the RCS, via the HPSI and LPSI pumps and their respective supply headers, to each of the four cold leg injection nozzles. In the long term, this flow path may be switched to take its supply from the containment sump and to supply part of its flow to the RCS hot legs via the shutdown cooling (SDC) suction nozzles. The charging pump flow path takes suction from the RWT and supplies the RCS via the normal charging lines. (1) (5)

The flow path for each train must maintain its designed independence to ensure that no single failure can disable both ECCS trains.

BASES

APPLICABILITY

In MODES 1 and 2, and in MODE 3 with RCS pressure ≥ 1700 psia, the ECCS OPERABILITY requirements for the limiting Design Basis Accident (DBA) large break LOCA are based on full power operation. Although reduced power would not require the same level of performance, the accident analysis does not provide for reduced cooling requirements in the lower MODES. The HPSI pump performance is based on the small break LOCA, which establishes the pump performance curve and has less dependence on power. The charging pump performance requirements are based on a small break LOCA. The requirements of MODES 2 and 3, with RCS pressure ≥ 1700 psia, are bounded by the MODE 1 analysis.

The ECCS functional requirements of MODE 3, with RCS pressure < 1700 psia, and MODE 4 are described in LCO 3.5.3, "ECCS - Shutdown."

In MODES 5 and 6, unit conditions are such that the probability of an event requiring ECCS injection is extremely low. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation - High Water Level," and LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level."

ACTIONS

A.1

With one LPSI subsystem inoperable, action must be taken to restore OPERABLE status within 7 days. In this condition, the remaining OPERABLE ECCS train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure to the remaining LPSI subsystem could result in loss of ECCS function. The 7 day Completion Time is reasonable to perform corrective maintenance on the inoperable LPSI subsystem. The 7 day Completion Time is based on the findings of the deterministic and probabilistic analysis in Reference 6. Reference 6 concluded that extending the Completion Time to 7 days for an inoperable LPSI train provides plant operational flexibility while simultaneously reducing overall plant risk. This is because the risks incurred by having the LPSI train unavailable for a longer time at power will be substantially offset by the benefits associated with avoiding unnecessary plant transitions and by reducing risk during plant shutdown operations.

BASES

ACTIONS (continued)

B.1

If one or more trains are inoperable except for reasons other than Condition A (one LPSI subsystem inoperable) and at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train is available, the inoperable components must be returned to OPERABLE status within 72 hours. The 72 hour Completion Time is based on an NRC study (Ref. 4) using a reliability evaluation and is a reasonable amount of time to effect many repairs.

An ECCS train is inoperable if it is not capable of delivering the design flow to the RCS. The individual components are inoperable if they are not capable of performing their design function, or if supporting systems are not available.

The LCO requires the OPERABILITY of a number of independent subsystems. Due to the redundancy of trains and the diversity of subsystems, the inoperability of one component in a train does not render the ECCS incapable of performing its function. Neither does the inoperability of two different components, each in a different train, necessarily result in a loss of function for the ECCS. This allows increased flexibility in plant operations when components in opposite trains are inoperable.

An event accompanied by a loss of offsite power and the failure of an emergency DG can disable one ECCS train until power is restored. A reliability analysis (Ref. 4) has shown that the impact with one full ECCS train inoperable is sufficiently small to justify continued operation for 72 hours.

bypass

Reference 5 describes situations in which one component, such as a shutdown cooling ~~total~~ flow control valve, can disable both ECCS trains. With one or more components inoperable, such that 100% of the equivalent flow to a single OPERABLE ECCS train is not available, the facility is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be immediately entered.

1

BASES

ACTIONS (continued)

C.1 and C.2

If the inoperable train cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and pressurizer pressure reduced to < 1700 psia within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power in an orderly manner and without challenging unit systems.

400

6

D.1

Condition B is applicable with one or more trains inoperable. The allowed Completion Time is based on the assumption that at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train is available. With less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, the facility is in a condition outside of the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.5.2.1

6

Verification of proper valve position ensures that the flow path from the ECCS pumps to the RCS is maintained. Misalignment of these valves could render both ECCS trains inoperable. Securing these valves in position by removing power or by key locking the control in the correct position ensures that the valves cannot be inadvertently misaligned or change position as the result of an active failure. These valves are of the type described in Reference 5, which can disable the function of both ECCS trains and invalidate the accident analysis. A 12 hour Frequency is considered reasonable in view of other administrative controls ensuring that a mispositioned valve is an unlikely possibility.

(with the exception of HV-8162 and HV-8163)

INSERT 1

INSERT 2

7

TSTF-425-A

SR 3.5.2.2

Not used.

3

6

SR 3.5.2.2

6

Verifying the correct alignment for manual, power operated, and automatic valves in the ECCS flow paths provides assurance that the proper flow paths will exist for ECCS operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves were verified to be in the correct position prior to locking,

INSERT 1

However, since the LPSI miniflow isolation valves are required to be open to provide pump protection, and the valves do not receive an automatic signal, the valves must be open. Furthermore, the valves are powered from the opposite electrical division, thus a single failure related to power distribution could also disable both LPSI trains if these valves are not in the open position with power removed. (Note that a failure to open LPSI miniflow isolation valve HV-8162 or HV-8163 makes only the corresponding LPSI train inoperable. Misalignment of one of these two valves could not render both ECCS trains inoperable.) The SR is modified by a Note that allows valves HV-8150, HV-8151, HV-8152, HV-8153, and HV-0396 to be open with power to the valve operators not removed, provided the associated flow path is isolated with a locked closed manual valve(s). This is allowed since closing and locking the manual valve(s) in the associated flow path performs the same function as closing and removing power from the valve operator.

7

6

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program.

8

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

4

Attachment 1, Volume 8, Rev. 0, Page 64 of 139

BASES

SURVEILLANCE REQUIREMENTS (continued)

sealing, or securing. A valve that receives an actuation signal is allowed to be in a nonaccident position provided the valve automatically repositions within the proper stroke time. This Surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position.

The 31 day Frequency is appropriate because the valves are operated under procedural control and an improper valve position would only affect a single train. This Frequency has been shown to be acceptable through operating experience.

TSTF-425-A

INSERT 3

4

SR 3.5.2.3

6

With the exception of systems in operation, the ECCS pumps are normally in a standby, nonoperating mode. As such, flow path piping has the potential to develop voids and pockets of entrained gases. Maintaining the piping from the ECCS pumps to the RCS full of water ensures that the system will perform properly, injecting its full capacity into the RCS upon demand. This will also prevent water hammer, pump cavitation, and pumping of noncondensible gas (e.g., air, nitrogen, or hydrogen) into the reactor vessel following an SIAS or during SDC. The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the ECCS piping and the adequacy of the procedural controls governing system operation.

RWST

(Ref. 7)

1

1

TSTF-425-A

INSERT 3

5

SR 3.5.2.4

6

Periodic surveillance testing of ECCS pumps to detect gross degradation caused by impeller structural damage or other hydraulic component problems is required by the ASME Code. This type of testing may be accomplished by measuring the pump developed head at only one point of the pump characteristic curve. This verifies both that the measured performance is within an acceptable tolerance of the original pump baseline performance and that the performance at the test flow is greater than or equal to the performance assumed in the unit safety analysis. SRs are specified in the Inservice Testing Program of the ASME Code. The ASME Code provides the activities and Frequencies necessary to satisfy the requirements.

TSTF-425-A

INSERT 3

The Frequency is controlled under the Surveillance Frequency Control Program. 8

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.5

Discharge head at design flow is a normal test of charging pump performance required by the ASME Code. A quarterly Frequency for such tests is a Code requirement. Such inservice inspections detect component degradation and incipient failures.

