ENCLOSURE 2

VOLUME 14

ST. LUCIE PLANT
UNIT 1 AND UNIT 2

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.9
REFUELING OPERATIONS

Revision 0

LIST OF ATTACHMENTS

1. 3.9.1, Boron Concentration
2. 3.9.2, Nuclear Instrumentation
3. 3.9.3, Containment Penetrations
4. 3.9.4, Shutdown Cooling (SDC) and Coolant Circulation – High Water Level
5. 3.9.5, Shutdown Cooling (SDC) and Coolant Circulation – Low Water Level
6. 3.9.6, Refueling Water Level
7. Relocated/Deleted Current Technical Specifications

ATTACHMENT 1

3.9.1, Boron Concentration

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

A01

3/4.9 REFUELING OPERATIONS

BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.1 ~~3.9.1~~ ~~With the reactor vessel head unbolted or removed~~, the boron concentration of ~~all filled portions of~~ the Reactor Coolant System and the refueling cavity shall be maintained within the limit specified in the COLR.

A02

, the refueling canal,

A03

Applicability **APPLICABILITY**: MODE 6~~*~~.

A02

Add proposed Applicability Note

L01

ACTION:

Boron concentration not within limit

additions

ACTION A ~~With the requirements of the above specification not satisfied~~, immediately suspend ~~all~~
ACTION A.1 ~~operations involving CORE ALTERATIONS or~~ positive reactivity ~~changes~~ and initiate ~~and~~
ACTION A.2 ~~continue boration at ≥ 40 gpm of greater than or equal to 1900 ppm boron or its equivalent~~ to restore boron concentration to within limit~~s~~.

L02

L03

action

SURVEILLANCE REQUIREMENTS

~~4.9.1.1~~ ~~The boron concentration limit shall be determined prior to:~~

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

~~b.~~ ~~Withdrawal of any full length CEA in excess of 3 feet from its fully inserted position.~~

L04

SR 3.9.1.1 ~~4.9.1.2~~ The boron concentration ~~of the refueling cavity~~ shall be determined ~~by chemical analysis~~ in accordance with the Surveillance Frequency Control Program.

LA01

~~*~~ ~~The reactor shall be maintained in MODE 6 when the reactor vessel head is unbolted or removed.~~

A02

A01

3/4.9 REFUELING OPERATIONS

3/4.9.1 BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.1 ~~3.9.1~~ ~~With the reactor vessel head closure bolts less than fully tensioned or with the head removed, the~~ boron concentration of ~~all filled portions of~~ the Reactor Coolant System and the refueling cavity shall be maintained within the limit specified in the COLR. A02

, the refueling canal, A03

Applicability **APPLICABILITY:** MODE 6~~*~~. A02

Add proposed Applicability Note L01

ACTION:

Boron concentration not within limit

ACTION A
ACTION A.1
ACTION A.2 ~~With the requirements of the above specification not satisfied,~~ immediately suspend ~~all operations involving CORE ALTERATIONS or~~ positive reactivity ~~changes~~ and initiate ~~and continue boration at greater than or equal to 40 gpm of a solution containing 1900 ppm boron or greater~~ to restore boron concentration to within limit~~s~~. L02 L03

action additions

SURVEILLANCE REQUIREMENTS

~~4.9.1.1~~ ~~The boron concentration limit shall be determined prior to:~~ L04

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

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

SR 3.9.1.1 ~~4.9.1.2~~ The boron concentration ~~of the reactor coolant system and the refueling canal~~ shall be determined ~~by chemical analysis~~ in accordance with the Surveillance Frequency Control Program. LA01

~~*~~ ~~The reactor shall be maintained in MODE 6 whenever fuel is in the reactor vessel with the reactor vessel head closure bolts less than fully tensioned or with the head removed.~~ A02

DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the St. Lucie Plant (PSL) Unit 1 and Unit 2, 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. 5.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS).

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

A02 CTS 3.9.1 Applicability is MODE 6 with the footnote (*) reactor vessel head unbolted (i.e., not fully tensioned) or with the reactor vessel head removed. CTS 3.9.1 also includes this Applicability requirement in the LCO statement. ITS 3.9.1 requires the LCO in MODE 6. This changes the CTS by deleting the Applicability footnote and the LCO Applicability requirement.

CTS Table 1.2 defines MODE 6 with fuel in the reactor vessel and with the vessel head closure bolts less than fully tensioned (i.e., unbolted) or with the reactor vessel head removed. ITS Table 1.1-1 also defines MODE 6 with one or more reactor vessel head closure bolts less than fully tensioned, which encompasses vessel head removed. Additionally, the ITS definition of a MODE specifically defines a MODE, "…with fuel in the reactor vessel." Therefore, the CTS Applicability footnote and repeating the Applicability requirement in the LCO statement are not necessary because they duplicate requirements found in the definition.

This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

A03 CTS 3.9.1 provides requirements on the boron concentration of all filled portions of the Reactor Coolant System (RCS) and the refueling cavity. ITS 3.9.1 provides requirements on the boron concentration of the RCS, the refueling canal, and the refueling cavity. This changes the CTS by explicitly including the refueling canal in the volumes required to have boron concentration maintained and removing the clarification related to all filled portions of the RCS. This change is acceptable because the technical requirements have not changed. It is inherently understood that the boron concentration requirement is related to the reactor coolant volume, and therefore, it is unnecessary to clarify "all filled portions." The refueling canal is considered an extension of the refueling cavity and contains the same water when connected to the RCS. Therefore, the refueling canal is governed by the CTS requirements because the refueling canal is connected to the refueling cavity during refueling operations, and therefore, connected to the RCS.

This change is designated as administrative because the technical requirements of the specifications have not changed.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* Unit 1 CTS 4.9.1.2 requires a determination of boron concentration of the refueling cavity "by chemical analysis" in accordance with the Surveillance Frequency Control Program. Unit 2 CTS 4.9.1.2 requires a determination of boron concentration of the reactor coolant system and the refueling canal "by chemical analysis" in accordance with the Surveillance Frequency Control Program. CTS 4.9.1.2 requires that the boron concentration of the Reactor Coolant System and the refueling canal be determined "by chemical analysis" in accordance with the Surveillance Frequency Control Program. ITS SR 3.9.1.1 requires verification that boron concentration is within the limit specified in the COLR. ITS SR 3.9.1.1 does not specify where boron concentration is to be determined and that the boron concentration be determined by chemical analysis. This changes the CTS by moving details of where and how the boron concentration is determined from the CTS to the Bases.

The removal of these procedural details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that the boron concentration be verified within its limit. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Section 5.5. This program provides for the evaluation of changes to ensure the Bases are properly controlled.

This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.1 provides limits on the boron concentration of all filled portions of the Reactor Coolant System and the refueling cavity when in MODE 6. ITS 3.9.1 modifies this requirement with a Note which states "Only applicable to the refueling canal and refueling cavity when connected to the RCS." This changes the CTS by eliminating the applicability of the boron concentration limits on the refueling canal and refueling cavity when those volumes are not connected to the RCS. In addition, ITS SR 3.9.1.1 requires a verification that the boron is within the limit specified in the COLR in accordance with the Surveillance Frequency Control Program.

The purpose of CTS 3.9.1 is to ensure the boron concentration of the water surrounding the reactor fuel is sufficient to maintain the required SHUTDOWN MARGIN. This change is acceptable because the requirements continue to ensure that process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. If the refueling canal and refueling cavity are not connected to the RCS (such as when the reactor vessel head is on the reactor vessel while de-tensioned), the boron concentration of those volumes cannot affect the reactor core SHUTDOWN MARGIN. In addition, the general requirements of ITS SR 3.0.1 (CTS 4.0.1) and SR 3.0.4 (CTS 4.0.4) ensure a boron concentration verification is performed prior to connecting the refueling canal and refueling cavity to the RCS, to ensure the newly connected portions cannot decrease the boron concentration below the limit.

This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

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

The purpose of CTS 3.9.1 is to ensure the boron concentration of the water surrounding the reactor fuel is sufficient to maintain the required SHUTDOWN MARGIN. Thus, when the limit is not met, the CTS 3.9.1 Action suspends CORE ALTERATIONS to preclude an event that could result in not meeting the SHUTDOWN MARGIN limit. CORE ALTERATION is defined in CTS 1.9, in part, as "the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel." There are two evolutions encompassed under the term CORE ALTERATION that could affect the SHUTDOWN MARGIN: addition of fuel to the reactor vessel and withdrawal of control rods. However, ITS 3.9.1 Required Action A.1 requires immediate suspension of positive reactivity additions. This would include both the addition of fuel to the reactor vessel and the withdrawal of control rods. Furthermore, another accident considered in MODE 6 that could affect SHUTDOWN MARGIN is a boron dilution event. A boron dilution accident is initiated by a dilution source which results in the boron concentration dropping below that required to maintain the SHUTDOWN MARGIN. A boron dilution accident is mitigated by stopping the dilution. Suspension of CORE ALTERATIONS has no effect on the mitigation of a boron dilution accident.

Therefore, since the only CORE ALTERATIONS that could affect the SHUTDOWN MARGIN are suspended by ITS 3.9.1 Required Action A.1, deletion of the requirement to suspend CORE ALTERATIONS is acceptable.

This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L03 *(Category 4 – Relaxation of Required Action)* CTS 3.9.1 Action states that when the boron concentration requirement is not met, initiate, and continue boration at ≥ 40 gpm of a solution containing 1900 pm boron or greater to restore boron concentration to within limits. ITS 3.9.1 Required Action A.2 requires initiation of action to restore boron concentration to within limit. This changes the CTS by eliminating the specific requirements for the boric acid solution to be used to restore compliance with the LCO.

The purpose of CTS 3.9.1 Action is to restore the required SHUTDOWN MARGIN in a timely manner. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. Removing the specific values of flow rate and boron concentration from the CTS ACTION provides flexibility in the restoration of the SHUTDOWN MARGIN and eliminates conflicts between the SDM value specified in the COLR and the specific boration values in the CTS ACTION. As stated, in the ITS Bases for ACTION A:

> "In determining the required combination of boration flow rate and concentration, there is no unique design basis event that must be satisfied. The only requirement is to restore the boron concentration to its required value as soon as possible. In order to raise the boron concentration as soon as possible, the operator should begin boration with the best source available for unit conditions. Once boration is initiated, it must be continued until the boron concentration is restored."

Specifying a minimum flow rate and concentration in the ACTION may not accomplish the objective of raising the RCS boron concentration as soon as possible. Specifying the boric acid solution requirements in the Action is not necessary, since the ITS requires that action to restore the boron concentration to within limit be initiated immediately. This prompt action will result in the boron concentration being restored in a timely manner, consistent with the CTS requirement.

This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.9.1.1 requires the boron concentration to be determined prior to removing or unbolting the reactor vessel head, and prior to withdrawal of any control element assembly (CEA) in excess of 3 feet from its fully inserted position. ITS 3.9.1 does not contain this Surveillance Requirement.

The purpose of CTS 4.9.1.1 is to ensure that the LCO requirements are met prior to entering MODE 6 and that the reactor has sufficient SHUTDOWN MARGIN prior to withdrawing any CEAs. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the values used to meet the LCO are consistent with the safety analyses. Thus, appropriate values continue to be tested in a manner and at a frequency necessary to give confidence that the assumptions in the safety analyses are protected. ITS 3.9.1 requires that the boron concentration be met in MODE 6 or that action be immediately initiated to restore the boron concentration and that all positive reactivity additions be suspended. CTS 4.0.4 (ITS SR 3.0.4) requires the SR to be met within its Frequency requirements prior to entering the MODE or other specified conditions in the Applicability except as provided by CTS 4.0.3 (ITS SR 3.0.3 – missed SR). Therefore, verification that the boron concentration is within the required limit must be performed prior to entering MODE 6 in order to avoid immediately entering into an Action that prohibits withdrawal of CEAs when the boron concentration requirement is not met. While the CTS Surveillance is not required, the level of protection provided is appropriate.

This change is designated as less restrictive because Surveillances required in the CTS will not be required in the ITS.

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

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

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

Applicability APPLICABILITY: MODE 6.

DOC L01 --NOTE--
Only applicable to the refueling canal and refueling cavity when connected to the RCS.

ACTIONS

3.9.1 Action
DOC L02
DOC L03

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.9.1.2 DOC L04	SR 3.9.1.1 Verify boron concentration is within the limit specified in the COLR.	~~[72 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

②

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

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

Applicability APPLICABILITY: MODE 6.

DOC L01

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

ACTIONS

3.9.1 Action
DOC L02
DOC L03

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.9.1.2 DOC L04	SR 3.9.1.1 Verify boron concentration is within the limit specified in the COLR.	~~[72 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

②

DOC L02
DOC L03

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.1, BORON CONCENTRATION

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

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

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

B 3.9 REFUELING OPERATIONS

B 3.9.1 Boron Concentration

BASES

BACKGROUND

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

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

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

The reactor is brought to shutdown conditions before beginning operations to open the reactor vessel for refueling. After the RCS is cooled and depressurized and the vessel head is unbolted, the head is slowly removed to form the refueling cavity. The refueling canal and the refueling cavity are then flooded with borated water from the refueling water tank or other borated water source into the open reactor vessel by gravity feeding or by the use of the Shutdown Cooling (SDC) System pumps. ①

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

BASES

APPLICABLE SAFETY ANALYSES

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

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

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

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

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

LCO

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

APPLICABILITY

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

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

①

BASES

ACTIONS

A.1

Continuation of positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant volume in the RCS, the refueling canal, or the refueling cavity is less than its limit, all operations involving positive reactivity additions must be suspended immediately. Operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

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

A.2

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

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[A minimum Frequency of once every 72 hours is therefore a reasonable amount of time to verify the boron concentration of representative samples. The Frequency is based on operating experience, which has shown 72 hours to be adequate.~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~--]~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. U FSAR, Section ~~[ ]~~ 15.2.4. ② ①

B 3.9 REFUELING OPERATIONS

B 3.9.1 Boron Concentration

BASES

BACKGROUND

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

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

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

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

or other borated water source ①

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

APPLICABLE SAFETY ANALYSES

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

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

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

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

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

LCO

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

APPLICABILITY

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

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

BASES

ACTIONS

A.1

Continuation of positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron concentration of any coolant volume in the RCS, the refueling canal, or the refueling cavity is less than its limit, all operations involving positive reactivity additions must be suspended immediately. Operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action.

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

A.2

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

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

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

①

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[A minimum Frequency of once every 72 hours is therefore a reasonable amount of time to verify the boron concentration of representative samples. The Frequency is based on operating experience, which has shown 72 hours to be adequate.~~ ②

~~OR~~

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

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. U FSAR, Section ~~[ ]~~ 15.4.6. ② ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.1, BASES, BORON CONCENTRATION

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.1, BORON CONCENTRATION

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

ATTACHMENT 2

3.9.2, Nuclear Instrumentation

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

A01

REFUELING OPERATIONS

INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

A02

source range

OPERABLE

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

LA01

~~control room~~

M01

Applicability **APPLICABILITY**: MODE 6.

Add proposed ACTION A.2

A03

Add proposed ACTION A.2 Note

L01

ACTION:

One required source range monitor inoperable.

ACTION A.2 ~~With the requirements of the above specification not satisfied~~, immediately suspend ~~all operations involving CORE ALTERATIONS~~ ~~or operations that would cause introduction into the~~
ACTION A.1 ~~RCS, coolant with boron concentration less than required to meet the boron concentration of Technical Specification 3.9.1.~~ ~~The provisions of Specification 3.0.3 are not applicable.~~

A03

A04

Add proposed ACTION A.1

M02

Add proposed ACTION B

M03

SURVEILLANCE REQUIREMENTS

~~4.9.2~~ ~~Each wide range logarithmic neutron flux monitor shall be demonstrated OPERABLE by performance of:~~

~~a.~~ ~~A CHANNEL FUNCTIONAL TEST in accordance with the Surveillance Frequency Control Program.~~

~~b.~~ ~~A CHANNEL FUNCTIONAL TEST within 8 hours prior to the start of CORE ALTERATIONS, and~~

L02

SR 3.9.2.1 ~~c.~~ ~~A~~ CHANNEL CHECK in accordance with the Surveillance Frequency Control Program ~~during CORE ALTERATIONS~~.

M05

Add proposed SR 3.9.2.2 and Note

M04

A01

REFUELING OPERATIONS

3/4.9.2 INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.2

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

A02

LA01

L03

Applicability

APPLICABILITY: MODE 6.

Add proposed ACTION A.2

A03

Add proposed ACTION A.2 Note

L01

ACTION:

ACTION A.2

ACTION A.1

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

A03

Add proposed ACTION A.1

M02

ACTION B.2

~~b.~~ ~~With both of the above~~ two required source range monitors inoperable ~~or not operating,~~ determine the boron concentration of the Reactor Coolant System at least once per 12 hours.

Add proposed ACTION B.1

M03

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

A04

SURVEILLANCE REQUIREMENTS

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

SR 3.9.2.1

~~a.~~ ~~A~~ CHANNEL CHECK in accordance with the Surveillance Frequency Control Program,

L02

~~b.~~ ~~A CHANNEL FUNCTIONAL TEST within 8 hours prior to the initial start of CORE ALTERATIONS, and~~

~~c.~~ ~~A CHANNEL FUNCTIONAL TEST in accordance with the Surveillance Frequency Control Program.~~

Add proposed SR 3.9.2.2 and Note

M04

DISCUSSION OF CHANGES
ITS 3.9.2, NUCLEAR INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the St. Lucie Plant (PSL) Unit 1 and Unit 2, 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. 5.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS).

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

A02 CTS 3.9.2 requires, in part, that two neutron flux monitors are to be operating; wide range logarithmic (Unit 1) and startup range (Unit 2). Additionally, CTS 3.9.2 Actions contain compensatory actions to take when one or more neutron flux monitors are not operating. ITS LCO 3.9.2 requires, in part, two source range monitors (SRMs) to be OPERABLE but does not require the SRMs to be operating. Furthermore, ITS 3.9.2 ACTIONS A and B do not contain compensatory actions to take when one or more of the SRMs are not operating. This changes the CTS by removing the statement that the neutron flux monitors are required to be operating.

ITS refers to the neutron flux monitors as SRMs consistent with the ISTS because, for the purpose of CTS 3.9.2, both types of monitors (wide range logarithmic (Unit 1) and startup range (Unit 2)) provide neutron flux indication in the source range. The purpose of the SRMs is to monitor core reactivity during refueling operations and provide a signal to the operators if an unexpected reactivity change occurs. This change is acceptable because the requirements have not changed. In accordance with the ITS definition of OPERABLE, a device must be capable of performing its specified safety function. For the SRMs, this requires them to be operating in order to perform their safety function (i.e., monitor neutron flux in the source range). This change is considered administrative and acceptable because it does not result in a technical change to the CTS.

A03 Unit 1 CTS 3.9.2 Action and Unit 2 CTS Action a require, in part, with one neutron flux monitor inoperable to immediately suspend all operations involving CORE ALTERATIONS or immediately suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of Technical Specification 3.9.1, “Boron Concentration.” Under similar conditions, ITS 3.9.2 Required Action A.1 requires immediate suspension of positive reactivity additions. Additionally, ITS 3.9.2 Required Action A.2 requires immediate suspension of movement of fuel, sources, and reactivity control components within the reactor vessel. This changes the CTS by immediately suspending positive reactivity additions and movement of fuel, sources, and reactivity control components within the reactor vessel, instead of suspending CORE ALTERATIONS.

The purpose of the SRMs is to monitor core reactivity during refueling operations and provide a signal to the operators if an unexpected reactivity change occurs. Thus, when an SRM is inoperable, CORE ALTERATIONS are suspended to preclude an unmonitored reactivity change. CORE ALTERATIONS is defined in CTS 1.9, in part, as "the movement of any fuel, sources, reactivity control components or other components affecting reactivity within the reactor vessel with the head removed and fuel in the vessel." CORE ALTERATIONS only occur when the reactor vessel head is removed; therefore, it only applies to MODE 6. There are two evolutions encompassed under the term CORE ALTERATION that could affect the reactivity of the core; the addition of fuel to the reactor vessel and the withdrawal of control rods. ITS 3.9.2 Required Action A.1 requires immediate suspension of these two positive reactivity changes and prohibits diluting the boron concentration of the coolant in the RCS. Therefore, since the CORE ALTERATIONS of concern are only those that could affect positive reactivity in the core and these are suspended by ITS 3.9.2 Required Action A.1, changing the requirement from suspending "CORE ALTERATIONS" to suspending "positive reactivity additions" is acceptable.

ITS 3.9.2 Required Action A.2 prohibits the movement of fuel assemblies, sources, and reactivity control components when an SRM is inoperable. The proposed changes ensure that no actions are taken that could alter the core reactivity when an SRM is inoperable. With one SRM inoperable, the operator may not be able to monitor the core reactivity condition in part of the reactor. Therefore, the conservative action is to suspend movement of any core components that may affect reactivity until the SRM is restored. While unlikely, movement of fuel assemblies from one core location to another, the movement of sources, or the removal of reactivity control components, could result in an undetected change in core reactivity. These changes are considered administrative and acceptable because they do not result in a technical change to the CTS.

A04 Unit 1 CTS 3.9.2 Action and Unit 2 CTS 3.9.2 Action c. contain the statement, "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.2 does not contain an equivalent statement. This changes the CTS by deleting the Specification 3.0.3 exception. This change is acceptable because the technical requirements have not changed. As explicitly stated in CTS 3.0.3 (ITS LCO 3.0.3), LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS LCO 3.0.3 exception statement is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 **Unit 1 only:** CTS 3.9.2 states that two wide range logarithmic neutron flux monitors shall be operating, each with continuous visual indication in the control room and one with audible indication "in the containment." ITS 3.9.2 states that two source range monitors (SRMs) shall be OPERABLE. Details of what constitutes an OPERABLE SRM channel are provided in the ITS Bases (Refer to Discussion of Change (DOC) LA01). The ITS Bases explicitly states: To alert the operator of a boron dilution accident, at least one SRM must include audible indication in the control room to be considered OPERABLE. This changes the CTS by changing the location requirement for the audible indication from “the containment” to the “control room.”

This change is necessary to ensure that the SRM channels are maintained consistent with the safety analyses and licensing basis in MODE 6. The boron dilution analysis assumes that the operator has prompt and definite indication from an audible indication. The analysis does not explicitly specify how many audible channels are required or the location of the audible indication. However, action to terminate a boron dilution event is either initiated from an operator in the control room or directed by an operator in the control room. Therefore, it is more appropriate to specify that an audible indication be available in the control room instead of in the containment. This change is designated as more restrictive because a specific location of the audible alarm indication not previously required in the CTS is being applied in the ITS.

M02 Unit 1 CTS 3.9.1 Action and Unit 2 CTS 3.9.2 Action a require, in part, with one neutron flux monitor inoperable to, optionally, suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of Technical Specification 3.9.1, “Boron Concentration.” Under similar conditions, ITS 3.9.2 Required Action A.1 requires immediate suspension of positive reactivity additions. This changes the CTS requiring suspension of positive reactivity additions, which is not optional and includes RCS dilution activities even if the introduced coolant has a boron concentration greater than the limit in LCO 3.9.1.

The purpose of the source range flux monitoring requirements while in MODE 6 is to provide a signal to alert the operator to unexpected changes in core reactivity such as by a boron dilution accident or an improperly loaded fuel assembly. Pursuant to the requirements of 10 CFR 50.36(c)(2), the required action provides appropriate remedial actions when the required source range monitoring capability is degraded to ensure continued safe operation without adequate monitoring capability until the degraded condition can be corrected. The CTS Action that prohibits introducing coolant into the RCS unless that coolant has a boron concentration greater than or equal to the boron concentration limit in LCO 3.9.1 is deleted. This current action would allow dilution of the boron concentration in the RCS with one SRM inoperable provided the boron concentration is not reduced to less than the limit in LCO 3.9.1. This change is necessary to minimize the possibility of a boron dilution event when monitoring capability is unavailable or degraded by suspending any positive reactivity additions, including any RCS dilution activity suspended. This change is more restrictive because it requires an action that was optional in CTS and expands the action to include suspension of any boron dilution activity regardless of existing RCS boron concentration.

M03 Unit 1 CTS provides no action when two required wide range logarithmic neutron flux monitors are inoperable. Unit 2 CTS 3.9.2 Action b provides action for two inoperable required startup range neutron flux monitors, requiring determination of the Reactor Coolant System boron concentration at least once per 12 hours. ITS 3.9.2 ACTION B requires actions when two SRMs are inoperable. The ITS requires immediate initiation of action to restore one SRM to OPERABLE status and to perform a verification of boron concentration (per ITS SR 3.9.1.1) once per 12 hours. This changes the Unit 1 CTS requirements by requiring an additional verification of boron concentration every 12 hours when both SRMs are inoperable, and changes Unit 1 and Unit 2 CTS by requiring an additional action to initiate immediate action to restore one SRM to OPERABLE status.

The purpose of this change is to provide necessary Required Actions that are appropriate for a possible condition that could be encountered. This change is acceptable because the proposed Required Actions are reasonable and necessary to ensure the reactor is maintained in a safe condition. This change is more restrictive because it provides for additional actions that the CTS does not require.

M04 CTS 4.9.2 requires the performance of a CHANNEL CHECK of the SRMs but does not require the performance of a CHANNEL CALIBRATION. ITS SR 3.9.2.2 requires performance of CHANNEL CALIBRATION of the SRMs at a periodic Frequency in accordance with the Surveillance Frequency Control Program (SFCP). This Surveillance is modified by a Note which states that the Neutron detectors are excluded from the CHANNEL CALIBRATION. This changes the CTS by adding a new Surveillance Requirement to periodically verify the calibration of the SRMs.

The purpose of ITS SR 3.9.2.2 is to provide additional assurance that the SRMs are capable of providing a reliable and accurate indication of core subcritical neutron flux. This change is acceptable because a CHANNEL CALIBRATION will continue to ensure OPERABILITY and proper operation of the SRMs in MODE 6. This Surveillance is modified by a Note which states that the Neutron detectors are excluded from the CHANNEL CALIBRATION.

PSL controls periodic Frequencies for Surveillances in accordance with the SFCP per CTS 6.8.4.o (Unit 1) and CTS 6.8.4.q (Unit 2). Therefore, SR 3.9.2.2 will be performed at a Frequency in accordance with the SFCP with an initial Frequency of 18 months consistent with the ISTS SR 3.9.2.2 and considers operating experience that these components usually pass the Surveillance when performed on an 18 month Frequency.

The SFCP was established as described in FPL (PSL Unit 1 and Unit 2) “Application for Technical Specification Change Regarding Risk-Informed Justifications for the Relocation of Specific Surveillance Frequency Requirements to a Licensee Controlled Program” (ADAMS Accession No. ML14070A087). The NRC issued Amendment No. 223 to Renewed Facility Operating License No. DPR-67 and Amendment No. 173 to Renewed Facility Operating License No. NPF-16 for the St. Lucie Plant, Unit Nos. 1 and 2 (St. Lucie 1 and 2), respectively (ADAMS Accession No. ML15127A066).This change is more restrictive because it provides an additional Surveillance Requirement that was not required in the CTS.

M05 **Unit 1 only**: CTS 4.9.2.c requires a CHANNEL CHECK to be performed in accordance the Surveillance Frequency Control Program during CORE ALTERATIONS. ITS SR 3.9.2.1 requires a CHANNEL CHECK to be performed in accordance with the Surveillance Frequency Control Program. This changes the CTS by requiring the CHANNEL CHECK to be performed in accordance with the Surveillance Frequency Control Program even if CORE ALTERATIONS are not in progress.

The purpose of this change is to routinely verify the OPERABILITY of the neutron flux monitors in all conditions in which the LCO applies, not just during CORE ALTERATIONS. This change is acceptable because the Surveillance verifies OPERABILITY of both monitors to ensure the reactor is maintained in a safe condition. This change is more restrictive because it provides for additional testing that the CTS does not require.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.9.2 states, in part, that two source range neutron flux monitors shall be operating, "each with continuous visual indication in the control room." CTS also requires one neutron flux monitor to have audible indication; in the containment for Unit 1 and in the control room and containment for Unit 2. ITS 3.9.2 LCO states that two source range monitors (SRMs) shall be OPERABLE. This changes the CTS by moving the requirement that each channel has a continuous visual indication in the control room and one with audible indication from the CTS to the Bases.

The removal of this detail, which is related to system design, from the Technical Specifications, is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS retains the requirement that two channels be OPERABLE and continues to require the associated Surveillance to verify OPERABILITY. The ITS Bases provides the description of the SRM detectors providing continuous visual indication and an audible alarm in the control room. The ITS Bases also includes a statement to ensure at least one SRM includes audible indication in the control room to be considered OPERABLE. Refer to other DOCs for CTS requirement specifying the location of the audible alarm indication. This change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 (*Category 4 – Relaxation of Required Action*) CTS 3.9.2 ACTION a requires, in part, with one neutron flux monitor inoperable to immediately suspend all operations involving CORE ALTERATIONS. Under similar conditions, ITS 3.9.2 Required Action A.2 requires immediate suspension of movement of fuel, sources, and reactivity control components within the reactor vessel, which is equivalent to suspending CORE ALTERATIONS. Additionally, ITS 3.9.2 Required Action A.2 is modified by a Note that permits fuel assemblies, sources, and reactivity control components to be moved, if necessary, to restore an inoperable source range monitor or to complete movement of a component to a safe condition. This changes the CTS by allowing certain CORE ALTERATIONS to be continued in order to restore the SRM to OPERABLE status or complete movement of a component to a safe condition.

Pursuant to the requirements of 10 CFR 50.36(c)(2), the required action provides appropriate remedial actions when the required source range monitoring capability is degraded to ensure continued safe operation without adequate monitoring capability until the degraded condition can be corrected. The SRMs are located outside the reactor core. Troubleshooting, repair, or replacement of the inoperable source range neutron flux monitors may require moving fuel, sources, or reactivity control components away from the SRM location to minimize the radiation dose to the workers. As a result, suspension of activities specified in ITS 3.9.2, Required Action A.2 (i.e., CORE ALTERATIONS) with no exceptions has the adverse impact of precluding restoring the SRMs to OPERABLE status. This change is acceptable because the required actions continue to minimize actions that could result in reactivity changes within the core, while providing the ability to safely restore source range neutron monitoring capability. This change is consistent with the Note specified in ISTS Traveler TSTF-571-T, "Revise Actions for Inoperable Source Range Neutron Flux Monitor," Revision 2, dated April 13, 2000. ISTS Traveler TSTF-571-T addressed, in part, NRC concerns with the adoption of ISTS Traveler TSTF-286 as documented in a letter to the TSTF dated October 4, 2018 (NRC ADAMS Accession No. ML17346A587). ISTS Traveler TSTF-571-T was incorporated into Revision 5 of the ISTS as recommended by the NRC staff. The October 4, 2018, letter states, in part, that "If a licensee includes the changes of traveler TSTF-571-T when adopting TSTF-286, the NRC staff's technical concerns should be adequately addressed with regard to TSTF-286. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than applied in the CTS.

L02 *(Category 5 – Deletion of Surveillance Requirement)* Unit 1 CTS 4.9.2.a and b, and Unit 2 CTS 4.9.2.b and c, state that a CHANNEL FUNCTIONAL TEST is required for the neutron flux monitors in accordance with the Surveillance Frequency Control Program and within 8 hours prior to the initial start of CORE ALTERATIONS, respectively. ITS 3.9.2 does not require the performance of similar tests for the required neutron flux monitors. This changes the CTS by deleting the CHANNEL FUNCTIONAL TEST Frequency of within 8 hours of CORE ALTERATIONS.

This change is acceptable because the deleted Surveillance Requirement Frequency is not necessary to verify that the equipment used to meet the LCO is consistent with the safety analysis. The SRMs continue to be tested in a manner and at a frequency necessary to give confidence that the assumptions in the safety analyses are protected. This change is designated as less restrictive because a Surveillance required in the CTS will not be required in the ITS.

L03 **Unit 2 only:** (*Category 1 – Relaxation of LCO Requirements*) CTS 3.9.2 requires two startup range neutron flux monitors to be operating, each with continuous visual indication in the control room and one with audible indication "in the containment and the control room." ITS 3.9.2 states that two source range monitors (SRMs) shall be OPERABLE. Details of what is constitutes an OPERABLE SRM channel are provided in the ITS Bases (Refer to DOC LA01). The ITS Bases explicitly states: To alert the operator of a boron dilution accident, at least one SRM must include audible indication in the control room to be considered OPERABLE. This changes the CTS by deleting the requirement for an audible indication to be "in the containment."

This change is acceptable because the LCO requirements continue to ensure that the SRM channels are maintained consistent with the safety analyses and licensing basis in MODE 6. The boron dilution analysis assumes that the operator has prompt and definite indication from an audible indication. The analysis does not explicitly specify how many audible channels are required or the location of the audible indication. However, action to terminate a boron dilution event is either initiated from an operator in the control room or directed by an operator in the control room. Therefore, it is unnecessary to specify that an audible indication be available in the containment. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

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

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

3.9.2
DOC M01
DOC LA01

LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE. ①

Applicability

APPLICABILITY: MODE 6.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.9.2 Action DOC M02	A. One ~~[~~required~~]~~ SRM inoperable.	A.1 Suspend positive reactivity additions.	Immediately	② ①
		<u>AND</u>		
DOC L01		A.2 ------------ NOTE ------------- Fuel assemblies, sources, and reactivity control components may be moved if necessary to restore an inoperable source range neutron flux monitor or to complete movement of a component to a safe condition. -----------------------------------		①
DOC A03		Suspend movement of fuel, sources, and reactivity control components within the reactor vessel.	Immediately	①
DOC M03	B. Two ~~[~~required~~]~~ SRMs inoperable.	B.1 Initiate action to restore one SRM to OPERABLE status.	Immediately	② ①
		<u>AND</u>		
DOC M03		B.2 Perform SR 3.9.1.1.	Once per 12 hours	

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
4.9.2.a DOC M05	SR 3.9.2.1	Perform CHANNEL CHECK.	~~[12 hours~~ ② ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②
DOC M04	SR 3.9.2.2	-------------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	~~[[18] months~~ ② ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②

CTS

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

3.9.2
DOC L03
DOC LA01

LCO 3.9.2 Two source range monitors (SRMs) shall be OPERABLE. ①

Applicability

APPLICABILITY: MODE 6.

ACTIONS

3.9.2 Action a.
DOC M02
DOC L01
DOC A03
DOC M03
3.9.2 Action b.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One [required] SRM inoperable. ① ②	A.1 Suspend positive reactivity additions. AND A.2 ------------ NOTE ------------- Fuel assemblies, sources, and reactivity control components may be moved if necessary to restore an inoperable source range neutron flux monitor or to complete movement of a component to a safe condition. ① ---------------------------------- Suspend movement of fuel, sources, and reactivity control components within the reactor vessel. ①	Immediately Immediately
B. Two [required] SRMs inoperable. ① ②	B.1 Initiate action to restore one SRM to OPERABLE status. AND B.2 Perform SR 3.9.1.1.	Immediately Once per 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY	
4.9.2.c SR 3.9.2.1	Perform CHANNEL CHECK.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ②
DOC M04 SR 3.9.2.2	-------------------------------NOTE------------------------------ Neutron detectors are excluded from CHANNEL CALIBRATION. --- Perform CHANNEL CALIBRATION.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.2, NUCLEAR INSTRUMENTATION

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

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

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

B 3.9 REFUELING OPERATIONS

B 3.9.2 Nuclear Instrumentation

BASES

BACKGROUND

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

include wide range logarithmic gamma-metric

In the source range, the

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

(cps). The instrument range of the wide range logarithmic detectors is 1 to 10^5 cps, each

in the control room

or other neutron flux detectors

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

described herein

APPLICABLE SAFETY ANALYSES

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

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

LCO

This LCO requires two SRMs OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity. ①

APPLICABILITY

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

logarithmic fission

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

LCO 3.3.11, "Logarithmic Neutron Flux Monitor."