6

SR 3.5.2.6

Not used.

6

7 8 9

SR 3.5.2.6, SR 3.5.2.7, and SR 3.5.2.8

6

These SRs demonstrate that each automatic ECCS valve actuates to the required position on an actual or simulated SIAS and on an RAS, that each ECCS pump starts on receipt of an actual or simulated SIAS, and that the LPSI pumps stop on receipt of an actual or simulated RAS. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls.

actual or simulated

9

INSERT 3

The 18 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for unplanned transients if the Surveillances were performed with the reactor at power. The 18 month Frequency is also acceptable based on consideration of the design reliability (and confirming operating experience) of the equipment. The actuation logic is tested as part of the Engineered Safety Feature Actuation System (ESFAS) testing, and equipment performance is monitored as part of the Inservice Testing Program.

TSTF-425-A

SR 3.5.2.9

Realignment of valves in the flow path on an SIAS is necessary for proper ECCS performance. The safety injection valves have stops to position them properly so that flow is restricted to a ruptured cold leg, ensuring that the other cold legs receive at least the required minimum flow. This SR is not required for units with flow limiting orifices. The 18 month Frequency is based on the same factors as those stated above for SR 3.5.2.6, SR 3.5.2.7, and SR 3.5.2.8.

6

TSTF-425-A

INSERT 3

The Frequency is controlled under the Surveillance Frequency Control Program. 8

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.2.10

Periodic inspection of the containment sump ensures that it is unrestricted and stays in proper operating condition. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during an outage, on the need to have access to the location, and on the potential for unplanned transients if the Surveillance were performed with the reactor at power. This Frequency is sufficient to detect abnormal degradation and is confirmed by operating experience.

INSERT 3

TSTF-425-A

REFERENCES

1. 10 CFR 50, Appendix A, GDC 35.

2. 10 CFR 50.46.

3. FSAR, Chapter [6].

U

Sections 6.3. 15.6.3, and 15.10.6.3

1 2

4. NRC Memorandum to V. Stello, Jr., from R. L. Baer, "Recommended Interim Revisions to LCOs for ECCS Components," December 1, 1975.

5. IE Information Notice No. 87-01, January 6, 1987.

6. CE NPSD-995, "Low Pressure Safety Injection System AOT Extension," May 1995.

1

7. Nine – Month Response to GL 2008-01, Dated October 14, 2008.

TSTF-425-A

INSERT 3

The Frequency is controlled under the Surveillance Frequency Control Program. 8

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

Attachment 1, Volume 8, Rev. 0, Page 70 of 139

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.2 BASES, ECCS - OPERATING

1. Changes are made (additions, deletions, and/or changes) to the Improved Standard Technical Specification (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 revised to reflect the current licensing basis.

3. Changes are made to use correct punctuation, correct typographical errors or to make corrections consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

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. SONGS does not credit the Charging Pumps in the accident analysis; therefore discussions that credit the Charging Pumps in the accident analysis are being deleted or revised. They were removed from the Technical Specifications as approved by the NRC in Amendments 163 and 154, dated 2/22/2000 (ADAMS Accession No. ML003687171).

6. Changes are made to the Bases to be consistent with changes made to the actual Specifications.

7. The exception and discussion of the LPSI miniflow isolation valves (HV-8162 and HV-8163) to the statement that the valves referenced in SR 3.5.2.1, if not in the correct position, can disable the function of both ECCS trains and invalidate the accident analysis, is being added to the Bases. The LPSI miniflow isolation valves are not automatically opened on an actuation signal and are powered from the opposite electrical division, therefore a single failure related to power distribution could also disable both LPSI trains if these valves are not in the open position with power removed. However, a failure to open LPSI miniflow isolation valve HV-8162 or HV-8163 makes only the corresponding LPSI train inoperable. Misalignment of one of these two valves could not render both ECCS trains inoperable.

8. 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 is not always true for each of the Frequencies.

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

10. Typographical error corrected. The phrase "the subsystem to" has been added to complete the sentence.

Attachment 1, Volume 8, Rev. 0, Page 71 of 139

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.2, ECCS - OPERATING

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

Attachment 1, Volume 8, Rev. 0, Page 73 of 139

ATTACHMENT 3

ITS 3.5.3, ECCS - SHUTDOWN

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

ITS

A01

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS — Shutdown

LCO 3.5.3

LCO 3.5.3 One high pressure safety injection (HPSI) train shall be OPERABLE.

Applicability

APPLICABILITY: MODE 3 with pressurizer pressure < 400 psia, MODE 4.

----NOTE----
LCO 3.0.4.b is not applicable to ECCS High Pressure Safety Injection subsystem.

A02

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. Required HPSI train inoperable.	A.1 Restore required HPSI train to OPERABLE status.	1 hour
ACTION B B. Required Action and associated Completion Time not met.	B.1 Be in MODE 5.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.3.1 SR 3.5.3.1 The following SRs are applicable: ~~SR 3.5.2.2~~ SR 3.5.2.3 SR 3.5.2.4 SR 3.5.2.5 SR 3.5.2.7 SR 3.5.2.8 SR 3.5.2.10	In accordance with applicable SRs

A03

Attachment 1, Volume 8, Rev. 0, Page 76 of 139

ITS

A01

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS — Shutdown

LCO 3.5.3

LCO 3.5.3 One high pressure safety injection (HPSI) train shall be OPERABLE.

Applicability

APPLICABILITY: MODE 3 with pressurizer pressure < 400 psia, MODE 4.

----NOTE----
LCO 3.0.4.b is not applicable to ECCS High Pressure Safety Injection subsystem.

A02

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. Required HPSI train inoperable.	A.1 Restore required HPSI train to OPERABLE status.	1 hour
ACTION B B. Required Action and associated Completion Time not met.	B.1 Be in MODE 5.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.3.1 SR 3.5.3.1 The following SRs are applicable: ~~SR 3.5.2.2~~ SR 3.5.2.3 SR 3.5.2.4 SR 3.5.2.5 SR 3.5.2.7 SR 3.5.2.8 SR 3.5.2.10	In accordance with applicable SRs

A03

Attachment 1, Volume 8, Rev. 0, Page 77 of 139

DISCUSSION OF CHANGES
ITS 3.5.3, ECCS - SHUTDOWN

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 The ITS 3.5.3 ACTIONS include a Note that states LCO 3.0.4.b is not applicable to the ECCS High Pressure Safety Injection (HPSI) subsystem. CTS 3.5.3 does not include this Note. This changes the CTS by including the ACTION Note excluding the use of LCO 3.0.4.b.

The purpose of the ITS 3.5.3 ACTIONS Note is to prohibit entry into the Applicability of LCO 3.5.3 with an inoperable ECCS HPSI subsystem. Currently, CTS 3.0.4 precludes entering MODE 4 or changing MODES from MODE 4 to MODE 3 when the HPSI train is inoperable. ITS LCO 3.0.4 has been modified as described in the Discussion for Changes for ITS Section 3.0, DOC L03. ITS LCO 3.0.4 allows entry into a MODE or other specified condition in the Applicability under certain conditions when a Technical Specification required component is inoperable. ITS LCO 3.0.4.b allows entry into a MODE or other specified condition in the Applicability of a Specification if a risk assessment is performed and determines it is acceptable to enter the Applicability, and appropriate risk management actions are established. This addition of this restriction (LCO 3.0.4.b is not applicable) is acceptable because there is an increased risk associated with entering a MODE or other specified condition in the Applicability with an inoperable ECCS HPSI subsystem, and therefore the provisions of LCO 3.0.4.b should not be applied in this circumstance. The change is acceptable because CTS LCO 3.0.4 and CTS 3.5.3 do not currently allow this option (i.e., MODES changes are not allowed while in the ACTIONS of this Specification). This change is considered administrative because it does not result in technical changes to the CTS.