To alert the operator of a boron dilution accident, at least one SRM must include audible indication in the control room to be considered OPERABLE.

BASES

ACTIONS

A.1 and A.2 ①

of visual indication

With only one SRM OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, positive reactivity additions and movement of fuel, sources, and reactivity control components within the reactor vessel must be suspended immediately. Performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position. Suspending the movement of fuel, sources, and reactivity control components ensures that positive reactivity is not inadvertently added to the reactor core while the SRM is inoperable. Required Action A.2 is modified by a Note that states that fuel assemblies, sources, and reactivity control components may be moved if necessary to facilitate repair or replacement of the inoperable SRM. It may be necessary to move these items away from the locations in the core close to the SRM to minimize personnel radiation dose during troubleshooting or repair. The Note also permits completion of movement of a component to a safe position, should the SRM be discovered inoperable during component movement.

B.1

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

B.2 ①

and no audible indication in the control room to detect a boron dilution event

, including boron dilution activities

With no SRM OPERABLE, there is no direct means of detecting changes in core reactivity. However, since positive reactivity additions are not to be made, the core reactivity condition is stabilized until the SRMs are ① OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to verify that the required boron concentration exists.

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

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

SR 3.9.2.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

~~[The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1, "Reactor Protection System."~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

SR 3.9.2.2

SR 3.9.2.2 is the performance of a CHANNEL CALIBRATION. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. ~~[The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed on the 18 month Frequency.~~ ②

~~OR~~

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

REFERENCES

1. 10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.
2. UFSAR, Section ~~[~~15.2.4~~]~~. ① ②

B 3.9 REFUELING OPERATIONS

B 3.9.2 Nuclear Instrumentation

BASES

BACKGROUND

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

include excore startup gamma-metric fission

(cps). The instrument range of the excore startup detectors is 1 to 10^5 cps.

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

in the control room

or other neutron flux detectors

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

described herein

①

APPLICABLE SAFETY ANALYSES

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

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

LCO

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

①

APPLICABILITY

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

logarithmic fission

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

①

LCO 3.3.11, "Logarithmic Neutron Flux Monitor."

To alert the operator of a boron dilution accident, at least one SRM must include audible indication in the control room to be considered OPERABLE.

①

ACTIONS

A.1 and A.2

of visual indication ①

With only one SRM OPERABLE, redundancy has been lost. Since these instruments are the only direct means of monitoring core reactivity conditions, positive reactivity additions and movement of fuel, sources, and reactivity control components within the reactor vessel must be suspended immediately. Performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position. Suspending the movement of fuel, sources, and reactivity control components ensures that positive reactivity is not inadvertently added to the reactor core while the SRM is inoperable. Required Action A.2 is modified by a Note that states that fuel assemblies, sources, and reactivity control components may be moved if necessary to facilitate repair or replacement of the inoperable SRM. It may be necessary to move these items away from the locations in the core close to the SRM to minimize personnel radiation dose during troubleshooting or repair. The Note also permits completion of movement of a component to a safe position, should the SRM be discovered inoperable during component movement.

B.1

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

B.2

and no audible indication in the control room to detect a boron dilution event ①

With no SRM OPERABLE, there is no direct means of detecting changes in core reactivity. However, since positive reactivity additions are not to be made, the core reactivity condition is stabilized until the SRMs are OPERABLE. This stabilized condition is determined by performing SR 3.9.1.1 to verify that the required boron concentration exists. ①

, including boron dilution activities

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

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

SR 3.9.2.1 is the performance of a CHANNEL CHECK, which is a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that the two indication channels should be consistent with core conditions. Changes in fuel loading and core geometry can result in significant differences between source range channels, but each channel should be consistent with its local conditions.

~~[The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.1, "Reactor Protection System."~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

SR 3.9.2.2

SR 3.9.2.2 is the performance of a CHANNEL CALIBRATION. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range neutron flux monitors consists of obtaining the detector plateau or preamp discriminator curves, evaluating those curves, and comparing the curves to the manufacturer's data. ~~[The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed on the 18 month Frequency.~~ ②

~~OR~~

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~--]~~ ②

REFERENCES

1. 10 CFR 50, Appendix A, GDC 13, GDC 26, GDC 28, and GDC 29.
2. UFSAR, Section ~~[~~ 15.4.2 ~~]~~. ① ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.2, BASES, NUCLEAR INSTRUMENTATION

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.2, NUCLEAR INSTRUMENTATION

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

ATTACHMENT 3

3.9.3, Containment Penetrations

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

A01

REFUELING OPERATIONS

CONTAINMENT PENETRATIONS

LIMITING CONDITION FOR OPERATION

LCO 3.9.3 ~~3.9.4~~ The containment penetrations shall be in the following status:

3.9.3.a ~~a.~~ The equipment hatch door closed and held in place by ~~a minimum of~~ four bolts.

3.9.3.b ~~b.~~ ~~A minimum of~~ one door in each airlock is closed.

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

3.9.3.c.1 ~~1.~~ Closed by a manual or automatic isolation valve, blind flange~~, or manual valve~~ ~~except for valves that are open on an intermittent basis under administrative control~~, or A03

3.9.3.c.2 ~~2.~~ ~~Be~~ capable of being closed by an OPERABLE ~~automatic~~ containment isolation valve, or

~~3.~~ ~~Be capable of being closed by an OPERABLE containment vacuum relief valve.~~ A04

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

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

ACTION:

ACTION A ~~With the requirements of the above~~ One or more containment penetrations not in required status. ~~specification not satisfied~~, immediately suspend ~~all operations involving~~ movement of recently irradiated fuel ~~in the~~ assemblies within containment. ~~The provisions of Specification 3.0.3 are not applicable.~~ A05

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1 & SR 3.9.3.2 ~~4.9.4~~ Each ~~of the above~~ required containment penetration~~s~~ is in the required status ~~shall be determined to be~~ either in its closed/isolated condition or capable of being closed by an OPERABLE ~~automatic~~ containment isolation valve ~~within 72 hours prior to the start of~~ ~~and~~ in accordance with the Surveillance Frequency Control Program ~~during movement of recently irradiated fuel in the containment~~ by: L01 A02

SR 3.9.3.1 & SR 3.9.3.2 Frequency

SR 3.9.3.1 a. Verify~~ing the penetrations are~~ each required containment is in the required status ~~in their closed/isolated condition~~, or

SR 3.9.3.2 b. ~~Testing of containment isolation valves per the applicable portions of Specifications 4.6.3.1.1. and 4.6.3.1.2~~ Verify each required containment isolation valve actuates to the isolation position on an actual or simulated actuation signal.

Add proposed SR 3.9.3.2 Note L02

L03

A01

~~INTENTIONALLY DELETED~~

A01

~~INTENTIONALLY DELETED~~

A01

~~INTENTIONALLY DELETED~~

REFUELING OPERATIONS

CONTAINMENT ISOLATION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.9.3.c ~~3.9.9~~ The containment isolation system shall be OPERABLE.

Applicability **APPLICABILITY:** During movement of recently irradiated fuel assemblies within containment.

ACTION:

LCO 3.9.3.c.1 ACTION A.1 With the containment isolation system inoperable, ~~either~~ suspend ~~all operations involving~~ movement of recently irradiated fuel assemblies within containment ~~or close each of the penetrations providing direct access from the containment atmosphere to the outside atmosphere~~. A06

SURVEILLANCE REQUIREMENTS

SR 3.9.3.2 ~~4.9.9~~ The containment isolation system shall be demonstrated OPERABLE ~~within 72 hours prior to the start of and~~ in accordance with the Surveillance Frequency Control Program ~~during movement of recently irradiated fuel assemblies~~ by verifying that containment isolation occurs ~~on manual initiation and on a high radiation signal from two of the containment radiation monitoring instrumentation channels~~. L01 A02 LA01

A01

REFUELING OPERATIONS

3/4.9.4 CONTAINMENT BUILDING PENETRATIONS

LIMITING CONDITION FOR OPERATION

LCO 3.9.3 ~~3.9.4~~ The containment ~~building~~ penetrations shall be in the following status:

3.9.3.a ~~a.~~ The equipment hatch door closed and held in place by ~~a minimum of~~ four bolts.

3.9.3.b ~~b.~~ ~~A minimum of~~ one door in each airlock is closed.

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

3.9.3.c.1 ~~1.~~ Closed by a~~n~~ manual or automatic isolation valve, blind flange~~, or manual valve~~, or

3.9.3.c.2 ~~2.~~ ~~Be~~ capable of being closed by an OPERABLE ~~automatic~~ containment isolation valve.

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

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

ACTION:

ACTION A ~~With the requirements of the above~~ One or more containment penetrations not in required status. ~~specification not satisfied~~, immediately suspend ~~all operations involving~~ movement of recently irradiated fuel ~~in the~~ assemblies within containment ~~building~~.

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1 & SR 3.9.3.2 ~~4.9.4~~ Each ~~of the above~~ required containment building penetrations is in the required status ~~shall be determined to be~~ either in its closed/isolated condition or capable of being closed by an OPERABLE ~~automatic~~ containment isolation valve ~~within 72 hours prior to the start of and~~ in accordance with the Surveillance Frequency Control Program ~~during movement of recently irradiated fuel in the containment building~~ by:

SR 3.9.3.1 & SR 3.9.3.2 Frequency L01 A02

SR 3.9.3.1 ~~a.~~ Verify~~ing the penetrations are in~~ each required containment is in the required status ~~their closed/isolated condition~~, or

SR 3.9.3.2 ~~b.~~ ~~Testing of~~ Verify each required containment isolation valve actuates to the isolation position on an actual or simulated actuation signal. ~~containment isolation valves per the applicable portions of Specification 4.6.3.2~~.

Add proposed SR 3.9.3.2 Note L02

L03

Ⓐ01

~~INTENTIONALLY DELETED~~

~~INTENTIONALLY DELETED~~

Ⓐ01

~~INTENTIONALLY DELETED~~

A01

REFUELING OPERATIONS

3/4.9.9 CONTAINMENT ISOLATION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.9.3.c ~~3.9.9~~ The containment isolation system shall be OPERABLE.

Applicability **APPLICABILITY:** During movement of recently irradiated fuel assemblies within containment.

ACTION:

LCO 3.9.3.c.1 ACTION A.1 With the containment isolation system inoperable, ~~either~~ suspend ~~all operations involving~~ movement of recently irradiated fuel assemblies within containment ~~or close each of the containment penetrations providing direct access from the containment atmosphere to the outside atmosphere~~. A06

SURVEILLANCE REQUIREMENTS

SR 3.9.3.2 ~~4.9.9~~ The containment isolation system shall be demonstrated OPERABLE ~~within 72 hours prior to the start of and~~ in accordance with the Surveillance Frequency Control Program ~~during movement of recently irradiated fuel~~ by verifying that containment isolation occurs ~~on manual initiation and on a high radiation test signal from each of the containment radiation monitoring instrumentation channels~~. L01 A02 LA01

DISCUSSION OF CHANGES
ITS 3.9.3, CONTAINMENT PENETRATIONS

ADMINISTRATIVE CHANGES

A01 In the conversion of the St. Lucie Plant (PSL) Unit 1 and Unit 2, 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. 5.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS).

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

A02 CTS 4.9.4 requires that each required containment penetration is in its required position in accordance with the Surveillance Frequency Control Program during movement of recently irradiated fuel assemblies within containment. CTS 4.9.9 requires that the containment isolation system be demonstrated OPERABLE in accordance with the Surveillance Frequency Control Program during movement of recently irradiated fuel assemblies within containment. ITS SR 3.9.3.1 also requires verification that that each required containment penetration is in its required position in accordance with the Surveillance Frequency Control Program. The CTS and ITS applicability is also during movement of recently irradiated fuel assemblies within containment. This changes the CTS by deleting the Applicability requirement from the Surveillance. ITS LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification). Additionally, SR 3.0.1 establishes the requirement that Surveillance Requirements must be met during the MODES or other specified conditions in the Applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. Therefore, maintaining the Applicability requirement in the Surveillance is not necessary.

This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

A03 **Unit 1 only:** CTS 3.9.4.c.1 states, in part, “except for valves that are open on an intermittent basis under administrative control.” CTS 3.9.4 Note provides this exception. ITS 3.9.3 Note provides this exception. This changes the CTS by deleting the CTS 3.9.4.c.1 statement “except for valves that are open on an intermittent basis under administrative control.”

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

A04 **Unit 1 only:** CTS 3.9.4.c.1 and c.3 state that each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed by isolation valve, blind flange, or manual valve (c.1), or be capable of being closed by an OPERABLE containment vacuum relief valve (c.3). Similarly, ITS 3.9.3 c.1 requires each penetration providing direct access from the containment atmosphere to the outside atmosphere shall be closed by a manual or automatic isolation valve, blind flange, or equivalent, however; ITS does not contain a specific requirement for the containment vacuum relief valve. This changes the CTS by deleting the explicit requirement for the containment vacuum relief valve. This change is acceptable because a containment vacuum relief valve is normally closed and automatically opens using a pneumatic operator under certain conditions. The valves automatically open and allow free air flow across the containment vessel boundary whenever a vacuum condition inside containment threatens vessel integrity. Since the vacuum relief valves also perform a containment isolation function in the event of a LOCA, the valves fail closed on loss of air. CTS and ITS both allow containment penetrations to be closed by a manual or automatic isolation valve. Therefore, it is not necessary to retain the explicit requirement for the containment vacuum relief valves because for the purpose of containment penetration Specifications, these valves are considered containment isolation valves.

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

A05 **Unit 1 only:** CTS 3.9.4 states "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.3 does not include this statement. This changes the CTS by deleting the Specification 3.0.3 exception. This change is acceptable because LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS 3.0.3 exception is not necessary.

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

A06 CTS 3.9.9 requires the containment isolation system to be OPERABLE during movement of recently irradiated fuel assemblies within containment. CTS 3.9.9 Action requires either suspending movement of recently irradiated fuel assemblies within containment or close each of the penetrations providing direct access from the containment atmosphere to the outside atmosphere. ITS 3.9.3 ACTIONS do not include the action to close each of the penetrations providing direct access from the containment atmosphere to the outside atmosphere. This changes the CTS by removing an unnecessary action. The purpose of the CTS 3.9.9 actions is to provide appropriate remedial actions when an LCO is not met consistent with the requirements of 10 CFR 50.36(c)(2)(i). The action to suspend movement of recently irradiated fuel assemblies within containment results in the LCO no longer being required. CTS 3.0.2 (ITS LCO 3.0.2) states, in part, that when an LCO is met or is no longer applicable prior to expiration of the specified time interval(s), completion of the ACTIONS is not required, unless otherwise stated. As indicated in the ISTS Bases of ITS LCO 3.0.2, “Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.” Therefore, it is unnecessary to provide an action to specifically require the LCO to be met, as this is inherent in LCO 3.0.1 and LCO 3.0.2.

This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 4.9.9 requires a verification that containment isolation occurs on manual initiation and on a high radiation signal from two of the containment radiation monitoring instrumentation channels. ITS SR 3.9.3.2 requires verifying each required containment isolation valve actuates to the isolation position on an actual or simulated actuation signal. This changes the CTS by moving the details of the actuation signal that isolates the required containment isolation valves to the ITS Bases.

The removal of these details, which are related to system actuation design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The Technical Specifications still retain the surveillance requirement to verify the required containment isolation valves close from the applicable actuation instrumentation. This change is acceptable because the removed information will be adequately controlled in the Technical Specification Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Section 5.5 of the Technical Specifications. This program provides for the evaluation of Bases changes in accordance with 10 CFR 50.59 to ensure the Bases are properly controlled. The ITS requirement is consistent with the ISTS wording for this requirement. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.9.4 requires a determination that each containment penetration is either in its closed/isolated condition or capable of being closed by an OPERABLE automatic containment isolation valve within 72 hours prior to the start of movement of recently irradiated fuel assemblies in containment and in accordance with the Surveillance Frequency Control Program (i.e., 7 days). CTS 4.9.9 requires that the containment isolation system shall be demonstrated OPERABLE within 72 hours prior to the start of and in accordance with the Surveillance Frequency Control Program (i.e., 7 days). ITS SR 3.9.3.1 requires verification that each required containment penetration is in the required status in accordance with the Surveillance Frequency Control Program (i.e., 7 days). This changes the CTS by reducing the Frequency for verifying the status of the containment penetrations and the containment isolation system from 72 hours before entering the Applicability of the LCO to 7 days before entering the Applicability of the LCO.

The purpose of CTS 4.9.4 and 4.9.9 is to verify that the valves associated with containment penetrations providing direct access to the outside atmosphere are in the correct position or the containment isolation valves are capable of being closed by an actuation signal to support handling or recently irradiated fuel assemblies. This change is acceptable because the Surveillance Frequency has been evaluated to ensure that the containment penetrations are verified on a periodicity commensurate with the normal duration of time to complete fuel handling operations such that the verification will occur two or three times during the applicable period of the Specification, including once prior to movement of recently irradiated fuel. The Frequency of 7 days is sufficient during the movement of recently irradiated fuel assemblies; and therefore, it is sufficient before recently irradiated fuel assemblies are moved. CTS 4.0.4 (ITS SR 3.0.4) requires the SR to be met within its Frequency requirements prior to entering the MODE or other specified conditions in the Applicability except as provided by CTS 4.0.3 (ITS SR 3.0.3 – missed SR). The containment penetrations must be in the required state prior to commencing movement of recently irradiated fuel assemblies or fuel assembly movement must be suspended immediately (thereby exiting the Applicability of the Specification). Additionally, it is improbable to move irradiated fuel within 72 hours from entering MODE 3 (i.e., keff < 0.99) because of the physical time required to perform plant shutdown, cooldown, depressurize the Reactor Coolant System, and the additional operations required prior to moving recently irradiated fuel in the reactor vessel (e.g., containment entry, removal of vessel head, removal of vessel internals, etc.). Therefore, changing the Frequency from 72 hours before moving recently irradiated fuel assemblies to within 7 days before moving recently irradiated fuel assemblies has no effect on plant safety. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L02 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.9.4.b does not provide an exception to performance of the Surveillance for containment isolation valve(s) in penetrations closed to comply with the LCO 3.9.4.c.1. ITS SR 3.9.3.2 is modified by a Note that states that SR 3.9.3.2 is not required to be met for containment isolation valve(s) in penetrations closed to comply with ITS LCO 3.9.3.c.1. This changes the CTS by adding a Note that the SR is not required to be met for containment ventilation isolation valve(s) in penetrations closed to comply with LCO 3.9.4.c.1.

The purpose of CTS 4.9.4.b is to verify the equipment required to meet the LCO is OPERABLE. This change is acceptable because when containment ventilation isolation valves are closed to comply with ITS LCO 3.9.3.c.1, the penetrations are in the expected condition (isolated) to mitigate the effects of a fuel handling accident inside containment. Therefore, it is not necessary for the actuation signal to reposition valves to the closed position. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

L03 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* Unit 1 CTS 4.9.4 requires testing containment isolation valves per the applicable portions of 4.6.3.1.1 and 4.6.3.1.2. Unit 2 CTS 4.9.4 requires testing containment isolation valves per the applicable portions of 4.6.3.2. Unit 1 CTS 4.6.3.1.1 and Unit 2 CTS 4.9.4 require isolation valves shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of the cycling test, and verification of isolation time. CTS 4.6.3.1.2 (Unit 1) and 4.6.3.2 (Unit 2) require, in part, verification that on a Containment Isolation (and Containment High Radiation – Unit 2) test signal, the isolation valve actuates to its isolation position. ITS SR 3.9.3.2 specifies that the signal may be from either an "actual" or simulated (i.e., test) signal. Also, Unit 1 ITS SR 3.9.3.2 does not include the CTS 4.6.3.1.1 Frequency. This changes the Unit 1 and Unit 2 CTS by explicitly allowing the use of either an actual or simulated signal for the test and also changes Unit 1 CTS by deleting the requirement to perform the Surveillance prior to return the valve to service following certain activities per CTS 4.6.3.1.1.

The purpose of CTS 4.9.4 is to ensure that the required containment isolation valves operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. Additionally, Unit 1 CTS 4.6.3.1.1 and Unit 2 CTS 4.9.4 are proposed to be deleted in ITS 3.6.3 and thus, is not addressed here (Refer to Discussion of Change L03 associated with ITS 3.6.3, Containment Isolation Valves). This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

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

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

3.9.4.b b. One door in each air lock is ~~[capable of being]~~ closed, and ②

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

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

3.9.4.c.2 2. Capable of being closed by an OPERABLE Containment ~~Purge and Exhaust~~ Isolation ~~System~~ valve. ①

3.9.4 Note

---NOTE---

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

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

ACTIONS

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

CTS

SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY	
4.9.4.a DOC L01	SR 3.9.3.1	Verify each required containment penetration is in the required status.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	②
4.9.4.b DOC L02 DOC L03	SR 3.9.3.2	-------------------------------NOTE------------------------------- Not required to be met for containment ~~purge and exhaust~~ isolation valve(s) in penetrations closed to comply with LCO 3.9.3.c.1. --		①
		Verify each required containment ~~purge and exhaust~~ isolation valve actuates to the isolation position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	②

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

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

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

3.9.4.b b. One door in each air lock is ~~[capable of being]~~ closed, and ②

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

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

3.9.4.c.2 2. Capable of being closed by an OPERABLE Containment ~~Purge and Exhaust~~ Isolation ~~System~~ valve. ①

3.9.4 Note

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

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

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

ACTIONS

3.9.4 Action ②

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.9.4.a DOC L01	SR 3.9.3.1	Verify each required containment penetration is in the required status.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	②
4.9.4.b DOC L02 DOC L03	SR 3.9.3.2	-------------------------------NOTE------------------------------- Not required to be met for containment ~~purge and exhaust~~ isolation valve(s) in penetrations closed to comply with LCO 3.9.3.c.1. --- Verify each required containment ~~purge and exhaust~~ isolation valve actuates to the isolation position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3, CONTAINMENT PENETRATIONS

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

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

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

B 3.9 REFUELING OPERATIONS

B 3.9.3 Containment Penetrations

BASES

BACKGROUND

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

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained well within the requirements of 10 CFR 50.67 ~~100~~. ① Additionally, the containment structure provides radiation shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. During movement of ~~[~~recently~~]~~ ② irradiated fuel assemblies within containment, the equipment hatch must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced.

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

BASES

BACKGROUND (continued)

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

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

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

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

~~[or]~~

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

The ~~other~~ containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated ~~on at least one side~~. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods must be approved and may include use of a material that can provide a temporary, atmospheric pressure ventilation barrier for the other containment penetrations during ~~[~~recently~~]~~ irradiated fuel movements~~ (Ref. 1)~~. ① ② ①

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident ~~[involving handling recently irradiated fuel]~~. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. ~~2~~ 1). Fuel handling accidents, ~~analyzed in Ref. 3, include~~ involve dropping a ② ①

①

INSERT 1

The Containment Purge and Exhaust System includes 48 inch purge supply and exhaust penetrations, and a second subsystem, the Hydrogen Purge System, includes a 2 inch makeup penetration (containing two manual isolation valves) and a 2 inch exhaust penetration (containing two 3 inch air operated isolation valves). During MODES 1, 2, 3, and 4, the two 48 inch valves in the purge supply and exhaust penetrations are secured in the closed position. The 2 inch and 3 inch valves can be opened intermittently. The purge supply and exhaust valves (48 inch and 3 inch) are closed automatically by the containment isolation signal (CIS).

BASES

APPLICABLE SAFETY ANALYSES (continued)

single irradiated fuel assembly ~~and handling tool or a heavy object onto other irradiated fuel assemblies~~. INSERT 2 ~~The requirements of LCO 3.9.6, "Refueling Water Level," in conjunction with minimum decay time of [72] hours prior to [irradiated fuel movement with containment closure capability or a minimum decay time of [x] days without containment closure capability], ensure that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are well within the guideline values specified in 10 CFR 100. The acceptance limits for offsite radiation exposure are contained in Standard Review Plan Section 15.7.4, Rev. 1 (Ref. 3), which defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values.~~ ①

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

LCO

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The allowance to have containment personnel air lock doors open and penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated during fuel movement is based on (1) confirmatory dose calculations of a fuel handling accident as approved by the NRC staff which indicate acceptable radiological consequences and (2) commitments from the licensee to implement acceptable administrative procedures that ensure in the event of a refueling accident (even though the containment fission product control function is not required to meet acceptable dose consequences) that the open air lock can and will be promptly closed following containment evacuation and that the open penetration(s) can and will be promptly closed. The time to close penetrations or combination of penetrations shall be included in the confirmatory dose calculations.~~
~~---~~ ③

This LCO limits the consequences of a fuel handling accident ~~[~~involving handling recently irradiated fuel~~]~~ in containment by limiting the potential escape paths for fission product radioactivity released within containment. ② The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment purge supply and exhaust isolation valves capable of being closed by an OPERABLE CIS. ~~and exhaust penetrations [and the containment personnel air locks].~~ ② ~~For the OPERABLE containment purge and exhaust penetrations, this LCO ensures that these penetrations are isolable by the Containment Purge and Exhaust Isolation System.~~ ① The

①

INSERT 2

The fuel handling accident analysis assumes movement of an irradiated fuel assembly that has not occupied part of a critical reactor core within the previous 72 hours. Additionally, containment closure is not assumed for a fuel handling accident inside containment. The Technical Requirements Manual includes a decay time requirement that no fuel movement will commence until 72 hours after shutdown. This ensures that the fuel handling accident analysis assumptions, including an open containment, are preserved.

The requirements of LCO 3.9.6, "Refueling Water Level," in conjunction with the minimum decay time prior to irradiated fuel movement, ensure that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are a small fraction of the guideline values specified in 10 CFR 50.67. The acceptance limits for offsite radiation exposure are contained in Table 1 of Standard Review Plan Section 15.0.1, Rev. 0 (Ref. 2), which are a small fraction of the 10 CFR 50.67 values.

BASES

LCO (continued)

OPERABILITY requirements for this LCO ensure that the automatic ~~purge and exhaust~~ valve closure times specified in the U FSAR can be achieved ~~and therefore meet the assumptions used in the safety analysis to ensure releases through the valves are terminated, such that the radiological doses are within the acceptance limit.~~ The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during movement of recently irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident. ① ①

~~The containment personnel air lock doors may be open during movement of [recently] irradiated fuel in the containment provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, one personnel airlock door will be closed following an evacuations of containment.~~ ①

APPLICABILITY

The containment penetration requirements are applicable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies within containment ~~because this is when there is a potential for the limiting~~ to mitigate a fuel handling accident in the unlikely event it occurs within 72 hours of a unit shutdown. In MODES 1, 2, 3, and 4, containment penetration requirements are addressed by LCO 3.6.1~~, "Containment."~~ In MODES 5 and 6, when movement of irradiated fuel assemblies within containment is not being conducted, the potential for a fuel handling accident does not exist. ~~[~~Additionally, due to radioactive decay, ~~a fuel h~~an~~dling~~ accident that involves ~~involving~~ handling non-recently irradiated fuel (i.e., fuel that has not occupied part of a critical reactor core within the previous 72 hours ~~[X] days~~) will result in doses that are well within the guideline values specified in 10 CFR ~~100~~ 50.67 even without containment closure capability.~~]~~ Therefore, under these conditions no requirements are placed on containment penetration status. ② ① ②

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The addition of the term "recently" associated with handling irradiated fuel in all of the containment function Technical Specification requirements is only applicable to those licensees who have demonstrated by analysis that after sufficient radioactive decay has occurred, off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).~~ ③

BASES

APPLICABILITY (continued)

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

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

- ~~During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification operability amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.~~ ③
- ~~A single normal or contingency method to promptly close primary or secondary containment penetrations should be developed. Such prompt methods need not completely block the penetration or be capable of resisting pressure.~~

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

ACTIONS

A.1 ~~and A.2~~ ①

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

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. The Surveillance on the open ~~purge and exhaust~~ containment isolation valves in penetrations with direct access from the containment atmosphere to the outside atmosphere will demonstrate that the valves ① are not blocked from closing. Also, the Surveillance will demonstrate that each valve operator has motive power, which will ensure each valve is capable of being closed by an OPERABLE automatic CIS ~~containment purge and exhaust isolation signa~~l. ①

~~[The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within the containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Ref. 3).~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ③
~~---]~~

SR 3.9.3.2

This Surveillance demonstrates that each required containment isolation ~~purge and exhaust~~ valve in penetrations with direct access from the containment atmosphere to the outside atmosphere actuates to its isolation position on manual initiation or on an actual ① or simulated CIS high radiation signal. ~~[The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.4 [(Digital) or 3.3.3 (Analog)], "Miscellaneous Actuations," the Containment Purge Isolation Signal System requires a CHANNEL CHECK every 7 days and a CHANNEL FUNCTIONAL TEST every 31 days to ensure the channel OPERABILITY during refueling~~ ②

SURVEILLANCE REQUIREMENTS (continued)

~~operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS. SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the INSERVICE TESTING PROGRAM requirements.~~ ②

~~OR~~

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

~~--------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~--~~]

~~These surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.~~ ②

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

REFERENCES

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

1. ~~2~~. U FSAR, Section ~~[ ]~~ 15.4.3. ①

2. ~~3~~. NUREG-0800, Section ~~15.7.4, Rev. 1, July 1981~~ 15.0.1, Rev. 0, July 2000. ①

B 3.9 REFUELING OPERATIONS

B 3.9.3 Containment Penetrations

BASES

BACKGROUND

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

The containment serves to contain fission product radioactivity that may be released from the reactor core following an accident, such that offsite radiation exposures are maintained well within the requirements of 10 CFR 50.67 ~~100~~. Additionally, the containment structure provides radiation ① shielding from the fission products that may be present in the containment atmosphere following accident conditions.

The containment equipment hatch, which is part of the containment pressure boundary, provides a means for moving large equipment and components into and out of containment. During movement of ~~[~~recently~~]~~ ② irradiated fuel assemblies within containment, the equipment hatch must be held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced.

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

BASES

BACKGROUND (continued)

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

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

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

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

~~[or]~~

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

The ~~other~~ containment penetrations that provide direct access from containment atmosphere to outside atmosphere must be isolated ~~on at least one side~~. Isolation may be achieved by an OPERABLE automatic isolation valve, or by a manual isolation valve, blind flange, or equivalent. Equivalent isolation methods must be approved and may include use of a material that can provide a temporary, atmospheric pressure ventilation barrier for the other containment penetrations during ~~[~~recently~~]~~ irradiated fuel movements ~~(Ref. 1)~~. ① ② ①

APPLICABLE SAFETY ANALYSES

During movement of irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident ~~[involving handling recently irradiated fuel]~~. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. ~~2~~ 1). Fuel handling accidents, ~~analyzed in Ref. 3, include~~ involve dropping a ② ①

①

INSERT 1

The Containment Purge and Exhaust System includes 48 inch purge supply and exhaust penetrations and 8 inch purge supply and exhaust penetrations. The second subsystem, a mini purge system, includes an 8 inch purge supply penetration and an 8 inch exhaust penetration. During MODES 1, 2, 3, and 4, the two 48 inch valves in the purge supply and exhaust penetrations are secured in the closed position. The two 8 inch valves can be opened intermittently. The purge supply and exhaust valves (48 inch and 8 inch) are closed automatically by the containment isolation actuation signal (CIAS).

BASES

APPLICABLE SAFETY ANALYSES (continued)

single irradiated fuel assembly ~~and handling tool or a heavy object onto other irradiated fuel assemblies.~~ INSERT 2 ~~The requirements of LCO 3.9.6, "Refueling Water Level," in conjunction with minimum decay time of [72] hours prior to [irradiated fuel movement with containment closure capability or a minimum decay time of [x] days without containment closure capability], ensure that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are well within the guideline values specified in 10 CFR 100. The acceptance limits for offsite radiation exposure are contained in Standard Review Plan Section 15.7.4, Rev. 1 (Ref. 3), which defines "well within" 10 CFR 100 to be 25% or less of the 10 CFR 100 values.~~ ①

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

LCO

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The allowance to have containment personnel air lock doors open and penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated during fuel movement is based on (1) confirmatory dose calculations of a fuel handling accident as approved by the NRC staff which indicate acceptable radiological consequences and (2) commitments from the licensee to implement acceptable administrative procedures that ensure in the event of a refueling accident (even though the containment fission product control function is not required to meet acceptable dose consequences) that the open air lock can and will be promptly closed following containment evacuation and that the open penetration(s) can and will be promptly closed. The time to close penetrations or combination of penetrations shall be included in the confirmatory dose calculations.~~ ③
~~---~~

This LCO limits the consequences of a fuel handling accident ~~[~~involving handling recently irradiated fuel~~]~~ in containment by limiting the potential escape paths for fission product radioactivity released within containment. ② The LCO requires any penetration providing direct access from the containment atmosphere to the outside atmosphere to be closed except for the OPERABLE containment purge supply and exhaust isolation valves capable of being closed by an OPERABLE CIS. ~~and exhaust penetrations [and the containment personnel air locks]. For the OPERABLE containment purge and exhaust penetrations, this LCO ensures that these penetrations are isolable by the Containment Purge and Exhaust Isolation System.~~ ② ① The

①

INSERT 2

The fuel handling accident analysis assumes movement of an irradiated fuel assembly that has not occupied part of a critical reactor core within the previous 72 hours. Additionally, containment closure is not assumed for a fuel handling accident inside containment. The Technical Requirements Manual includes a decay time requirement that no fuel movement will commence until 72 hours after shutdown. This ensures that the fuel handling accident analysis assumptions, including an open containment, are preserved.

The requirements of LCO 3.9.6, "Refueling Water Level," in conjunction with the minimum decay time prior to irradiated fuel movement, ensure that the release of fission product radioactivity, subsequent to a fuel handling accident, results in doses that are a small fraction of the guideline values specified in 10 CFR 50.67. The acceptance limits for offsite radiation exposure are contained in Table 1 of Standard Review Plan Section 15.0.1, Rev. 0 (Ref. 2), which are a small fraction of the 10 CFR 50.67 values.