A03 CTS SR 3.5.3.1 lists SR 3.5.2.2 from CTS 3.5.2 (ECCS – Operating) that is applicable for the ECCS – Shutdown (MODE 3 with pressurizer pressure < 400 psia and MODE 4). ITS SR 3.5.3.1 does not list SR 3.5.2.2 from ITS 3.5.2 that is applicable. This changes the CTS by deleting CTS SR 3.5.2.2 from the listing in SR 3.5.3.1.

CTS SR 3.5.2.2 has been deleted from CTS 3.5.2 as justified in ITS 3.5.2 DOC L02. Therefore, this SR has been deleted from CTS SR 3.5.3.1. This change is acceptable and is considered administrative because the justification is provided in another Specification.

Attachment 1, Volume 8, Rev. 0, Page 78 of 139

DISCUSSION OF CHANGES
ITS 3.5.3, ECCS - SHUTDOWN

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Attachment 1, Volume 8, Rev. 0, Page 79 of 139

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

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.3 ECCS - Shutdown

LCO 3.5.3

LCO 3.5.3 One high pressure safety injection (HPSI) train shall be OPERABLE.

Applicability

APPLICABILITY: MODE 3 with pressurizer pressure < [1700] psia, 400
MODE 4.

2

ACTIONS

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

DOC A02

LCO 3.0.4.b is not applicable to ECCS High Pressure Safety Injection subsystem when entering MODE 4.

4

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. Required HPSI train inoperable.	A.1 Restore required HPSI train to OPERABLE status.	1 hour
ACTION B B. Required Action and associated Completion Time not met.	B.1 Be in MODE 5.	24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.5.3.1 The following SRs are applicable: [SR 3.5.2.1] SR 3.5.2.2 [SR 3.5.2.3] SR 3.5.2.4 SR 3.5.2.6 SR 3.5.2.7 [SR 3.5.2.9] SR 3.5.2.10	In accordance with applicable SRs

SR 3.5.3.1

3 4 5 7 8

2 3

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.3, ECCS - SHUTDOWN

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 revised to reflect the current licensing basis.

3. The bracketed SRs in SR 3.5.3.1 (SR 3.5.2.1 and SR 3.5.2.9) are being deleted. The bracketed SR 3.5.2.1 is being deleted because the SR's purpose is to ensure a single failure does not render both ECCS trains inoperable; however ITS 3.5.3 only requires one train to be OPERABLE. SR 3.5.2.9 is being deleted because SONGS uses orifices to balance the ECCS flow to the RCS versus throttle valves. The numbers of the other SRs are being changed to be consistent with changes made to the SRs number in ITS 3.5.2.

4. The ISTS 3.5.3 ACTIONS Note states that LCO 3.0.4.b is not applicable to the ECCS High Pressure Safety Injection (HPSI) subsystem "when entering MODE 4." This Note was added as part of TSTF-359, which modified ISTS LCO 3.0.4. SCE has reviewed the NRC model safety evaluation for TSTF-359 published in the Federal Register. The model safety evaluation states that LCO 3.0.4.b cannot be used for the HPSI subsystem not only in MODE 4, but also in the MODE 3 portion of the ISTS 3.5.3 Applicability, which is MODE 3 below [1700 psia]. However, the actual Note added to NUREG-1432 for this change to ISTS 3.5.3 uses the term "when entering MODE 4." SCE believes there are certain conditions that could arise where the HPSI train becomes inoperable when in MODE 4, and the Note would not preclude changing MODES to MODE 3. Thus, the Note would not preclude the use of LCO 3.0.4.b to perform this MODE change. This would have to be precluded administratively. In order to preclude a misinterpretation and to make the use of the Note restriction more user friendly, SCE is changing the Note to delete the words "when entering MODE 4." This will ensure the Note is applied not only when entering MODE 4 from MODE 5, but also when entering MODE 3 from MODE 4. Thus, both changes in MODES would be precluded by the Note.

Attachment 1, Volume 8, Rev. 0, Page 82 of 139

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

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.3 ECCS - Shutdown

BASES

BACKGROUND

The Background section for Bases B 3.5.2, "ECCS - Operating," is applicable to these Bases, with the following modifications.

In MODE 3 with pressurizer pressure < 1700 psia and in MODE 4, an ECCS train is defined as one high pressure safety injection (HPSI) subsystem. The HPSI flow path consists of piping, valves, and pumps that enable water from the refueling water tank (RWT) to be injected into the Reactor Coolant System (RCS) following the accidents described in Bases 3.5.2.

APPLICABLE SAFETY ANALYSES

The Applicable Safety Analyses section of Bases 3.5.2 is applicable to these Bases.

Due to the stable conditions associated with operation in MODE 4, and the reduced probability of a Design Basis Accident (DBA), the ECCS operational requirements are reduced. Included in these reductions is that certain automatic safety injection (SI) actuation signals are not available. In this MODE, sufficient time exists for manual actuation of the required ECCS to mitigate the consequences of a DBA.

Only one train of ECCS is required for MODE 4. Protection against single failures is not relied on for this MODE of operation.

ECCS - Shutdown satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

In MODE 3 with pressurizer pressure < 1700 psia, an ECCS subsystem is composed of a single HPSI subsystem. Each HPSI subsystem includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWT and transferring suction to the containment sump.

During an event requiring ECCS actuation, a flow path is required to supply water from the RWT to the RCS via the HPSI pumps and their respective supply headers to each of the four cold leg injection nozzles. In the long term, this flow path may be switched to take its supply from the containment sump and to deliver its flow to the RCS hot and cold legs.

BASES

LCO (continued)

With RCS pressure < 1700 psia, one HPSI pump is acceptable without single failure consideration, based on the stable reactivity condition of the reactor and the limited core cooling requirements. The low pressure safety injection (LPSI) pumps may therefore be released from the ECCS train for use in shutdown cooling (SDC). In MODE 4 with RCS cold leg temperature less than or equal to the LTOP enable temperature specified in the PTLR, a maximum of one HPSI pump is allowed to be OPERABLE in accordance with LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System."

APPLICABILITY

In MODES 1, 2, and 3 with RCS pressure ≥ 1700 psia, the OPERABILITY requirements for ECCS are covered by LCO 3.5.2.

In MODE 3 with RCS pressure < 1700 psia and in MODE 4, one OPERABLE ECCS train is acceptable without single failure consideration, based on the stable reactivity condition of the reactor and the limited core cooling requirements.

In MODES 5 and 6, unit conditions are such that the probability of an event requiring ECCS injection is extremely low. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation - High Water Level," and LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level."

ACTIONS

A Note prohibits the application of LCO 3.0.4.b to an inoperable ECCS High Pressure Safety Injection subsystem. There is an increased risk associated with entering MODE 4 from MODE 5 with an inoperable ECCS High Pressure Safety Injection subsystem and the provisions of LCO 3.0.4.b, which allow entry into a MODE or other specified condition in the Applicability with the LCO not met after performance of a risk assessment addressing inoperable systems and components, should not be applied in this circumstance.