BASES

LCO (continued)

U

OPERABILITY requirements for this LCO ensure that the automatic ~~purge and exhaust~~ valve closure times specified in the FSAR can be achieved ~~and therefore meet the assumptions used in the safety analysis to ensure releases through the valves are terminated, such that the radiological doses are within the acceptance limit.~~ The LCO is modified by a Note allowing penetration flow paths with direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls. Administrative controls ensure that 1) appropriate personnel are aware of the open status of the penetration flow path during movement of irradiated fuel assemblies within containment, and 2) specified individuals are designated and readily available to isolate the flow path in the event of a fuel handling accident. ① ①

recently

~~The containment personnel air lock doors may be open during movement of [recently] irradiated fuel in the containment provided that one door is capable of being closed in the event of a fuel handling accident. Should a fuel handling accident occur inside containment, one personnel airlock door will be closed following an evacuations of containment.~~ ①

APPLICABILITY

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

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in the unlikely event it occurs within 72 hours of a unit shutdown.

that involves

non-

72 hours

not

50.67

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The addition of the term "recently" associated with handling irradiated fuel in all of the containment function Technical Specification requirements is only applicable to those licensees who have demonstrated by analysis that after sufficient radioactive decay has occurred, off-site doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100).~~ ③

BASES

APPLICABILITY (continued)

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

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

~~- During fuel handling/core alterations, ventilation system and radiation monitor availability (as defined in NUMARC 91-06) should be assessed, with respect to filtration and monitoring of releases from the fuel. Following shutdown, radioactivity in the fuel decays away fairly rapidly. The basis of the Technical Specification operability amendment is the reduction in doses due to such decay. The goal of maintaining ventilation system and radiation monitor availability is to reduce doses even further below that provided by the natural decay.~~ ③

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

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

ACTIONS

A.1~~ and A.2~~ ①

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

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

This Surveillance demonstrates that each of the containment penetrations required to be in its closed position is in that position. The Surveillance on the open ~~purge and exhaust~~ containment isolation valves in penetrations with direct access from the containment atmosphere to the outside atmosphere will demonstrate that the valves ① are not blocked from closing. Also, the Surveillance will demonstrate that each valve operator has motive power, which will ensure each valve is capable of being closed by an OPERABLE automatic CIS ~~containment purge and exhaust isolation signa~~l. ①

~~[The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within the containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO. As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Ref. 3).~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ③
~~--]~~

SR 3.9.3.2

This Surveillance demonstrates that each required containment isolation ~~purge and exhaust~~ ① valve in penetrations with direct access from the containment atmosphere to the outside atmosphere actuates to its isolation position on manual initiation or on an actual or simulated CIS high radiation signal. ~~[The 18 month Frequency maintains~~ ② ~~consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.4 [(Digital) or 3.3.3 (Analog)], "Miscellaneous Actuations," the Containment Purge Isolation Signal System requires a CHANNEL CHECK every 7 days and a CHANNEL FUNCTIONAL TEST every 31 days to ensure the channel OPERABILITY during refueling~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS. SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the INSERVICE TESTING PROGRAM requirements.~~ ②

~~OR~~

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

~~--------------------------------REVIEWER'S NOTE--------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~--~~]

~~These surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.~~ ②

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

REFERENCES

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

1. ~~2~~. UFSAR, Section ~~[ ]~~ 15.7.4. ①

2. ~~3~~. NUREG-0800, Section ~~15.7.4, Rev. 1, July 1981~~ 15.0.1, Rev. 0, July 2000. ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3, BASES, CONTAINMENT PENETRATIONS

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

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.3, CONTAINMENT PENETRATIONS

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

ATTACHMENT 4

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

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

A01

REFUELING OPERATIONS

SHUTDOWN COOLING AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

SDC

LCO 3.9.4 ~~3.9.8.1~~ ~~At least~~ one ~~shutdown cooling~~ loop shall be OPERABLE and in operation*.

with

Applicability **APPLICABILITY:** MODE 6 ~~when~~ the water level above the top of ~~irradiated fuel assemblies seated within~~ the reactor ~~pressure~~ vessel ~~is greater than or equal to~~ 23 feet. flange

< ≥

M01

ACTION:

Immediately M04

Add ACTION A.1 M02

Add ACTION A.3 A02

required SDC inoperable or not

ACTION A ~~a.~~ ~~With less than~~ one ~~shutdown cooling~~ loop in operation, suspend ~~all operations involving an increase in reactor decay heat load or~~ operations that A02

ACTION A.2 would cause introduction into the RCS, ~~coolant~~ with boron concentration less than required to meet the boron concentration of ~~Technical Specification~~ 3.9.1. of coolant LCO

ACTION A.6 Close ~~all containment~~ penetration~~s~~ providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. each

with a manual or automatic isolation valve, blind flange, or equivalent

Add ACTIONS A.4, A.5, A.6 L01

~~b.~~ ~~The provisions of Specification 3.0.3 are not applicable.~~ A03

SURVEILLANCE REQUIREMENTS

Verify SDC

SR 3.9.4.1 ~~4.9.8.1~~ ~~At least~~ one ~~shutdown cooling loop shall be verified to be~~ in operation and circulating reactor coolant at a flow rate ~~of greater than or equal to~~ 3000 gpm in accordance with the Surveillance Frequency Control Program. ≥

SDC

SR 3.9.4.2 ~~4.9.8.1.1~~ Verify required ~~shutdown cooling~~ loop locations susceptible to gas accumulation are sufficiently filled with water in accordance with the Surveillance Frequency Control Program.

---

required SDC ≤

SR 3.9.4 Note * The ~~shutdown cooling~~ loop may be removed from operation for ~~up to~~ 1 hour per 8 hour period ~~during the performance of CORE ALTERATIONS in the vicinity of reactor pressure vessel hot legs,~~ provided no operations are permitted that would cause introduction into the ~~RCS,~~ ~~coolant~~ with boron concentration less than required to meet the ~~SHUTDOWN MARGIN~~ of ~~Technical Specification~~ 3.9.1. L02

of coolant that

LCO

minimum required boron concentration

Reactor Coolant System

A01

REFUELING OPERATIONS

3/4.9.8 SHUTDOWN COOLING AND COOLANT CIRCULATION

HIGH WATER LEVEL

LIMITING CONDITION FOR OPERATION

SDC

LCO 3.9.4 ~~3.9.8.1~~ ~~At least~~ one ~~shutdown cooling~~ loop shall be OPERABLE and in operation.*

with

Applicability **APPLICABILITY:** MODE 6 ~~when~~ the water level above the top of the reactor ~~pressure~~ vessel flange ~~is greater than or equal to~~ 23 feet.

≥

Immediately — M04

Add ACTION A.3 — A02

ACTION:

One required SDC inoperable not

ACTION A ~~With no shutdown cooling~~ loop ~~OPERABLE~~ and in operation, suspend ~~all operations involving an increase in reactor decay heat load or~~ operations that would cause introduction into the RCS~~,~~ ~~coolant~~ with boron concentration less than required to meet the boron concentration of ~~Technical~~ LCO ~~Specification~~ 3.9.1 ~~and within 1 hour~~ initiate corrective action to return the required shutdown cooling loop to OPERABLE and operating status ~~as soon as possible~~. Close ~~all containment~~ penetration~~s~~ providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

A02

of coolant

ACTION A.2

ACTION A.1

ACTION A.6

each

Immediately

with a manual or automatic isolation valve, blind flange, or equivalent

L01

Add ACTIONS A.4, A.5, A.6

M03

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1, SR 3.9.5.2 ~~4.9.8.1~~ In accordance with the Surveillance Frequency Control Program:

Verify SDC

SR 3.9.5.1 ~~a.~~ ~~At least~~ one ~~shutdown cooling~~ loop ~~shall be verified to be~~ in operation

at a and circulating

SR 3.9.5.1 ~~b.~~ ~~The total~~ flow rate of reactor coolant ~~to the reactor pressure vessel shall be verified to be greater than or equal to~~ ≥ 3000 gpm.**

SDC

SR 3.9.5.2 ~~c.~~ Verify required ~~shutdown cooling~~ loop locations susceptible to gas accumulation are sufficiently filled with water.

---

required SDC ≤ Reactor Coolant System

LCO 3.9.4 Note * The ~~shutdown cooling~~ loop may be removed from operation for ~~up to~~ 1 hour per 8~~-~~hour period ~~during the performance of CORE ALTERATIONS in the vicinity of reactor pressure vessel hot legs,~~ provided no operations are permitted that would cause introduction into the ~~RCS,~~ ~~coolant~~ with boron concentration less than required to meet the ~~SHUTDOWN MARGIN~~ of ~~Technical Specification~~ 3.9.1.

L02

of coolant

LCO

that

minimum required boron concentration

≥ when

SR 3.9.4.1 Note ** ~~The~~ reactor coolant flow rate ~~requirement~~ may be reduced to 1850 gpm ~~if the following conditions are satisfied before the reduced requirement is implemented:~~ the reactor ~~has been determined to have been~~ subcritical ~~for at least~~ 125 hours, the maximum RCS temperature is ≤ 117°F, and ~~the~~ temperature ~~of CCW~~ to the ~~shutdown cooling~~ heat exchanger is ≤ 87°F.

is

component cooling water ≥ SDC

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

ADMINISTRATIVE CHANGES

A01 In the conversion of the St. Lucie Plant (PSL) Unit 1 and Unit 2, 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. 5.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS).

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

A02 Unit 1 CTS 3.9.8.1 Action a. states, in part, that with less than one shutdown cooling (SDC) loop in operation, suspend all operations involving an increase in the reactor decay heat load of the RCS. Similarly, Unit 2 CTS 3.9.8.1 Action states, in part, that with no SDC loop in operation, suspend all operations involving an increase in the reactor decay heat load of the RCS. ITS 3.9.4 Required Action A.3 states, in part, that with one required SDC loop inoperable or not in operation, suspend loading irradiated fuel assemblies in the core. This changes the CTS by requiring that the loading of irradiated fuel assemblies be suspended instead of requiring that all operations involving an increase in the reactor decay heat load be suspended.

This change is acceptable because the requirements have not changed. The reactor decay heat load is generated only by irradiated fuel. The only method of increasing the decay heat load of a reactor in MODE 6 is to load additional irradiated fuel assemblies into the core. Therefore, the CTS and ITS requirements are equivalent. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 **Unit 1 only:** CTS 3.9.8.1 Action b. states "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.4 does not include this statement. This changes CTS by deleting the Specification 3.0.3 exception. This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS LCO 3.0.3 exception is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 **Unit 1 only:** CTS 3.9.8.1 requires at least one SDC loop to be OPERABLE and in operation in MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is ≥ 23 feet. ITS 3.9.4 requires one SDC loop to be OPERABLE and in operation when water level is ≥ 23 feet above the top of the reactor vessel flange. This changes the CTS by changing the point at which one SDC loop is required to be OPERABLE and in operation.

The purpose of CTS 3.9.8.1 is to ensure adequate SDC is available and in operation for heat removal and coolant circulation. CTS 3.9.8.1 and CTS 3.9.8.2

provide the requirements when water level is ≥ 23 feet and < 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel, respectively. When water level is ≥ 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel, only one SDC loop is required to be OPERABLE and in operation. When water level is < 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel, two SDC loops are required to be OPERABLE, and one must be in operation. In ITS 3.9.4 and ITS 3.9.5, the equivalent ITS requirements, the water level reference point is the top of the reactor vessel flange, not the top of the irradiated fuel assemblies seated within the reactor pressure vessel. Changing this reference point effectively requires a larger complement of SDC loops to be OPERABLE between 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel and 23 feet above the top of the reactor vessel flange. Therefore, this change is acceptable because more loops will be required to be OPERABLE under certain water level conditions to ensure the decay heat can be removed and the coolant circulated. This change is designated more restrictive because more SDC loops are required OPERABLE in the ITS under certain water level conditions than were required in the CTS.

M02 **Unit 1 only:** CTS 3.9.8.1 Actions do not include an action to immediately initiate action to satisfy the SDC loop requirements in the event the SDC loop requirements are not met. ITS 3.9.4 Required Action A.1 requires that action be immediately initiated to satisfy the SDC loop requirements. This changes the CTS by requiring action be taken immediately to satisfy the SDC loop requirements.

The purpose of CTS 3.9.8.1 is to ensure that adequate decay heat removal and coolant circulation are available in MODE 6. Although decay heat is removed from the Reactor Coolant System via natural circulation to the bulk of water contained in the refueling cavity, this method of heat transfer can continue for only a discrete amount of time before boiling would occur. In addition, with no forced circulation, RCS flow may not be adequate to support coolant mixing to maintain uniform boron concentrations. This change is acceptable because it requires that action be initiated to restore the SDC loop requirements in order to restore forced coolant flow and heat removal. This change is designated as more restrictive because additional actions will be required in the ITS than are required in the CTS.

M03 **Unit 2 only**: CTS Action states, in part, within one (1) hour initiate corrective action to return the required shutdown cooling loop to operation. ITS Required Action A.1 states immediately initiate action to restore one SDC loop to OPERABLE status and operation. This changes the CTS by revising the Actions to “immediately” require actions to be taken when a required SDC loop is not in operation.

This change is acceptable because it provides appropriate immediate actions for a required SDC loop not in operation. This action is required to assure continued safe operation. Action to restore one SDC loop to OPERABLE status and operation is necessary to be able to remove the decay heat generated by the reactor. The immediate Completion Time reflects the importance of maintaining operation for decay heat removal. This change is designated as more restrictive because the time to complete the actions is added in the ITS that is not required in the CTS.

M04 CTS 3.9.8.1 Actions do not include a Completion Time to immediately initiate action to suspend operations that would cause the introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of Technical Specification 3.9.1. ITS 3.9.4 Required Action A.2 requires that action be immediately initiated to suspend operations that would cause introduction of coolant into the RCS that does not meet the minimum boron concentration requirement. This changes the CTS by requiring that action be taken immediately to perform a Required Action.

The purpose of CTS 3.9.8.1 is to ensure that adequate decay heat removal and coolant circulation are available in MODE 6. If SDC loop requirements are not met, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Immediately suspending operations that could result in failure to meet the minimum boron concentration limit is required to assure continued safe operation. This change is designated as more restrictive because a Completion Time in ITS is being added to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* Unit 1 CTS 3.9.8.1 Action a. states, in part, that with less than one SDC loop in operation, close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. Similarly, Unit 2 CTS 3.9.8.1 Action states, in part, that with no SDC loop in operation, close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. ITS 3.9.4 Required Actions A.4, A.5, and A.6 state that with the SDC loop requirements not met, within 4 hours close and secure the equipment hatch with at least four bolts, close one door in each air lock, and verify each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent, or is capable of being closed by an OPERABLE Containment Isolation System. This changes the CTS Actions by specifying the applicable containment penetration requirements to satisfy “each penetration” and by separating the CTS action into allowing penetrations capable of being closed by an OPERABLE Containment Isolation System to remain open when the SDC requirements are not met.

The purpose of the CTS 3.9.8.1 Action is to ensure that radioactive material does not escape the containment should the SDC requirements continue to not be met and boiling occurs in the core. Therefore, containment penetrations are closed to seal the containment. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of an accident occurring during the repair period. The Required Actions are consistent with the actions taken for containment closure in CTS 3.9.4 (ITS 3.9.3). Penetrations which can be closed by an OPERABLE Containment Isolation System do not need to be closed if SDC is inoperable, since the presence of radioactivity in the containment will cause the valves to close automatically, thus performing the isolation function. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 CTS 3.9.8.1 Footnote * states, in part, that the SDC loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs, provided no operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SHUTDOWN MARGIN of Technical Specification 3.9.1. ITS LCO 3.9.4 Note states that the required SDC loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, "Boron Concentration." The allowance to remove SDC from operation is no longer restricted to CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs. This changes the CTS by allowing the SDC loop to be removed from operation during conditions other than CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs.

The purpose of the allowance to remove the SDC loop from operation for up to 1 hour per 8 hour period is to perform certain activities that cannot be performed with a SDC loop in service; for example, core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles, and RCS to SDC isolation valve testing. This change is acceptable because, during the 1 hour period, decay heat is removed by natural convection due to the large mass of water in the refueling cavity and appropriate controls are continue to be provided in the Technical Specifications during periods when SDC is not in operation prohibiting activities that would cause introduction of coolant into the RCS with boron concentration less than the minimum required boron concentration to preserve SHUTDOWN MARGIN and avoid unexpected reactivity changes. This change is designated as less restrictive because the scope of the current allowance is expanded to be less stringent in the ITS than applied in the CTS.

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

CTS

3.9 REFUELING OPERATIONS

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

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

3.9.8.1 Footnote *

---NOTE---

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

3

2

3

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.9.8.1 Action DOC M01	A. One required SDC loop inoperable or not in operation.	A.1 Initiate action to restore SDC loop to OPERABLE status and operation.	Immediately
		AND	
3.9.8.1 Action a. DOC M04		A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
		AND	
DOC M02		A.3 Suspend loading irradiated fuel assemblies in the core.	Immediately
		AND	

1

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L01		A.4 Close equipment hatch and secure with ~~[~~four~~]~~ bolts.	4 hours	②
		<u>AND</u>		
DOC L01		A.5 Close one door in each air lock.	4 hours	
		<u>AND</u>		
3.9.8.1 Action		A.6~~.1~~ Verify ~~Close~~ each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent~~.~~; or	4 hours	④
		~~OR~~		
DOC L01		~~A.6.2 Verify each penetration~~ is capable of being closed by an OPERABLE Containment ~~Purge and Exhaust~~ Isolation System.	~~4 hours~~	④ ①

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.9.8.1	SR 3.9.4.1	Verify one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ ~~[2200]~~ 3000 gpm.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ②
4.9.8.1.1	SR 3.9.4.2	Verify required SDC loop locations susceptible to gas accumulation are sufficiently filled with water.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ②

3.9 REFUELING OPERATIONS

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

3.9.8.1 LCO 3.9.4 One SDC loop shall be OPERABLE and in operation. ③

3.9.8.1 Footnote *

--NOTE--

The required SDC loop may be removed from operation for ≤ 1 hour per ~~[~~8~~]~~ hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1~~.~~, "Boron Concentration." ② ③

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.9.8.1 Action DOC L03	A. One required SDC loop inoperable or not in operation.	A.1 Initiate action to restore SDC loop to OPERABLE status and operation.	Immediately
		AND	
3.9.8.1 Action DOC M04		A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately
		AND	
		A.3 Suspend loading irradiated fuel assemblies in the core.	Immediately
		AND	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L01		A.4 Close equipment hatch and secure with ~~[~~four~~]~~ bolts.	4 hours	②
		AND		
DOC L01		A.5 Close one door in each air lock.	4 hours	
		AND		
3.9.8.1 Action		A.6~~.1~~ Verify ~~Close~~ each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent~~.~~; or	4 hours	④
		~~OR~~		
DOC L01		~~A.6.2 Verify each penetration~~ is capable of being closed by an OPERABLE Containment ~~Purge and Exhaust~~ Isolation System.	~~4 hours~~	④ ①

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.9.8.1.a 4.9.8.1.b 4.9.8.1.b Footnote **	SR 3.9.4.1	Verify one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ ~~[2200]~~ 3000 gpm. --------------------------------NOTE-------------------------- Reactor coolant flow rate may be reduced to ≥ 1850 gpm when the reactor is subcritical ≥ 125 hours, the maximum RCS temperature is ≤ 117°F, and component cooling water temperature to the SDC heat exchanger is ≤ 87°F. ---	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ⑤ ②
4.9.8.1.c	SR 3.9.4.2	Verify required SDC loop locations susceptible to gas accumulation are sufficiently filled with water.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ②

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

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

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

3. Change made to be consistent with the ISTS format as specified in the Writer's Guide for the Improved Standard Technical Specifications, TSTF GG 05 01 and other Specifications; for example, LCO 3.8.2.a reference to LCO 3.8.10, “Distribution Systems – Shutdown.”