A.1

With no HPSI pump OPERABLE, the unit is not prepared to respond to a loss of coolant accident. The 1 hour Completion Time to restore at least one HPSI train to OPERABLE status ensures that prompt action is taken to restore the required cooling capacity or to initiate actions to place the unit in MODE 5, where an ECCS train is not required.

BASES

ACTIONS (continued)

B.1

When the Required Action cannot be completed within the required Completion Time, a controlled shutdown should be initiated. Twenty-four hours is reasonable, based on operating experience, to reach MODE 5 in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.3.1

The applicable Surveillance descriptions from Bases 3.5.2 apply.

REFERENCES

The applicable references from Bases 3.5.2 apply.

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.3 BASES, ECCS - SHUTDOWN

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

2. Changes are made to the Bases to be consistent with changes made to the actual Specifications.

Attachment 1, Volume 8, Rev. 0, Page 87 of 139

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.3, ECCS - SHUTDOWN

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

Attachment 1, Volume 8, Rev. 0, Page 89 of 139

ATTACHMENT 4

ITS 3.5.4, REFUELING WATER STORAGE TANK (RWST)

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

ITS

A01

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.4 LCO 3.5.4 The RWST shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. RWST boron concentration not within limits.	A.1 Restore RWST to OPERABLE status.	8 hours
ACTION C ~~OR~~ INSERT 1 C. RWST borated water temperature not within limits.	C.1 Restore RWST to OPERABLE status.	8 hours
ACTION D ~~B~~. RWST inoperable for reasons other than Condition A. (D; or C)	~~B~~.1 Restore RWST to OPERABLE status. (D)	1 hour
ACTION E ~~C~~. Required Action and associated Completion Time of Condition ~~A~~ or ~~B~~ not met. (E; D; C)	~~C~~.1 Be in MODE 3. (E) AND ~~C~~.2 Be in MODE 5. (E)	6 hours 36 hours

L01

Attachment 1, Volume 8, Rev. 0, Page 92 of 139

L01 **INSERT 1**

ACTION B	B. Required Action and associated Completion Time of Condition A not met.	B.1	----------NOTE---------- LCO 3.0.4.a is not Applicable when entering MODE 3 or MODE 4. ---------- Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.5.4.1	SR 3.5.4.1	----------NOTE---------- Only required to be performed when ambient air temperature is < 40°F or > 100°F. ---------- Verify RWST borated water temperature is ≥ 40°F and ≤ 100°F.	~~24 hours~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.5.4.2	SR 3.5.4.2	Verify RWST borated water volume is ≥ 362,800 gallons above the ECCS suction connection.	~~7 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.5.4.3	SR 3.5.4.3	Verify RWST boron concentration is ≥ 2350 ppm and ≤ 2800 ppm.	~~7 days~~ In accordance with the Surveillance Frequency Control Program	LA01

Attachment 1, Volume 8, Rev. 0, Page 94 of 139

ITS

A01

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Storage Tank (RWST)

LCO 3.5.4 LCO 3.5.4 The RWST shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. RWST boron concentration not within limits.	A.1 Restore RWST to OPERABLE status.	8 hours
ACTION C ~~OR~~ INSERT 1 C. RWST borated water temperature not within limits.	C.1 Restore RWST to OPERABLE status.	8 hours
ACTION D ~~B~~. RWST inoperable for reasons other than Condition A. (D; or C)	~~B~~.1 Restore RWST to OPERABLE status. (D)	1 hour
ACTION E ~~C~~. Required Action and associated Completion Time of Condition ~~A~~ or ~~B~~ not met. (E; D; C)	~~C~~.1 Be in MODE 3. (E) AND ~~C~~.2 Be in MODE 5. (E)	6 hours 36 hours

L01

Attachment 1, Volume 8, Rev. 0, Page 95 of 139

L01 **INSERT 1**

ACTION B	B. Required Action and associated Completion Time of Condition A not met.	B.1	----------NOTE---------- LCO 3.0.4.a is not Applicable when entering MODE 3 or MODE 4. ---------- Be in MODE 3.	6 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
SR 3.5.4.1	SR 3.5.4.1	----------NOTE---------- Only required to be performed when ambient air temperature is < 40°F or > 100°F. ---------- Verify RWST borated water temperature is ≥ 40°F and ≤ 100°F.	~~24 hours~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.5.4.2	SR 3.5.4.2	Verify RWST borated water volume is ≥ 362,800 gallons above the ECCS suction connection.	~~7 days~~ In accordance with the Surveillance Frequency Control Program	LA01
SR 3.5.4.3	SR 3.5.4.3	Verify RWST boron concentration is ≥ 2350 ppm and ≤ 2800 ppm.	~~7 days~~ In accordance with the Surveillance Frequency Control Program	LA01

Attachment 1, Volume 8, Rev. 0, Page 97 of 139

DISCUSSION OF CHANGES
ITS 3.5.4, REFUELING WATER STORAGE TANK (RWST)

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 3.5.4.1 requires verification that RWST borated water temperature is within limits every 24 hours. CTS SR 3.5.4.2 requires verification that RWST borated water volume is ≥ 362,800 gallons above the ECCS suction connection every 7 days. CTS SR 3.5.4.3 requires verification that RWST boron concentration is within limit every 7 days. ITS SR 3.5.4.1, ITS SR 3.5.4.2, and ITS SR 3.5.4.3 require similar Surveillances, respectively, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs 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;

Attachment 1, Volume 8, Rev. 0, Page 98 of 139

DISCUSSION OF CHANGES
ITS 3.5.4, REFUELING WATER STORAGE TANK (RWST)

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 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.**

Attachment 1, Volume 8, Rev. 0, Page 99 of 139

DISCUSSION OF CHANGES
ITS 3.5.4, REFUELING WATER STORAGE TANK (RWST)

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

Attachment 1, Volume 8, Rev. 0, Page 100 of 139

DISCUSSION OF CHANGES
ITS 3.5.4, REFUELING WATER STORAGE TANK (RWST)

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 4 – Relaxation of Required Action)* CTS 3.5.4 Condition A, in part, is for the condition when RWST boron concentration is not within limits and the Required Action is to restore the RWST to OPERABLE status within 8 hours. If the RWST is not restored within the 8 hour Completion Time, Condition C is entered and requires the unit to be in MODE 3 in 6 hours and MODE 5 in 36 hours. Under similar conditions (i.e., boron concentration not within limits and not restored within 8 hours), ITS 3.5.4 ACTION B requires the unit to be in MODE 3 in 6 hours. Continuation of the shutdown to MODE 5 under this condition is not required. Furthermore, Required Action B.1 is modified by a Note which states, LCO 3.0.4.a is not applicable when entering MODE 3 or MODE 4. Due to this new shutdown allowance for when boron concentration is not within limits, CTS ACTION A has been split into two separate ACTIONS; one for when the boron concentration is not within limits (ITS 3.5.4 ACTION A) and one for when the RWST borated water temperature is not within limits (ITS 3.5.4 ACTION C). The specific Required Actions for these two conditions has not changed. In addition, CTS 3.5.4 ACTIONS B and C have been renumbered to ITS 3.5.4 ACTIONS D and E due to these changes; again with no technical changes to the requirements. However, CTS 3.5.4 Conditions B and C have been modified in ITS 3.5.4 Conditions D and E, respectively, to account for the new ITS 3.5.4 ACTION C and the renumbering of the ACTIONS. This changes the CTS by eliminating the requirement to be in MODE 5 in 36 hours when the RWST boron concentration cannot be restored within 8 hours and renumbering ACTIONS due to this change.

The purpose of CTS 3.5.4 ACTION C is to place the unit in a condition where the LCO is not applicable. The proposed change, which is consistent with TSTF-422, allows the plant end state to conclude at MODE 3 within 6 hours versus

Attachment 1, Volume 8, Rev. 0, Page 101 of 139

DISCUSSION OF CHANGES
ITS 3.5.4, REFUELING WATER STORAGE TANK (RWST)

MODE 5 within 36 hours. This change is based on a topical report, CE NPSD-01186 (approved by NRC on July 17, 2001), which justified a modified end state for some TS allowed outage time requirements of which the RWST boron concentration is one. The topical report demonstrates through probabilistic and deterministic safety evaluations that the proposed end states represent a condition of equal or lower risk than the original end states. This change is based on allowing plant operation in the steam generator heat removal mode whenever practical and require reliance on shutdown cooling only when it is a risk beneficial alternative to other actions. It is acceptable to remain in MODE 3 in this condition because the boron concentration limit is based on MODE 1 events which are unlikely in MODE 3, such as a LOCA, and conditions which do not exist in MODE 3, such as a critical core with all rods out. Since the anticipated deviations from the RWST boron concentration requirements are expected to be small and the ability to correct the deficiency is expected to be readily available, entry into MODE 4 or 5 is not necessary.

The Note, which modifies the new Required Action B.1, prohibits entry into the end state Mode of Applicability during startup using the provisions of LCO 3.0.4.a. The purpose of this Note is to provide assurance that entry into the end state Mode of Applicability during startup is not made without the appropriate risk assessment. Entry into the end state Mode of Applicability during startup will still be allowed under the provisions of LCO 3.0.4.b. This is acceptable because LCO 3.0.4.b allows entry only after performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering the MODE or other specified condition in the Applicability, and establishment of risk management actions, if appropriate. Details of the risk assessment are provided in the Bases for LCO 3.0.4.b.

SCE has reviewed the NRC safety evaluation (SE) published on May 4, 2005 (70 FR 23238) as part of the CLIIP Notice for Comment. This included the NRC staff's SE supporting the changes associated with TSTF–422, Revision 1. SCE has concluded that the justifications presented in the TSTF proposal and the SE prepared by the NRC staff are applicable to SONGS Units 2 and 3 and justify this amendment for the incorporation of the changes to the SONGS Units 2 and 3 TS.

SONGS will adopt the end states proposed in TSTF-422 and will perform a risk assessment in accordance with 10 CFR 50.65(a)(4) when using the end states regardless of whether maintenance is being performed. The risk assessment will follow Regulatory Guide 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants," which endorses NUMARC 93-01, "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Section 11 guidance for implementation of 10 CFR 50.65(a)(4). SONGS will also follow the industry-developed implementation guidance, WCAP-16364-NP, Revision 0, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," November 2004.

This change is designated as less restrictive because it relaxes the end state from MODE 5 to MODE 3 when the RWST boron concentration is not restored within 8 hours and a unit shutdown is required.

Attachment 1, Volume 8, Rev. 0, Page 102 of 139

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

U2/U3 CTS

RWT 3.5.4 S 1

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.4 Refueling Water Tank (RWT) Storage S 1

LCO 3.5.4 LCO 3.5.4 The RWT S shall be OPERABLE. 1

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. RWT S boron concentration not within limits. OR RWT borated water temperature not within limits. INSERT 1	A.1 Restore RWT S to OPERABLE status.	8 hours 1 TSTF-422-A
ACTION B B. D RWT S inoperable for reasons other than Condition A. or C	B.1 D Restore RWT S to OPERABLE status	1 hour 1 TSTF-422-A
ACTION C C. E Required Action and associated Completion Time not met. of Condition C or D	C.1 E Be in MODE 3. AND C.2 E Be in MODE 5.	6 hours 36 hours TSTF-422-A

Attachment 1, Volume 8, Rev. 0, Page 104 of 139

TSTF-422-A **INSERT 1**

ACTION C	B. Required Action and associated Completion Time of Condition A not met.	B.1	----------NOTE---------- LCO 3.0.4.a is not Applicable when entering MODE 3 or MODE 4. ---------- Be in MODE 3.	6 hours
ACTION A	C. S RWT borated water temperature not within limits.	C.1	Restore S RWT to OPERABLE status.	8 hours

1

U2/U3 CTS

RWT 3.5.4 S 1

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
SR 3.5.4.1	SR 3.5.4.1	----------NOTE---------- [Only required to be performed when ambient air temperature is < [40] °F or > [100] °F.] ---------- Verify RWT borated water temperature is ≥ [40] °F and ≤ [100] °F. (S)	24 hours (1, 2) TSTF-425-A
SR 3.5.4.2	SR 3.5.4.2	Verify RWT borated water volume is ≥ [362,800 gallons, (88)%] [above the ECCS suction connection]. (S)	7 days (1, 2) TSTF-425-A
SR 3.5.4.3	SR 3.5.4.3	Verify RWT boron concentration is ≥ [1720] (2350) ppm and ≤ [2500] (2800) ppm. (S)	7 days (1, 2) TSTF-425-A

In accordance with the Surveillance Frequency Control Program

Attachment 1, Volume 8, Rev. 0, Page 106 of 139

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.4, REFUELING WATER STORAGE TANK (RWST)

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 revised to reflect the current licensing basis.

Attachment 1, Volume 8, Rev. 0, Page 107 of 139

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

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.4 Refueling Water Tank (RWT)

BASES

BACKGROUND The RWT supports the ECCS and the Containment Spray System by providing a source of borated water for Engineered Safety Feature (ESF) pump operation.

The RWT supplies two ECCS trains by separate, redundant supply headers. Each header also supplies one train of the Containment Spray System. A motor operated isolation valve is provided in each header to allow the operator to isolate the usable volume of the RWT from the ECCS after the ESF pump suction has been transferred to the containment sump following depletion of the RWT during a loss of coolant accident (LOCA). A separate header is used to supply the Chemical and Volume Control System (CVCS) from the RWT. Use of a single RWT to supply both trains of the ECCS is acceptable since the RWT is a passive component, and passive failures are not assumed to occur coincidently with the Design Basis Event during the injection phase of an accident. Not all the water stored in the RWT is available for injection following a LOCA; the location of the ECCS suction piping in the RWT will result in some portion of the stored volume being unavailable.

The high pressure safety injection (HPSI), low pressure safety injection (LPSI), and containment spray pumps are provided with recirculation lines that ensure each pump can maintain minimum flow requirements when operating at shutoff head conditions. These lines discharge back to the RWT, which vents to the atmosphere. When the suction for the HPSI and containment spray pumps is transferred to the containment sump, this flow path must be isolated to prevent a release of the containment sump contents to the RWT. If not isolated, this flow path could result in a release of contaminants to the atmosphere and the eventual loss of suction head for the ESF pumps.

This LCO ensures that:

a. The RWT contains sufficient borated water to support the ECCS during the injection phase;

b. Sufficient water volume exists in the containment sump to support continued operation of the ESF pumps at the time of transfer to the recirculation mode of cooling; and

c. The reactor remains subcritical following a LOCA.

BASES

BACKGROUND (continued)

Insufficient water inventory in the RWT could result in insufficient cooling capacity of the ECCS when the transfer to the recirculation mode occurs. Improper boron concentrations could result in a reduction of SDM or excessive boric acid precipitation in the core following a LOCA, as well as excessive caustic stress corrosion of mechanical components and systems inside containment.