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

5. **Unit 2 only:** A Note is added to ITS SR 3.9.4.1 that allows a reduction of reactor coolant flow rate when specific conditions are met consistent with the St. Lucie Plant Unit 2 current licensing basis.

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

B 3.9 REFUELING OPERATIONS

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

BASES

BACKGROUND

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

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to inadequate cooling of the reactor fuel due to a resulting loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to the boron plating out on components near the areas of the boiling activity, and because of the possible addition of water to the reactor vessel with a lower boron concentration than is required to keep the reactor subcritical. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is a fission product barrier. One ~~train~~ loop of the SDC System is required to be operational in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to prevent this challenge. The LCO does permit the SDC pump to be removed from operation for short durations under the condition that the boron concentration is not diluted. This conditional stopping of the SDC pump does not result in a challenge to the fission product barrier. ①

SDC and Coolant Circulation - High Water Level satisfies Criterion ~~2~~ 4 of 10 CFR 50.36(c)(2)(ii). ③

BASES

LCO

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

a. Removal of decay heat, and ①

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

~~c. Indication of reactor coolant temperature~~. ①

An OPERABLE SDC loop includes an SDC pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path ~~and to determine the low end temperature~~. The flow path starts in one of the RCS hot legs and is returned to at least one of the RCS cold legs. ①
Management of gas voids is important to SDC System OPER~~E~~ABILITY. ④

Additionally, since the SDC System is a manually operated system (i.e., it is not automatically actuated), each SDC loop is OPERABLE if it can be manually aligned (remote or local) to the SDC mode.

Both SDC pumps may be aligned to the Refueling Water Storage Tank to support filing or draining the refueling cavity or for performance of required testing. ①

The LCO is modified by a Note that allows the required operating SDC loop to be removed from operation for up to 1 hour in each 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1~~.~~, Boron Concentration.” Boron concentration reduction with coolant ⑤
at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles, and RCS to SDC isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity.

APPLICABILITY

One SDC loop must be in operation in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.6, "Refueling Water Level." Requirements for the SDC System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS)~~, and~~ ①
~~Section 3.5, Emergency Core Cooling Systems (ECCS)~~. SDC loop requirements in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, are located in LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level."

ACTIONS

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

A.1

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

A.2

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

A.3

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

A.4, A.5~~, A.6.1,~~ and A.6~~.2~~ ⑥

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

a. The equipment hatch must be closed and secured with ~~[~~four~~]~~ bolts, ②

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

BASES

ACTIONS (continued)

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

①

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1

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

②

~~OR~~

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

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

②

①

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.9.4.2

SDC System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required SDC loop(s) and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of SDC System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The SDC System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If the accumulated gas is eliminated or brought within the acceptance criteria limits during performance of the Surveillance, the Surveillance is met and past system OPERABILITY is evaluated under the Corrective Action Program. If it is determined by subsequent evaluation that the SDC System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

SDC System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible

BASES

SURVEILLANCE REQUIREMENTS (continued)

location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~[The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the SDC System piping and the procedural controls governing system operation.~~ ②

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

~~-----------------------------------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.~~ ②
~~---]~~

REFERENCES 1. U FSAR, Section ~~[ ]~~ 15.2.4. ① ②

B 3.9 REFUELING OPERATIONS

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

BASES

BACKGROUND

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

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to inadequate cooling of the reactor fuel due to a resulting loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to the boron plating out on components near the areas of the boiling activity, and because of the possible addition of water to the reactor vessel with a lower boron concentration than is required to keep the reactor subcritical. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is a fission product barrier. One ~~train~~ loop of the SDC System is required to be ① operational in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to prevent this challenge. The LCO does permit the SDC pump to be removed from operation for short durations under the condition that the boron concentration is not diluted. This conditional stopping of the SDC pump does not result in a challenge to the fission product barrier.

SDC and Coolant Circulation - High Water Level satisfies Criterion ~~2~~ 4 of ③ 10 CFR 50.36(c)(2)(ii).

BASES

LCO

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

a. Removal of decay heat, and ①

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

~~c. Indication of reactor coolant temperature~~. ①

An OPERABLE SDC loop includes an SDC pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path ~~and to determine the low end temperature~~. The flow path starts in one of the RCS hot legs and is returned to at least one of the RCS cold legs. ① Management of gas voids is important to SDC System OPER~~E~~ABILITY. ④

Additionally, since the SDC System is a manually operated system (i.e., it is not automatically actuated), each SDC loop is OPERABLE if it can be manually aligned (remote or local) to the SDC mode.

Both SDC pumps may be aligned to the Refueling Water Storage Tank to support filing or draining the refueling cavity or for performance of required testing. ①

The LCO is modified by a Note that allows the required operating SDC loop to be removed from operation for up to 1 hour in each 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1~~.~~, Boron Concentration.” ⑤ Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles, and RCS to SDC isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity. ①

APPLICABILITY

One SDC loop must be in operation in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.6, "Refueling Water Level." Requirements for the SDC System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS)~~, and Section 3.5, Emergency Core Cooling Systems (ECCS)~~. ① SDC loop requirements in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, are located in LCO 3.9.5, "Shutdown Cooling (SDC) and Coolant Circulation - Low Water Level."

ACTIONS

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

A.1

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

A.2

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

A.3

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

A.4, A.5~~, A.6.1,~~ and A.6~~.2~~ ⑥

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

a. The equipment hatch must be closed and secured with ~~[~~four~~]~~ bolts, ②

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

BASES

ACTIONS (continued)

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

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1

This Surveillance demonstrates that the SDC loop is in operation and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. ~~[The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator in the control room for monitoring the SDC System.~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

The SR is modified by a Note that provides an allowance to reduce the required RCS flow rate when specific conditions are met. The time after reactor shutdown, RCS temperature, and CCW temperature to the shutdown cooling heat exchanger are initial conditions to ensure a reduced SDC flow rate will not result in a temperature transient exceeding the established refueling operational temperature limit. ①

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.9.4.2

SDC System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the required SDC loop(s) and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of SDC System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

The SDC System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If the accumulated gas is eliminated or brought within the acceptance criteria limits during performance of the Surveillance, the Surveillance is met and past system OPERABILITY is evaluated under the Corrective Action Program. If it is determined by subsequent evaluation that the SDC System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

SDC System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~[The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the SDC System piping and the procedural controls governing system operation.~~ ②

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

~~-----------------------------------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.~~ ②
~~--]~~

REFERENCES 1. U FSAR, Section ~~[ ]~~ 15.4.6. ① ②

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

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

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

3. The SDC and Coolant Circulation Technical Specification requirements in MODE 6 do not represent a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Therefore, these requirements do not meet Criterion 2 of 10 CFR 50.35(c)(2)(ii) at St. Lucie Plant Unit 1 and Unit 2. The SDC and Coolant Circulation Technical Specification requirements in MODE 6 do meet Criterion 4 of 10 CFR 50.35(c)(2)(ii) because this system is an important contributor to risk reduction in the plant specific probabilistic risk assessment. Therefore, the ISTS reference to the 10 CFR 50.36(c)(2)(ii) criterion is changed from 2 to 4 in the ITS.

4. Typographical/grammatical error corrected.

5. Change made to be consistent with the ISTS format as specified in the Writer's Guide for the Improved Standard Technical Specifications, TSTF GG 05 01 and other ISTS Bases (e.g., ISTS Bases 3.9.1 refers to LCO 3.9.4, "Shutdown Cooling and Coolant Circulation - High Water Level").

6. Changes are made to reflect changes made to the Specification.

Specific No Significant Hazards Considerations (NSHCs)

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

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

ATTACHMENT 5

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

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

A01

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

~~3.9.8.2~~ Two ~~independent~~ ~~shutdown cooling~~ SDC loops shall be OPERABLE and ~~at least~~ one ~~shutdown cooling~~ SDC loop shall be in operation.*

Add LCO 3.9.5 note 1 — L02

APPLICABILITY: MODE 6 ~~when~~ with the water level above the top of ~~irradiated fuel assemblies seated within the~~ reactor ~~pressure~~ vessel flange ~~is less than~~ < 23 feet.

M01

ACTION:

ACTION A
ACTION A.1 ~~a.~~ ~~With less than the required~~ One ~~shutdown cooling~~ SDC loop~~s~~ ~~OPERABLE~~ inoperable, ~~within one (1) hour~~ immediately ~~1)~~ initiate ~~corrective~~ action to ~~return the required~~ restore SDC loop~~s~~ to OPERABLE status, or ~~2)~~ establish ~~greater than or equal to~~

ACTION A.2 ≥ 23 feet of water above ~~irradiated fuel assemblies seated within~~ the top of reactor ~~pressure~~ vessel flange.

M02

ACTION B
ACTION B.1 ~~b.~~ ~~With~~ no ~~shutdown cooling~~ SDC loop OPERABLE or in operation, immediately suspend operations that would cause introduction into the RCS, of coolant with boron concentration less than required to meet the boron concentration of ~~Technical Specification~~ LCO 3.9.1. and

ACTION B.2 ~~within one (1) hour~~ Immediately initiate ~~corrective~~ action to ~~return the required shutdown cooling~~ restore SDC loop to OPERABLE status and to operation.

ACTION B.5 ~~Close all containment~~ Verify each penetration~~s~~ providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent within 4 hours.

Add ACTIONS B.3, B.4 — L01

~~c.~~ ~~The provisions of Specification 3.0.3 are not applicable.~~ — A02

M02

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1 ~~4.9.8.2~~ ~~At least~~ Verify one ~~shutdown cooling~~ SDC loop ~~shall be verified to be~~ in operation and circulating reactor coolant at a flow rate ~~of greater than or equal to~~ ≥ 3000 gpm in accordance with the Surveillance Frequency Control Program.

SR 3.9.5.3 ~~4.9.8.2.1~~ Verify ~~shutdown cooling~~ SDC loop locations susceptible to gas accumulation are sufficiently filled with water in accordance with the Surveillance Frequency Control Program.

Add SR 3.9.5.2 — M03

LCO 3.9.5 Note 2 * One required ~~shutdown cooling~~ SDC loop may be inoperable for up to 2 hours for surveillance testing, provided that the other shutdown cooling loop is OPERABLE and in operation.

A01

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

SDC

~~3.9.8.2~~ Two ~~independent shutdown cooling~~ loops shall be OPERABLE and ~~at least~~ one ~~shutdown cooling~~ loop shall be in operation.**

SDC

Add LCO 3.9.5 note 1 L02

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

<

ACTION:

One restore SDC SDC immediately M02

ACTION A
ACTION A.1

ACTION A.2

~~a.~~ ~~With less than the required shutdown cooling~~ loop~~s~~ OPERABLE, ~~within 1 hour~~ initiate ~~corrective~~ action to ~~return the required~~ loop~~s~~ to OPERABLE status, or ~~to~~ establish ~~greater than or equal to~~ 23 feet of water above the reactor ~~pressure~~ vessel flange~~, as soon as possible~~.

≥ top of

SDC OPERABLE or immediately M02

ACTION B
ACTION B.1

ACTION B.2

ACTION B.5

~~b.~~ ~~With~~ no ~~shutdown cooling~~ loop in operation, suspend operations that would cause introduction into the RCS~~,~~ coolant with boron concentration less than required to meet the boron concentration of ~~Technical Specification~~ 3.9.1 and ~~within 1 hour~~ initiate ~~corrective~~ action to ~~return the required shutdown cooling~~ loop to operation. ~~Close all containment~~ penetration~~s~~ providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

of LCO

Verify each restore SDC is either closed with a manual or automatic isolation valve, blind flange, or equivalent L01

OPERABLE status and to

Add ACTIONS B.3, B.4

Immediately M02

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1,
SR 3.9.5.3

~~4.9.8.2~~ In accordance with the Surveillance Frequency Control Program:

Verify SDC

SR 3.9.5.1

~~a.~~ ~~At least~~ one ~~shutdown cooling~~ loop ~~shall be verified to be~~ in operation~~.~~

at a and circulating

SR 3.9.5.1

~~b.~~ ~~The total~~ flow rate of reactor coolant ~~to the reactor pressure vessel shall be verified to be greater than or equal to~~ 3000 gpm.*

SDC ≥

SR 3.9.5.3

~~c.~~ Verify ~~shutdown cooling~~ trains locations susceptible to gas accumulation are sufficiently filled with water.

Add SR 3.9.5.2 M03

≥ when

SR 3.9.5.1 Note

* ~~The~~ reactor coolant flow rate ~~requirement~~ may be reduced to 1850 gpm ~~if the following conditions are satisfied before the reduced requirement is implemented:~~ the reactor ~~has been determined to have been~~ subcritical ~~for at least~~ 125 hours, the maximum RCS temperature is ≤ 117°F, and ~~the~~ temperature ~~of CCW~~ to the ~~shutdown cooling~~ heat exchanger is ≤ 87°F.

is

≥ SDC

SDC component cooling water

LCO 3.9.5
Note 2

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

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

ADMINISTRATIVE CHANGES

A01 In the conversion of the St. Lucie Plant (PSL) Unit 1 and Unit 2, 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. 5.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS).

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

A02 **Unit 1 only:** CTS 3.9.8.2 Action c. states "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.5 does not include this statement. This changes CTS by deleting the Specification 3.0.3 exception. This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS LCO 3.0.3 exception is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 **Unit 1 only:** CTS 3.9.8.2 requires two shutdown cooling (SDC) loops to be OPERABLE and one SDC loop in operation in MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is < 23 feet. ITS 3.9.5 requires two SDC loops to be OPERABLE and one SDC loop in operation when water level is < 23 feet above the top of the reactor vessel flange. This changes the CTS by changing the point at which two SDC loops are required to be OPERABLE and one in operation.

The purpose of CTS 3.9.8.2 is to ensure adequate SDC is available and in operation for heat removal and coolant circulation. CTS 3.9.8.1 and CTS 3.9.8.2 provide the requirements when water level is ≥ 23 feet and < 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel, respectively. When water level is ≥ 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel, only one SDC loop is required to be OPERABLE and in operation. When water level is < 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel, two SDC loops are required to be OPERABLE, and one must be in operation. In ITS 3.9.4 and ITS 3.9.5, the equivalent ITS requirements, the water level reference point is the top of the reactor vessel flange, not the top of the irradiated fuel assemblies seated within the reactor pressure vessel. Changing this reference point effectively requires a larger complement of SDC loops to be OPERABLE between 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel and 23 feet above the top of the reactor vessel flange. Therefore, this change is acceptable because more loops will be required to be OPERABLE under certain water level conditions to ensure the decay heat can be removed and the coolant circulated. This change is designated more restrictive because more SDC loops are required OPERABLE in the ITS under certain water level conditions than were required in the CTS.

M02 CTS 3.9.8.2 Action a~~.~~ states, in part, that with one SDC loop inoperable, within one (1) hour initiate corrective action to return the required loop to OPERABLE status or to restore reactor cavity water level to greater than or equal to the limit. CTS 3.9.8.2 Action b~~.~~ states that with no SDC loop OPERABLE or in operation, within one (1) hour initiate corrective action to return the required shutdown cooling loop to operation. ITS 3.9.5 ACTIONS A and B require similar actions but require the initiation of the Required Actions immediately.

CTS 3.9.8.2 Action b does not include a Completion Time to initiate action to suspend operations that would cause the introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of Technical Specification 3.9.1. ITS 3.9.5 Required Action B.1 requires that action be immediately initiated to suspend operations that would cause introduction of coolant into the RCS that does not meet the minimum boron concentration requirement. This changes the CTS by requiring that actions be taken immediately to satisfy the SDC loop requirements.

The purpose of CTS 3.9.8.2 is to ensure that adequate decay heat removal and coolant circulation are available in MODE 6. If the SDC loop requirements are not met, there will be no forced circulation to provide decay heat removal or coolant circulation to maintain uniform boron concentrations. Immediately initiating action to restore SDC loops to OPERABLE status with one in operation and immediately suspending operations that could result in failure to meet the minimum boron concentration limit are required to assure continued safe operation. The immediate Completion Time reflects the importance of restoring operation for decay heat removal and suspending the specified operations. This change is designated as more restrictive because the immediate Completion Time in ITS is more restrictive than the CTS Completion Time of 1 hour.

M03 The CTS 3.9.8.2 requires two independent SDC loops to be OPERABLE. ITS SR 3.9.5.2 requires periodic verification of correct breaker alignment and that indicated power is available to the required SDC pump not in operation in accordance with the Surveillance Frequency Control Program. This changes the CTS by adding a Surveillance Requirement.

The purpose of ITS 3.9.5 is to require one SDC loop to be in operation and one SDC loop to be held in readiness should it be needed. This change is necessary to ensure that the SDC loop that is in standby will be ready should it be needed to provide decay heat removal and coolant circulation.

PSL controls periodic Frequencies for Surveillances in accordance with the Surveillance Frequency Control Program (SFCP) per CTS 6.8.4.o (Unit 1) and CTS 6.8.4.q (Unit 2). Therefore, SR 3.9.5.2 will be performed at a Frequency in accordance with the Surveillance Frequency Control Program with an initial Frequency of 7 days consistent with the ISTS SR 3.9.5.2 Frequency. The initial Frequency is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.

This change is designated as more restrictive because it adds a new Surveillance Requirement to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirements)* ITS 3.9.5 is modified by a Note (Note 1) that allows all SDC pumps to be removed from operation for ≤ 15 minutes when switching from one loop to another, provided several conditions are met. CTS 3.9.8.2 does not contain this allowance. This changes the CTS by allowing the LCO to not be met under certain situations.

The purpose of CTS 3.9.8.2 is to ensure sufficient decay heat removal is available in the specified MODE and condition. The ITS Note allows an operational evolution for switching from one loop to another while in the Applicability of the Specification. This evolution is necessary to demonstrate SDC OPERABILITY. This change is acceptable because the time period is short and specific controls are required to preclude reaching saturation conditions and to preclude reducing the required RCS boron concentration. The circumstances for stopping both SDC pumps are to be limited to 15 minutes when switching SDC loops and requires the core outlet temperature to be maintained > 10°F below saturation temperature. The Note also prohibits boron dilution by introduction of coolant into the RCS with boron concentration less than that required to meet the minimum boron concentration of LCO 3.9.1, Boron Concentration, and draining operations that could further reduce RCS water volume. This change is designated as less restrictive because less stringent LCO requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.9.8.2 Action b. states, in part, that with no SDC loop in operation, close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. ITS 3.9.5 Required Actions B.3, B.4, and B.5 state that with the SDC loop requirements not met, within 4 hours close and secure the equipment hatch with at least four bolts, close one door in each air lock, and verify each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent, or is capable of being closed by an OPERABLE Containment Isolation System. This changes the CTS Actions by specifying the applicable containment penetration requirements to satisfy "each containment penetration" and by separating the CTS action into allowing penetrations capable of being closed by an OPERABLE Containment Isolation System to remain open when the SDC requirements are not met.

The purpose of the CTS 3.9.8.2 Action is to ensure that radioactive material does not escape the containment should the SDC requirements continue to not be met and boiling occurs in the core. Therefore, containment penetrations are closed to seal the containment. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering a reasonable time for repairs or replacement of required features, and the low probability of an accident occurring during the repair period. The Required Actions are consistent with the actions taken for containment closure in CTS 3.9.4 (i.e., ITS 3.9.3). Penetrations which can be closed by an OPERABLE Containment Isolation System do not need to be closed if SDC is inoperable, since the presence of radioactivity in the containment will cause the valves to close automatically, thus performing the isolation function. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

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

3.9 REFUELING OPERATIONS

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

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

---NOTES---

DOC L01

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

   a. The core outlet temperature is maintained >10 degrees F below saturation temperature,

   b. No operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, “Boron Concentration.” and ② ②

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

3.9.8.2 Footnote *

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

Applicability
DOC M01

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

ACTIONS

3.9.8.1
Action a.
DOC M02

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

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.9.8.1 Action b. DOC M02	B. No SDC loop OPERABLE or in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately	
		AND		
3.9.8.1 Action b.		B.2 Initiate action to restore one SDC loop to OPERABLE status and to operation.	Immediately	
		AND		
DOC L02		B.3 Close equipment hatch and secure with ~~[~~four~~]~~ bolts.	4 hours	③
		AND		
DOC L02		B.4 Close one door in each air lock.	4 hours	
		AND		
3.9.8.1 Action b.		B.5~~.1~~ Verify ~~Close~~ each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent.; or	4 hours	④
		~~OR~~		
DOC L02		~~B.5.2~~ ~~Verify each penetration~~ is capable of being closed by an OPERABLE Containment ~~Purge and Exhaust~~ Isolation System.	~~4 hours~~	④ ①

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.9.8.2.a	SR 3.9.5.1	Verify required SDC loops are OPERABLE and one SDC loop is in operation and circulating reactor coolant at a flow rate of ≥ 3000 gpm.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ③
DOC M03	SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ③
4.9.8.2.1	SR 3.9.5.3	Verify SDC loop locations susceptible to gas accumulation are sufficiently filled with water.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ③

3.9 REFUELING OPERATIONS

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

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

---NOTES---

DOC L01

1. All SDC pumps may be removed from operation for ≤ 15 minutes when switching from one ~~train~~ loop to another provided: ①
   a. The core outlet temperature is maintained >10 degrees F below saturation temperature,
   b. No operations are permitted that would cause introduction of coolant into the Reactor Coolant System (RCS) with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, “Boron Concentration.” and ② ②
   c. No draining operations to further reduce RCS water volume are permitted.

3.9.8.2 Footnote **

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

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

ACTIONS

3.9.8.1
Action a.
DOC M02

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

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.9.8.1 Action b. DOC M02	B. No SDC loop OPERABLE or in operation.	B.1	Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately	
		AND			
3.9.8.1 Action b.		B.2	Initiate action to restore one SDC loop to OPERABLE status and to operation.	Immediately	
		AND			
DOC L02		B.3	Close equipment hatch and secure with ~~[~~four~~]~~ bolts.	4 hours	③
		AND			
DOC L02		B.4	Close one door in each air lock.	4 hours	
		AND			
3.9.8.1 Action b.		B.5~~.1~~	~~Close~~ Verify each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent; or	4 hours	④
		~~OR~~			
DOC L02		~~B.5.2~~	~~Verify each penetration~~ is capable of being closed by an OPERABLE Containment ~~Purge and Exhaust~~ Isolation System.	~~4 hours~~	④ ①

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.9.8.2.a, b 4.9.8.b.b Footnote *	SR 3.9.5.1	Verify required SDC loops are OPERABLE and one SDC loop is in operation. and circulating reactor coolant at a flow rate of ≥ 3000 gpm -----------------------------------NOTE---------------------------- Reactor coolant flow rate may be reduced to ≥ 1850 gpm when the reactor is subcritical ≥ 125 hours, the maximum RCS temperature is ≤ 117°F, and component cooling water temperature to the SDC heat exchanger is ≤ 87°F. --	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 5 3
DOC M03	SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required SDC pump that is not in operation.	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 3
4.9.8.2.c	SR 3.9.5.3	Verify SDC loop locations susceptible to gas accumulation are sufficiently filled with water.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	3 3

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

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

2. Change made to be consistent with the ISTS format as specified in the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01 and other Specifications; for example, LCO 3.8.2.a reference to LCO 3.8.10, “Distribution Systems – Shutdown.”

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

4. ISTS 3.9.5 Required Actions B.5.1 and B.5.2 are connected by an "OR" logical connector, such that either one can be performed to meet the requirements of the ACTION. However, the two Required Actions as presented in the ISTS are applicable to all the containment penetrations; either Required Action B.5.1 or Required Action B.5.2 must be performed. Thus, the ISTS presentation will not allow one penetration to be isolated by use of a manual valve and another penetration to be capable of being closed by an OPERABLE Containment Isolation System. This is not the intent of the requirement. The requirement is based on ISTS LCO 3.9.3, which requires each penetration to be either: a) closed by a manual or automatic isolation valve, blind flange, or equivalent; or b) capable of being closed by an OPERABLE Containment Isolation System. For consistency with the actual LCO requirement, ISTS 3.9.5 Required Actions B.5.1 and B.5.2 have been combined into a single Required Action in ITS 3.9.5 Required Action B.5. This will allow each of the applicable containment penetrations to be either isolated or capable of being isolated, as required, to ensure containment closure can be achieved.

5. **Unit 2 only**: A Note is added to ITS SR 3.9.5.1 that allows a reduction of reactor coolant flow rate when specific conditions are met consistent with the St. Lucie Plant Unit 2 current licensing basis.

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

B 3.9 REFUELING OPERATIONS

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

BASES

BACKGROUND

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

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to inadequate cooling of the reactor fuel due to the resulting loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to the boron plating out on components near the areas of the boiling activity, and because of the possible addition of water to the reactor vessel with a lower boron concentration than is required to keep the reactor subcritical. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is a fission product barrier. Two ~~trains~~ loops of the SDC System are required to ① be OPERABLE, and one train is required to be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to prevent this challenge.

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

LCO

In MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, both SDC loops must be OPERABLE. Additionally, at least one loop of the SDC System must be in operation in order to provide: ①

a. Removal of decay heat, and ①

b. Mixing of borated coolant to minimize the possibility of a criticality~~, and~~ ①

BASES

LCO (continued)

~~c. Indication of reactor coolant temperature~~. ①

This LCO is modified by two Notes. Note 1 permits the SDC pumps to be removed from operation for ≤ 15 minutes when switching from one train to another. The circumstances for stopping both SDC pumps are to be limited to situations when the outage time is short ~~[~~and the core outlet temperature is maintained > 10 degrees F below saturation temperature~~]~~. ② The Note prohibits boron dilution by introduction of coolant into the RCS with boron concentration less than that required to meet the minimum boron concentration of LCO 3.9.1, or draining operations when SDC forced flow is stopped. ③

, “Boron Concentration.”

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

An OPERABLE SDC loop consists of an SDC pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path ~~and to determine the low end temperature~~. ① The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs. Management of gas voids is important to SDC System OPERABILITY.

at least one of

Additionally, since the SDC System is a manually operated system (i.e., it is not automatically actuated), each SDC loop is OPERABLE if it can be manually aligned (remote or local) to the SDC mode.

Both SDC pumps may be aligned to the Refueling Water Storage Tank to support filling or draining the refueling cavity or for performance of required testing. ①

APPLICABILITY

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

ACTIONS

A.1 and A.2

If one SDC loop is inoperable, action shall be immediately initiated and continued until the SDC loop is restored to OPERABLE status and to operation, or until ≥ 23 ft of water level is established above the reactor vessel flange. When the water level is established at ≥ 23 ft above the

BASES

ACTIONS (continued)

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

B.1

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

B.2

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

B.3, B.4~~, B.5.1,~~ and B.5~~.2~~ ④

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

a. The equipment hatch must be closed and secured with ~~[~~four~~]~~ bolts, ②

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

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

BASES

ACTIONS (continued)

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that one SDC loop is operating and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. In addition, this Surveillance demonstrates that the other SDC loop is OPERABLE.

In addition, during operation of the SDC loop with the water level in the vicinity of the reactor vessel nozzles, the SDC loop flow rate determination must also consider the SDC pump suction requirements. ~~[The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator to monitor the SDC System in the control room.~~ ②

~~Verification that the required loops are OPERABLE and in operation ensures that loops can be placed in operation as needed, to maintain decay heat and retain forced circulation. The Frequency of 12 hours is considered reasonable, since other administrative controls are available and have proven to be acceptable by operating experience.~~ ②

~~OR~~ ②

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~--]~~

SURVEILLANCE REQUIREMENTS (continued)

SR 3.9.5.2

Verification that the required pump is OPERABLE ensures that an additional SDC pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. ~~[The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~ ②

~~OR~~ ②

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

SR 3.9.5.3

SDC System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the SDC loops and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of SDC System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The SDC System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If the accumulated gas is eliminated or brought within the acceptance criteria limits during performance of the Surveillance, the Surveillance is met and past system OPERABILITY is evaluated under the Corrective Action Program. If it is determined by subsequent evaluation that the SDC System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

SDC System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~[The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the SDC System piping and the procedural controls governing system operation.~~ ②

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~------------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]~~ ② ②

REFERENCES 1. U FSAR, Section ~~[ ]~~ 15.2.4. ① ②

B 3.9 REFUELING OPERATIONS

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

BASES

BACKGROUND

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

APPLICABLE SAFETY ANALYSES

If the reactor coolant temperature is not maintained below 200°F, boiling of the reactor coolant could result. This could lead to inadequate cooling of the reactor fuel due to the resulting loss of coolant in the reactor vessel. Additionally, boiling of the reactor coolant could lead to a reduction in boron concentration in the coolant due to the boron plating out on components near the areas of the boiling activity, and because of the possible addition of water to the reactor vessel with a lower boron concentration than is required to keep the reactor subcritical. The loss of reactor coolant and the reduction of boron concentration in the reactor coolant would eventually challenge the integrity of the fuel cladding, which is a fission product barrier. Two ~~trains~~ loops of the SDC System are required to ① be OPERABLE, and one train is required to be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to prevent this challenge.

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

LCO

In MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, both SDC loops must be OPERABLE. Additionally, at least one loop of the SDC System must be in operation in order to provide: ①

a. Removal of decay heat, and ①

b. Mixing of borated coolant to minimize the possibility of a criticality~~, and~~ ①

LCO (continued)

~~c. Indication of reactor coolant temperature~~. ①

This LCO is modified by two Notes. Note 1 permits the SDC pumps to be removed from operation for ≤ 15 minutes when switching from one train to another. The circumstances for stopping both SDC pumps are to be limited to situations when the outage time is short ~~[~~and the core outlet temperature is maintained > 10 degrees F below saturation temperature~~]~~. ② The Note prohibits boron dilution by introduction of coolant into the RCS with boron concentration less than that required to meet the minimum boron concentration of LCO 3.9.1, “Boron Concentration.” ③ or draining operations when SDC forced flow is stopped.

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

An OPERABLE SDC loop consists of an SDC pump, a heat exchanger, valves, piping, instruments, and controls to ensure an OPERABLE flow path ~~and to determine the low end temperature~~. ① The flow path starts in one of the RCS hot legs and is returned to at least one of the RCS cold legs. Management of gas voids is important to SDC System OPERABILITY.

Additionally, since the SDC System is a manually operated system (i.e., it is not automatically actuated), each SDC loop is OPERABLE if it can be manually aligned (remote or local) to the SDC mode.

Both SDC pumps may be aligned to the Refueling Water Storage Tank to support filling or draining the refueling cavity or for performance of required testing. ①

APPLICABILITY

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

ACTIONS

A.1 and A.2

If one SDC loop is inoperable, action shall be immediately initiated and continued until the SDC loop is restored to OPERABLE status and to operation, or until ≥ 23 ft of water level is established above the reactor vessel flange. When the water level is established at ≥ 23 ft above the

BASES

ACTIONS (continued)

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

B.1

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

B.2

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

B.3, B.4~~, B.5.1,~~ and B.5~~.2~~ ④

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

a. The equipment hatch must be closed and secured with ~~[~~four~~]~~ bolts, ②

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

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

BASES

ACTIONS (continued)

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that one SDC loop is operating and circulating reactor coolant. The flow rate is determined by the flow rate necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. In addition, this Surveillance demonstrates that the other SDC loop is OPERABLE.

In addition, during operation of the SDC loop with the water level in the vicinity of the reactor vessel nozzles, the SDC loop flow rate determination must also consider the SDC pump suction requirements. ~~[The Frequency of 12 hours is sufficient, considering the flow, temperature, pump control, and alarm indications available to the operator to monitor the SDC System in the control room.~~ ②

~~Verification that the required loops are OPERABLE and in operation ensures that loops can be placed in operation as needed, to maintain decay heat and retain forced circulation. The Frequency of 12 hours is considered reasonable, since other administrative controls are available and have proven to be acceptable by operating experience.~~ ②

~~OR~~ ②

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

The SR is modified by a Note that provides an allowance to reduce the required RCS flow rate when specific conditions are met. The time after reactor shutdown, RCS temperature, and CCW temperature to the shutdown cooling heat exchanger are initial conditions to ensure a reduced SDC flow rate will not result in a temperature transient exceeding the established refueling operational temperature limit. ①

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.9.5.2

Verification that the required pump is OPERABLE ensures that an additional SDC pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. ~~[The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience.~~ 2

~~OR~~ 2

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

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ 2
~~---]~~

SR 3.9.5.3

SDC System piping and components have the potential to develop voids and pockets of entrained gases. Preventing and managing gas intrusion and accumulation is necessary for proper operation of the SDC loops and may also prevent water hammer, pump cavitation, and pumping of noncondensible gas into the reactor vessel.

Selection of SDC System locations susceptible to gas accumulation is based on a review of system design information, including piping and instrumentation drawings, isometric drawings, plan and elevation drawings, and calculations. The design review is supplemented by system walk downs to validate the system high points and to confirm the location and orientation of important components that can become sources of gas or could otherwise cause gas to be trapped or difficult to remove during system maintenance or restoration. Susceptible locations depend on plant and system configuration, such as stand-by versus operating conditions.

BASES

SURVEILLANCE REQUIREMENTS (continued)

The SDC System is OPERABLE when it is sufficiently filled with water. Acceptance criteria are established for the volume of accumulated gas at susceptible locations. If accumulated gas is discovered that exceeds the acceptance criteria for the susceptible location (or the volume of accumulated gas at one or more susceptible locations exceeds an acceptance criteria for gas volume at the suction or discharge of a pump), the Surveillance is not met. If the accumulated gas is eliminated or brought within the acceptance criteria limits during performance of the Surveillance, the Surveillance is met and past system OPERABILITY is evaluated under the Corrective Action Program. If it is determined by subsequent evaluation that the SDC System is not rendered inoperable by the accumulated gas (i.e., the system is sufficiently filled with water), the Surveillance may be declared met. Accumulated gas should be eliminated or brought within the acceptance criteria limits.

SDC System locations susceptible to gas accumulation are monitored and, if gas is found, the gas volume is compared to the acceptance criteria for the location. Susceptible locations in the same system flow path which are subject to the same gas intrusion mechanisms may be verified by monitoring a representative sub-set of susceptible locations. Monitoring may not be practical for locations that are inaccessible due to radiological or environmental conditions, the plant configuration, or personnel safety. For these locations alternative methods (e.g., operating parameters, remote monitoring) may be used to monitor the susceptible location. Monitoring is not required for susceptible locations where the maximum potential accumulated gas void volume has been evaluated and determined to not challenge system OPERABILITY. The accuracy of the method used for monitoring the susceptible locations and trending of the results should be sufficient to assure system OPERABILITY during the Surveillance interval.