APPLICABLE SAFETY ANALYSES

During accident conditions, the RWT provides a source of borated water to the HPSI, LPSI, containment spray, and charging pumps. As such, it provides containment cooling and depressurization, core cooling, and replacement inventory and is a source of negative reactivity for reactor shutdown (Ref. 1). The design basis transients and applicable safety analyses concerning each of these systems are discussed in the Applicable Safety Analyses section of Bases B 3.5.2, "ECCS - Operating," and B 3.6.6, "Containment Spray and Cooling Systems." These analyses are used to assess changes to the RWT in order to evaluate their effects in relation to the acceptance limits.

The volume limit of [362,800] gallons is based on two factors:

a. Sufficient deliverable volume must be available to provide at least 20 minutes (plus a 10% margin) of full flow from all ESF pumps prior to reaching a low level switchover to the containment sump for recirculation and ;

b. The containment sump water volume must be sufficient to support continued ESF pump operation after the switchover to recirculation occurs. This sump volume water inventory is supplied by the RWT borated water inventory.

Twenty minutes is the point at which 75% of the design flow of one HPSI pump is capable of meeting or exceeding the decay heat boiloff rate.

When ESF pump suction is transferred to the sump, there must be sufficient water in the sump to ensure adequate net positive suction head (NPSH) for the HPSI and containment spray pumps. The RWT capacity must be sufficient to supply this amount of water without considering the inventory added from the safety injection tanks or Reactor Coolant System (RCS), but accounting for loss of inventory to containment subcompartments and reservoirs due to containment spray operation and to areas outside containment due to leakage from ECCS injection and recirculation equipment.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The [1720] ppm limit for minimum boron concentration was established to ensure that, following a LOCA with a minimum level in the RWT, the reactor will remain subcritical in the cold condition following mixing of the RWT and RCS water volumes. Small break LOCAs assume that all control rods are inserted, except for the control element assembly (CEA) of highest worth, which is withdrawn from the core. Large break LOCAs assume that all CEAs remain withdrawn from the core. The most limiting case occurs at beginning of core life.

The maximum boron limit of [2500] ppm in the RWT is based on boron precipitation in the core following a LOCA. With the reactor vessel at saturated conditions, the core dissipates heat by pool nucleate boiling. Because of this boiling phenomenon in the core, the boric acid concentration will increase in this region. If allowed to proceed in this manner, a point will be reached where boron precipitation will occur in the core. Post LOCA emergency procedures direct the operator to establish simultaneous hot and cold leg injection to prevent this condition by establishing a forced flow path through the core regardless of break location. These procedures are based on the minimum time in which precipitation could occur, assuming that maximum boron concentrations exist in the borated water sources used for injection following a LOCA. Boron concentrations in the RWT in excess of the limit could result in precipitation earlier than assumed in the analysis.

The upper limit of [100] °F and the lower limit of [40] °F on RWT temperature are the limits assumed in the accident analysis. Although RWT temperature affects the outcome of several analyses, the upper and lower limits established by the LCO are not limited by any of these analyses.

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

LCO

The RWT ensures that an adequate supply of borated water is available to cool and depressurize the containment in the event of a Design Basis Accident (DBA) and to cool and cover the core in the event of a LOCA, that the reactor remains subcritical following a DBA, and that an adequate level exists in the containment sump to support ESF pump operation in the recirculation mode.

To be considered OPERABLE, the RWT must meet the limits established in the SRs for water volume, boron concentration, and temperature.

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, the RWT OPERABILITY requirements are dictated by the ECCS and Containment Spray System OPERABILITY requirements. Since both the ECCS and the Containment Spray System must be OPERABLE in MODES 1, 2, 3, and 4, the RWT must be OPERABLE to support their operation.

Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.4, "Shutdown Cooling (SDC) and Coolant Circulation - High Water Level," and LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level."

ACTIONS

A.1

With RWT boron concentration ~~or borated water temperature~~ not within limits, it must be returned to within limits within 8 hours. In this condition neither the ECCS nor the Containment Spray System can perform their design functions; therefore, prompt action must be taken to restore the tank to OPERABLE condition. The allowed Completion Time of 8 hours to restore the RWT to within limits was developed considering the time required to change boron concentration ~~or temperature~~ and that the contents of the tank are still available for injection.

INSERT 1

~~B~~.1

With RWT borated water volume not within limits, it must be returned to within limits within 1 hour. In this condition, neither the ECCS nor Containment Spray System can perform their design functions; therefore, prompt action must be taken to restore the tank to OPERABLE status or to place the unit in a MODE in which these systems are not required. The allowed Completion Time of 1 hour to restore the RWT to OPERABLE status is based on this condition simultaneously affecting multiple redundant trains.

~~C~~.1 and ~~C~~.2

temperature or water volume

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

TSTF-422-A

INSERT 1

B.1 S

If the RWT boron concentration is not restored to within limits within the associated Completion Time, the plant must be brought to MODE 3 within 6 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems. Reference 2 demonstrated that is it acceptable to remain in MODE 3 in this condition because the boron concentration limit is based on MODE 1 events which are unlikely in MODE 3, such as a LOCA, and conditions which do not exist in MODE 3, such as a critical core with all rods out. Since the anticipated deviations from the RWT boron concentration requirements are expected to be small and the ability to correct the deficiency is expected to be readily available, entry into MODE 4 or 5 is not unnecessary. 1 1

Required Action B.1 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 3 or MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 3 or MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

C.1 S

With RWT water temperature not within limits, it must be returned to within limits within 8 hours. In this condition neither the ECCS nor the Containment Spray System can perform their design functions; therefore, prompt action must be taken to restore the tank to OPERABLE condition. The allowed Completion Time of 8 hours to restore the RWT to within limits was developed considering the time required to change water temperature and that the contents of the tank are still available for injection. 1 1

BASES

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1

RWT borated water temperature shall be verified every 24 hours to be within the limits assumed in the accident analysis. This Frequency has been shown to be sufficient to identify temperature changes that approach either acceptable limit.

The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperatures are within the operating temperature limits of the RWT. With ambient temperatures within this range, the RWT temperature should not exceed the limits.

SR 3.5.4.2

Above minimum RWT water volume level shall be verified every 7 days. This Frequency ensures that a sufficient initial water supply is available for injection and to support continued ESF pump operation on recirculation. Since the RWT volume is normally stable and is provided with a Low Level Alarm, a 7 day Frequency is appropriate and has been shown to be acceptable through operating experience.

SR 3.5.4.3

Boron concentration of the RWT shall be verified every 7 days to be within the required range. This Frequency ensures that the reactor will remain subcritical following a LOCA. Further, it ensures that the resulting sump pH will be maintained in an acceptable range such that boron precipitation in the core will not occur earlier than predicted and the effect of chloride and caustic stress corrosion on mechanical systems and components will be minimized. Since the RWT volume is normally stable, a 7 day sampling Frequency is appropriate and has been shown through operating experience to be acceptable.

REFERENCES

1. FSAR, Chapter [6] and Chapter [15].

TSTF-425-A

INSERT 2

The Frequency is controlled under the Surveillance Frequency Control Program.

5

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

4

TSTF-422-A

INSERT 3

2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

Attachment 1, Volume 8, Rev. 0, Page 115 of 139

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.4 BASES, REFUELING WATER STORAGE TANK (RWST)

1. Changes are made (additions, deletions, and/or changes) to the Improved Standard Technical Specification (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 revised to reflect the current licensing basis.

3. Changes are made to use correct punctuation, correct typographical errors or to make corrections consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

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. 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 is not always true for each of the Frequencies. Furthermore, for SR 3.5.4.2 and SR 3.5.4.3, the word "Frequency" in the second sentence has also been deleted, since the Frequency of every 7 days was deleted in the previous sentence and this word should also have been deleted.

6. The word "Above" leading off the first sentence in the ISTS SR 3.5.4.2 Bases can erroneously imply either that the minimum RWST water level is described above (i.e., in a previous sentence) or that the unit must maintain the RWST water level above the minimum limit. The SR requirement is to verify the minimum RWST level requirement is met. Therefore, the word "Above" is changed to "A" for clarity (i.e., "A minimum RWST water volume level shall be verified.")

Attachment 1, Volume 8, Rev. 0, Page 116 of 139

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.4, REFEULING WATER STORAGE TANK (RWST)

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

Attachment 1, Volume 8, Rev. 0, Page 118 of 139

ATTACHMENT 5

ITS 3.5.5, TRISODIUM PHOSPHATE (TSP)

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

ITS

A01

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.5 Trisodium Phosphate (TSP) ~~Dodecahydrate~~ L01

LCO 3.5.5 LCO 3.5.5 The TSP ~~Dodecahydrate~~ baskets shall contain ≥ 291 ft^3 of TSP. L01

LCO 3.5.2 APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. TSP ~~Dodecahydrate~~ not within limits.	A.1 Restore TSP ~~Dodecahydrate~~ to within limits.	72 hours L01
ACTION B	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.5.1	SR 3.5.5.1 Verify the TSP baskets contain ≥ 291 ft^3 of trisodium phosphate ~~dodecahydrate crystals~~.	~~24 months~~ L01 LA01 In accordance with the Surveillance Frequency Control Program
SR 3.5.5.2	SR 3.5.5.2 Verify that a sample from the TSP baskets provides adequate pH adjustment of RWST water.	~~24 months~~ LA01 In accordance with the Surveillance Frequency Control Program

Attachment 1, Volume 8, Rev. 0, Page 121 of 139

ITS

A01

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.5 Trisodium Phosphate (TSP) ~~Dodecahydrate~~ L01

LCO 3.5.5 LCO 3.5.5 The TSP ~~Dodecahydrate~~ baskets shall contain ≥ 291 ft^3 of TSP. L01

LCO 3.5.2 APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A	A. TSP ~~Dodecahydrate~~ not within limits.	A.1 Restore TSP ~~Dodecahydrate~~ to within limits.	72 hours L01
ACTION B	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.5.5.1	SR 3.5.5.1 Verify the TSP baskets contain ≥ 291 ft^3 of trisodium phosphate ~~dodecahydrate crystals~~.	~~24 months~~ L01 LA01 In accordance with the Surveillance Frequency Control Program
SR 3.5.5.2	SR 3.5.5.2 Verify that a sample from the TSP baskets provides adequate pH adjustment of RWST water.	~~24 months~~ LA01 In accordance with the Surveillance Frequency Control Program

Attachment 1, Volume 8, Rev. 0, Page 122 of 139

DISCUSSION OF CHANGES
ITS 3.5.5, TRISODIUM PHOSPHATE (TSP)

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 3.5.5.1 requires verification of the volume of TSP in the TSP baskets every 24 months. CTS SR 3.5.5.2 requires verification that a sample from the TSP baskets provides adequate pH adjustment of RWST water every 24 months. ITS SR 3.5.5.1 and ITS SR 3.5.5.2 require similar Surveillances, respectively, but specify the periodic Frequency as "In accordance with the Surveillance Frequency Control Program." This changes the CTS by moving the specified Frequencies for the SRs 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

Attachment 1, Volume 8, Rev. 0, Page 123 of 139

DISCUSSION OF CHANGES
ITS 3.5.5, TRISODIUM PHOSPHATE (TSP)

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.

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:

Attachment 1, Volume 8, Rev. 0, Page 124 of 139

DISCUSSION OF CHANGES
ITS 3.5.5, TRISODIUM PHOSPHATE (TSP)

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

Attachment 1, Volume 8, Rev. 0, Page 125 of 139

DISCUSSION OF CHANGES
ITS 3.5.5, TRISODIUM PHOSPHATE (TSP)

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 3.5.5 is the Trisodium Phosphate (TSP) Dodecahydrate Specification. The term "dodecahydrate" is used to describe the chemical form of TSP in the LCO, ACTION A, and SR 3.5.5.1. ITS 3.5.5 is the Trisodium Phosphate (TSP) Specification and the term dodecahydrate is not used to describe the chemical form of TSP. The ITS will allow any hydrated form of TSP to meet the LCO requirements. This changes the CTS by eliminating the use of the term "dodecahydrate" to describe TSP in the LCO, ACTION A, and SR 3.5.5.1.

The purpose of the word "dodecahydrate" is to ensure the correct hydrated form of TSP is used, consistent with the analysis. This change deletes "dodecahydrate" (consistent with TSTF-148) from the description of TSP and allows the use of a hydrated form with 45% to 57% moisture as described in the ITS Bases. The chemical industry defines hydrated TSP as having 45% to 57% moisture content. The theoretical moisture content of TSP dodecahydrate is 55%. The reason for using the TSP in a hydrated form is to ensure that it will not absorb large amounts of water that exists in the containment atmosphere. This ensures it will undergo less physical and chemical changes as an anhydrous form of TSP and ensures it will perform its safety function. The safety function of the TSP is to maintain the pH of the recirculation solution to levels above 7.0, which prevents a significant fraction of the dissolved iodine from converting to a volatile form. The higher pH thus decreases the level of airborne iodine in containment and reduces the radiological consequences from containment. This change is acceptable because a hydrated form of TSP with 45% to 57% moisture will perform the required safety function. This change is less restrictive because it allows the hydrated form of TSP to be used with moisture content of between 45% to 57% versus a theoretical moisture content of TSP dodecahydrate of 55%.

Attachment 1, Volume 8, Rev. 0, Page 126 of 139

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

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.5 Trisodium Phosphate (TSP)

LCO 3.5.2

LCO 3.5.5 The TSP baskets shall contain ≥ [291] ft^3 of active TSP. (2)

Applicability

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION A A. TSP not within limits.	A.1 Restore TSP to within limits.	72 hours
ACTION A B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours [12] hours (2)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.5.5.1	SR 3.5.5.1 Verify the TSP baskets contain ≥ [291] ft^3 of trisodium phosphate.	[18] months (2) TSTF-425-A (1)
SR 3.5.5.2	SR 3.5.5.2 Verify that a sample from the TSP baskets provides adequate pH adjustment of RWT water. (S)	[18] months (2) TSTF-425-A (1)

In accordance with the Surveillance Frequency Control Program

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.5, TRISODIUM PHOSPHATE (TSP)

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 revised to reflect the current licensing basis.

Attachment 1, Volume 8, Rev. 0, Page 129 of 139

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

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.5 Trisodium Phosphate (TSP)

BASES

BACKGROUND

Trisodium phosphate (TSP) is placed on the floor or in the sump of the containment building to ensure that iodine, which may be dissolved in the recirculated reactor cooling water following a loss of coolant accident (LOCA), remains in solution. TSP also helps inhibit stress corrosion cracking (SCC) of austenitic stainless steel components in containment during the recirculation phase following an accident.

Fuel that is damaged during a LOCA will release iodine in several chemical forms to the reactor coolant and to the containment atmosphere. A portion of the iodine in the containment atmosphere is washed to the sump by containment sprays. The emergency core cooling water is borated for reactivity control. This borated water causes the sump solution to be acidic. In a low pH (acidic) solution, dissolved iodine will be converted to a volatile form. The volatile iodine will evolve out of solution into the containment atmosphere, significantly increasing the levels of airborne iodine. The increased levels of airborne iodine in containment contribute to the radiological releases and increase the consequences from the accident due to containment atmosphere leakage.

After a LOCA, the components of the core cooling and containment spray systems will be exposed to high temperature borated water. Prolonged exposure to the core cooling water combined with stresses imposed on the components can cause SCC. The SCC is a function of stress, oxygen and chloride concentrations, pH, temperature, and alloy composition of the components. High temperatures and low pH, which would be present after a LOCA, tend to promote SCC. This can lead to the failure of necessary safety systems or components.

Adjusting the pH of the recirculation solution to levels above 7.0 prevents a significant fraction of the dissolved iodine from converting to a volatile form. The higher pH thus decreases the level of airborne iodine in containment and reduces the radiological consequences from containment atmosphere leakage following a LOCA. Maintaining the solution pH above 7.0 also reduces the occurrence of SCC of austenitic stainless steel components in containment. Reducing SCC reduces the probability of failure of components.

Attachment 1, Volume 8, Rev. 0, Page 131 of 139

BASES

BACKGROUND (continued)

TSP is employed as a passive form of pH control for post LOCA containment spray and core cooling water. Baskets of TSP are placed on the floor or in the sump of the containment building to dissolve from released reactor coolant water and containment sprays after a LOCA. Recirculation of the water for core cooling and containment sprays then provides mixing to achieve a uniform solution pH. The hydrated form (45-57% moisture) of TSP is used because of the high humidity in the containment building during normal operation. Since the TSP is hydrated, it is less likely to absorb large amounts of water from the humid atmosphere and will undergo less physical and chemical change than the anhydrous form of TSP.

APPLICABLE SAFETY ANALYSES

The LOCA radiological consequences analysis takes credit for iodine retention in the sump solution based on the recirculation water pH being ≥ 7.0. The radionuclide releases from the containment atmosphere and the consequences of a LOCA would be increased if the pH of the recirculation water were not adjusted to 7.0 or above.

TSP satisfies Criterion 3 of the 10 CFR 50.36(c)(2)(ii).

LCO

The TSP is required to adjust the pH of the recirculation water to > 7.0 after a LOCA. A pH > 7.0 is necessary to prevent significant amounts of iodine released from fuel failures and dissolved in the recirculation water from converting to a volatile form and evolving into the containment atmosphere. Higher levels of airborne iodine in containment may increase the release of radionuclides and the consequences of the accident. A pH > 7.0 is also necessary to prevent SCC of austenitic stainless steel components in containment. SCC increases the probability of failure of components.

The required amount of TSP is based upon the extreme cases of water volume and pH possible in the containment sump after a large break LOCA. The minimum required volume is the volume of TSP that will achieve a sump solution pH of ≥ 7.0 when taking into consideration the maximum possible sump water volume and the minimum possible pH. The amount of TSP needed in the containment building is based on the mass of TSP required to achieve the desired pH. However, a required volume is specified, rather than mass, since it is not feasible to weigh the entire amount of TSP in containment. The minimum required volume is based on the manufactured density of TSP. Since TSP can have a tendency to agglomerate from high humidity in the containment building, the density may increase and the volume decrease during normal plant operation. Due to possible agglomeration and increase in density, estimating the minimum volume of TSP in containment is conservative with respect to achieving a minimum required pH.

Attachment 1, Volume 8, Rev. 0, Page 132 of 139

BASES

APPLICABILITY

In MODES 1, 2, and 3, the RCS is at elevated temperature and pressure, providing an energy potential for a LOCA. The potential for a LOCA results in a need for the ability to control the pH of the recirculated coolant.

In MODES 4, 5, and 6, the potential for a LOCA is reduced or nonexistent, and TSP is not required.

ACTIONS

A.1

If it is discovered that the TSP in the containment building sump is not within limits, action must be taken to restore the TSP to within limits. During plant operation the containment sump is not accessible and corrections may not be possible.

The Completion Time of 72 hours is allowed for restoring the TSP within limits, where possible, because 72 hours is the same time allowed for restoration of other ECCS components.

B.1 and B.2

If the TSP cannot be restored within limits within the Completion Time of Required Action A.1, the plant must be brought to a MODE in which the LCO does not apply. The specified Completion Times for reaching MODES 3 and 4 are those used throughout the Technical Specifications; they were chosen to allow reaching the specified conditions from full power in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.5.1

Periodic determination of the volume of TSP in containment must be performed due to the possibility of leaking valves and components in the containment building that could cause dissolution of the TSP during normal operation. A verification Frequency of 18 months is required to determine visually that a minimum of [291] cubic feet is contained in the TSP baskets. This requirement ensures that there is an adequate volume of TSP to adjust the pH of the post LOCA sump solution to a value ≥ 7.0.

TSTF-425-A

2

The periodic verification is required every 18 months, since access to the TSP baskets is only feasible during outages, and normal fuel cycles are scheduled for 18 months. Operating experience has shown this Surveillance Frequency acceptable due to the margin in the volume of TSP placed in the containment building.

INSERT 1

TSTF-425-A

TSTF-425-A

INSERT 1

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

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

Attachment 1, Volume 8, Rev. 0, Page 134 of 139

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.5.2

Testing must be performed to ensure the solubility and buffering ability of the TSP after exposure to the containment environment. A representative sample of [ ] grams of TSP from one of the baskets in containment is submerged in 1.0 gal ± 0.05 gal of water at a boron concentration of [ ] ppm and at the standard temperature of 25°C ± 5°C. Without agitation, the solution pH should be raised to ≥ 7 within 4 hours. The representative sample weight is based on the minimum required TSP weight of [ ] kilograms, which at manufactured density corresponds to the minimum volume of [ ] cubic ft, and maximum possible post LOCA sump volume of [ ] gallons, normalized to buffer a 1.0 gal sample. The boron concentration of the test water is representative of the maximum possible boron concentration corresponding to the maximum possible post LOCA sump volume. Agitation of the test solution is prohibited, since an adequate standard for the agitation intensity cannot be specified. The test time of 4 hours is necessary to allow time for the dissolved TSP to naturally diffuse through the sample solution. In the post LOCA containment sump, rapid mixing would occur, significantly decreasing the actual amount of time before the required pH is achieved. This would ensure compliance with the Standard Review Plan requirement of a pH ≥ 7.0 by the onset of recirculation after a LOCA.

< 3.43

≥ 1 liter

a

≥ 2812

17,461 lbs

291

120°F ± 10°F

1 2

INSERT 2

TSTF-425-A

REFERENCES None.

TSTF-425-A

INSERT 2

[The periodic verification is required every 18 months, since access to the TSP baskets is only feasible during outages, and normal fuel cycles are scheduled for 18 months. Operating experience has shown this Surveillance Frequency acceptable due to the margin in the volume of TSP placed in the containment building. 2

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

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

JUSTIFICATION FOR DEVIATIONS
ITS 3.5.5 BASES, TRISODIUM PHOSPHATE (TSP)

1. Changes are made (additions, deletions, and/or changes) to the Improved Standard Technical Specification (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 revised to reflect the current licensing basis.

3. 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.

4. Changes are made to use correct punctuation, correct typographical errors or to make corrections consistent with the Writers Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01.

5. 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 is not always true for each of the Frequencies.

Attachment 1, Volume 8, Rev. 0, Page 137 of 139

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.5.5, TRISODIUM PHOSPHATE (TSP)

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

Attachment 1, Volume 8, Rev. 0, Page 139 of 139