~~[The 31 day Frequency takes into consideration the gradual nature of gas accumulation in the SDC System piping and the procedural controls governing system operation.~~ ②

~~OR~~

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program. The Surveillance Frequency may vary by location susceptible to gas accumulation.

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~--]~~

REFERENCES 1. U FSAR, Section ~~[ ]~~ 15.4.6. ① ②

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

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

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

3. Change made to be consistent with the ISTS format as specified in the Writer's Guide for the Improved Standard Technical Specifications, TSTF GG 05 01 and other ISTS Bases (e.g., ISTS Bases 3.9.1 refers to LCO 3.9.4, "Shutdown Cooling and Coolant Circulation - High Water Level").

4. Changes are made to reflect changes made to the Specification.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS

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

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

ATTACHMENT 6

3.9.6, Refueling Water Level

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

REFUELING OPERATIONS

WATER LEVEL – REACTOR VESSEL

LIMITING CONDITION FOR OPERATION

LCO 3.9.6 ~~3.9.10~~ ~~At least~~ ≥ 23 feet of refueling water level shall be maintained ~~over~~ above the top of ~~irradiated fuel assemblies seated within the~~ reactor ~~pressure~~ vessel flange. M01

Applicability **APPLICABILITY**: ~~During CORE ALTERATIONS.~~ L01
During movement of irradiated fuel assemblies within containment.

ACTION:

ACTION A ~~With the requirements of the above~~ Refueling water level not within limit. ~~specifications not satisfied~~, immediately suspend ~~CORE ALTERATIONS~~ ~~and~~ movement of irradiated fuel assemblies within containment~~, and immediately initiate action to restore refueling cavity water level to within limits~~. L01 A02

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1 ~~4.9.10~~ ~~The~~ Verify refueling water level is ≥ 23 feet above the top of reactor vessel flange ~~shall be determined to be at least its minimum required depth within 2 hours prior to the start of~~ ~~and~~ in accordance with the Surveillance Frequency Control Program ~~during CORE ALTERATIONS~~ ~~and~~ ~~during movement of irradiated fuel assemblies within containment~~. M01 L02 L01 A03

A01

REFUELING OPERATIONS

3/4.9.10 WATER LEVEL – REACTOR VESSEL

LIMITING CONDITION FOR OPERATION

LCO 3.9.6 ~~3.9.10~~ ~~At least~~ ≥ 23 feet of refueling water level shall be maintained ~~over~~ above the top of ~~the~~ reactor ~~pressure~~ vessel flange.

Applicability **APPLICABILITY**: ~~During CORE ALTERATIONS.~~ L01
During movement of irradiated fuel assemblies within containment.

ACTION:

ACTION A ~~With the requirements of the above~~ Refueling water level not within limit. ~~specifications not satisfied~~, immediately suspend ~~CORE ALTERATIONS~~ ~~and~~ movement of irradiated fuel assemblies within containment~~, and immediately initiate action to restore refueling cavity water level to within limits~~. L01 A02

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1 ~~4.9.10~~ ~~The~~ Verify refueling water level is ≥ 23 feet above the top of reactor vessel flange ~~shall be determined to be at least its minimum required depth within 2 hours prior to the start of~~ and in accordance with the Surveillance Frequency Control Program thereafter ~~during CORE ALTERATIONS~~ ~~and~~ ~~during movement of irradiated fuel assemblies within containment~~. L02 L01 A03

DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING WATER LEVEL

ADMINISTRATIVE CHANGES

A01 In the conversion of the St. Lucie Plant (PSL) Unit 1 and Unit 2, 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. 5.0, "Standard Technical Specifications-Combustion Engineering Plants" (ISTS).

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

A02 CTS 3.9.10 requires the refueling cavity water level to be within the specified limit. CTS 3.9.10 Action requires immediate action to suspend CORE ALTERATIONS and movement of irradiated fuel assemblies in containment; and immediately initiate action to restore the refueling cavity water level to within the limit. ITS 3.9.6 ACTIONS do not include the action to initiate action to restore refueling cavity water level to within the limit. This changes the CTS by removing an unnecessary action. The purpose of the CTS 3.9.10 actions is to provide appropriate remedial actions when an LCO is not met consistent with the requirements of 10 CFR 50.36(c)(2)(i). The action to suspend CORE ALTERATIONS and movement of irradiated fuel assemblies within containment results in the LCO no longer being required (Refer to Discussion of Change L01 for removal of CORE ALTERATION Applicability and Action). CTS 3.0.2 (ITS LCO 3.0.2) state, in part, that when an LCO is met or is no longer applicable prior to expiration of the specified time interval(s), completion of the ACTIONS is not required, unless otherwise stated. As indicated in the ISTS Bases of ITS LCO 3.0.2, “Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.” Therefore, it is unnecessary to provide an action to specifically require the LCO to be met, as this is inherent in LCO 3.0.1 and LCO 3.0.2.

This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

A03 CTS 4.9.10 requires the refueling cavity water level to be determined to be within limit in accordance with the Surveillance Frequency Control Program during movement of irradiated fuel assemblies within containment. ITS SR 3.9.6.1 requires verification that the refueling water level is within limit in accordance with the Surveillance Frequency Control Program. The CTS and ITS applicability are also during movement of irradiated fuel assemblies within containment. This changes the CTS by deleting the Applicability requirement from the Surveillance. ITS LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification). Additionally, SR 3.0.1 establishes the requirement that Surveillance Requirements must be met during the MODES or other specified conditions in the Applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. Therefore, maintaining the Applicability requirement in the Surveillance is not necessary.

This change is designated as an administrative change and is acceptable because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 **Unit 1 only**: CTS 3.9.10 requires a minimum of 23 feet of water be maintained over the top of irradiated fuel assemblies seated within the reactor pressure vessel. ITS 3.9.6 requires 23 feet of water be maintained above the top of the reactor vessel flange. This changes the CTS by increasing the amount of water that must be in the refueling cavity during irradiated fuel movement.

Refueling water level is required to ensure the consequences of a design basis refuel accident remain within the bounds of the radiological dose calculations. Since the fuel handling accident could occur anywhere in the refueling cavity, the water level in the reactor vessel and refueling cavity must be at least 23 feet above the top of the reactor vessel flange. Therefore, the increased water level requirement is acceptable. This change is made consistent with the requirements of PSL Unit 2 CTS and the ISTS. This change is designated as more restrictive because it adds new requirements to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.4 is applicable during CORE ALTERATIONS and movement of irradiated fuel assemblies within the containment. ITS 3.9.3 is applicable during movement of irradiated fuel assemblies within containment. References to CORE ALTERATIONS in CTS 3.9.4 are eliminated in the Applicability, Action, and Surveillances. This changes the CTS by eliminating requirements for maintaining refueling water level during CORE ALTERATIONS.

The purpose of CTS 3.9.4 is to ensure the refueling water level satisfies the condition assumed in the Fuel Handling Accident (FHA) inside containment analysis. This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. CORE ALTERATIONS is defined in CTS 1.9, in part, as "the movement or manipulation of any fuel, sources, reactivity control components, or other components affecting reactivity, within the reactor vessel with the head removed and fuel in the vessel." There is only one accident considered that involves a CORE ALTERATION: An FHA. According to the Unit 1 UFSAR Section 15.4.3 and Unit 2 UFSAR Section 15.7.4.1.2, an FHA is initiated by the dropping of an irradiated fuel assembly either in the containment or in the fuel building. Suspension of CORE ALTERATIONS, except for suspension of movement of irradiated fuel, will not prevent or impair the mitigation of an FHA.

This change is acceptable because the likelihood of dropping a reactivity component other than an irradiated fuel assembly is minimized by following the regulatory guidelines of NUREG-0612, “Control of Heavy Loads at Nuclear Power Plants,” which includes establishing safe load paths, establishing and maintaining procedures for load-handling operations; training of crane operators; design, testing, inspection, and maintenance of cranes and lifting devices. The PSL crane design precludes the handling of heavy objects, such as shipping casks, over the reactor vessel. Administrative controls that control of movement of light loads or prevent movement of light loads over irradiated fuel assemblies are similar to those used for control of heavy loads, to the extent practicable, as advised in NUREG-0612. Consequently, the possibility of dropping a reactivity component other than an irradiated fuel assembly and damaging of fuel assemblies in the reactor vessel is remote. Therefore, imposing requirements during CORE ALTERATIONS in addition to during movement of irradiated fuel is unnecessary. This change is consistent with the ISTS and designated as less restrictive because the ITS LCO requirements are applicable in fewer operating conditions than in the CTS.

L02 *(Category 7 – Relaxation Of Surveillance Frequency)* CTS 4.9.10 requires the refueling cavity water level to be determined to be within limit "within 2 hours prior to the start of" and in accordance with the Surveillance Frequency Control Program (i.e., at least once per 24 hours). ITS SR 3.9.6.1 requires verification that the refueling water level is ≥ 23 feet above the top of the reactor vessel flange in accordance with the Surveillance Frequency Control Program (i.e., at least once per 24 hours). This changes the CTS by reducing the Frequency for verifying refueling water level from 2 hours before entering the Applicability of the LCO to 24 hours before entering the Applicability of the LCO.

The purpose of CTS 4.9.10 is to ensure that the refueling water level is greater than or equal to that assumed in the fuel handling accident analysis. This change is acceptable because the Surveillance Frequency has been evaluated to ensure that the refueling water level is verified on a periodicity considering the large volume of water and the normal procedural controls of valve positions, which make significant unplanned level changes unlikely. The Frequency of 24 hours is sufficient during the movement of fuel assemblies; therefore, it is sufficient before fuel assemblies are moved. CTS 4.0.4 (ITS SR 3.0.4) requires the SR to be met within its Frequency requirements prior to entering the MODE or other specified conditions in the Applicability except as provided by CTS 4.0.3 (ITS SR 3.0.3 – missed SR). The reactor cavity minimum water level must be met prior to commencing movement of irradiated fuel assemblies or fuel assembly movement must be suspended immediately (thereby exiting the Applicability of the Specification). Therefore, changing the Frequency from 2 hours before moving irradiated fuel assemblies to within 24 hours before moving irradiated fuel assemblies has no effect on plant safety. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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

3.9 REFUELING OPERATIONS

3.9.6 Refueling Water Level

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

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

ACTIONS

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

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
4.9.10 SR 3.9.6.1 Verify refueling water level is ≥ 23 ft above the top of reactor vessel flange.	~~[24 hours~~ ② ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②

3.9 REFUELING OPERATIONS

3.9.6 Refueling Water Level

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

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

ACTIONS

3.9.10 Action ②

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

SURVEILLANCE REQUIREMENTS

4.9.10 ② ②

SURVEILLANCE	FREQUENCY
SR 3.9.6.1 Verify refueling water level is ≥ 23 ft above the top of reactor vessel flange.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.6, REFUELING WATER LEVEL

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

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

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

B 3.9 REFUELING OPERATIONS

B 3.9.6 Refueling Water Level

BASES

BACKGROUND

The movement of irradiated fuel assemblies within containment requires a minimum water level of 23 ft above the top of the reactor vessel flange. During refueling this maintains sufficient water level in the containment, ~~the refueling canal,~~ the fuel transfer canal, the refueling cavity, and the spent fuel pool. ① Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident (Refs. 1 and 2). Sufficient iodine activity would be retained to limit offsite doses from the accident to ~~≤ 25% of 10 CFR 100 limits, as provided by the guidance of Reference 3.~~ within the radiation dose criteria set forth in 10 CFR 50.67, as provided by the guidance of Reference 1 ①

APPLICABLE SAFETY ANALYSES

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

~~The fuel handling accident analysis inside containment is described in Reference 2. With a minimum water level of 23 ft and a minimum decay time of [X] hours prior to fuel handling, the analysis and test programs demonstrate that the iodine release due to a postulated fuel handling accident is adequately captured by the water and offsite doses are maintained within allowable limits (Ref. 4).~~ ①

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

LCO

A minimum refueling water level of 23 ft above the reactor vessel flange is required to ensure that the radiological consequences of a postulated ~~fuel handling accident~~ FHA ① inside containment are within acceptable limits as provided by the guidance of Reference 3.

APPLICABILITY

LCO 3.9.6 is applicable when moving fuel assemblies in the presence of irradiated fuel assemblies. The LCO minimizes the possibility of ~~a fuel handling accident~~ an FHA ① in containment that is beyond the assumptions of the safety analysis. If irradiated fuel is not present in containment, there can be no significant radioactivity release as a result of a postulated ~~fuel handling accident~~ FHA. ① Requirements for ~~fuel handling accidents~~ FHAs in the spent fuel pool are covered by LCO 3.7.~~10~~13, "Spent Fuel Storage Pool Water Level." ③

---

①

INSERT 1

The fuel handling accident (FHA) analysis is described in Reference 2. During movement of irradiated fuel assemblies, the water level in the reactor cavity is an initial condition design parameter in the analysis of the FHA in containment postulated in Appendix B or Regulatory Guide (RG) 1.183 (Ref. 1). A minimum water level of 23 feet is maintained above the damaged fuel assembly for both the containment and fuel handling building release locations. Fuel handling accidents consist of dropping a single irradiated fuel assembly either in the FHB or inside the containment and assumes all the fuel rods in the assembly are damaged. The offsite dose analysis does not credit filtration during an FHA inside containment with the maintenance hatch open or in the spent fuel storage pool. The control room dose analysis credits control room emergency ventilation filtration during an FHA inside or outside the containment.

In the event of an FHA, a minimum water level of 23 feet and a minimum decay time of 72 hours prior to fuel handling ensures an effective iodine decontamination factor of 200 per the guidance provided in NRC Regulatory Issue Summary 2006-04 (Ref. 3). The FHA assumes 100% of the noble gas is released from the damaged fuel assembly and escapes from the reactor cavity. All of the non-iodine particulates released from the damaged fuel assembly are assumed to be retained by the water. Iodine released from the damaged fuel assembly is assumed to be composed of 99.85% elemental and 0.15% organic. Activity released from the FHA is assumed to leak to the environment over a two-hour period and no credit is taken for dilution in the containment.

BASES

ACTIONS

A.1

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

Verification of a minimum water level of 23 ft above the top of the reactor vessel flange ensures that the design basis for the postulated ~~fuel handling accident~~ FHA analysis during refueling operations is met. Water at the required level above the top of the reactor vessel flange limits the consequences of damaged fuel rods that are postulated to result from ~~a fuel handling accident~~ an FHA inside containment (Ref. 2). ①

~~[The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls of valve positions, which make significant unplanned level changes unlikely.~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

REFERENCES

1. Regulatory Guide ~~1.25, March 23, 1972~~ 1.183, July 2000. ①
2. U FSAR, Section ~~[ ]~~ 15.4.3. ②
3. ~~NUREG-0800, Section 15.7.4.~~ NRC Regulatory Issue Summary 2006-04, "Experience with Implementation of Alternate Source Terms," March 7, 2006. ①
4. ~~4. 10 CFR 100.10~~. ①

B 3.9 REFUELING OPERATIONS

B 3.9.6 Refueling Water Level

BASES

BACKGROUND

The movement of irradiated fuel assemblies within containment requires a minimum water level of 23 ft above the top of the reactor vessel flange. During refueling this maintains sufficient water level in the containment, ~~the refueling canal,~~ the fuel transfer canal, the refueling cavity, and the spent fuel pool. Sufficient water is necessary to retain iodine fission product activity in the water in the event of a fuel handling accident (Refs. 1 and 2). Sufficient iodine activity would be retained to limit offsite doses from the accident to ~~< 25% of 10 CFR 100 limits, as provided by the guidance of Reference 3.~~ within the radiation dose criteria set forth in 10 CFR 50.67, as provided by the guidance of Reference 1 ① ①

APPLICABLE SAFETY ANALYSES

INSERT 1

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

~~The fuel handling accident analysis inside containment is described in Reference 2. With a minimum water level of 23 ft and a minimum decay time of [X] hours prior to fuel handling, the analysis and test programs demonstrate that the iodine release due to a postulated fuel handling accident is adequately captured by the water and offsite doses are maintained within allowable limits (Ref. 4).~~ ①

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

LCO

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

APPLICABILITY

LCO 3.9.6 is applicable when moving fuel assemblies in the presence of irradiated fuel assemblies. The LCO minimizes the possibility of ~~a fuel handling accident~~ an FHA in containment that is beyond the assumptions of the safety analysis. If irradiated fuel is not present in containment, there can be no significant radioactivity release as a result of a postulated ~~fuel handling accident~~ FHA. Requirements for ~~fuel handling accidents~~ FHAs in the spent fuel pool are covered by LCO 3.7.~~10~~13, "Spent Fuel Storage Pool Water Level." ① ① ③

①

INSERT 1

The fuel handling accident (FHA) analysis is described in Reference 2. During movement of irradiated fuel assemblies, the water level in the reactor cavity is an initial condition design parameter in the analysis of the FHA in containment postulated in Appendix B or Regulatory Guide (RG) 1.183 (Ref. 1). A minimum water level of 23 feet is maintained above the damaged fuel assembly for both the containment and fuel handling building release locations. Fuel handling accidents consist of dropping a single irradiated fuel assembly either in the FHB or inside the containment and assumes all the fuel rods in the assembly are damaged. The offsite dose analysis does not credit filtration during an FHA inside containment with the maintenance hatch open or in the spent fuel storage pool. The control room dose analysis credits control room emergency ventilation filtration during an FHA inside or outside the containment.

In the event of an FHA, a minimum water level of 23 feet and a minimum decay time of 72 hours prior to fuel handling ensures an effective iodine decontamination factor of 200 per the guidance provided in NRC Regulatory Issue Summary 2006-04 (Ref. 3). The FHA assumes 100% of the noble gas is released from the damaged fuel assembly and escapes from the reactor cavity. All of the non-iodine particulates released from the damaged fuel assembly are assumed to be retained by the water. Iodine released from the damaged fuel assembly is assumed to be composed of 99.85% elemental and 0.15% organic. Activity released from the FHA is assumed to leak to the environment over a two-hour period and no credit is taken for dilution in the containment.

BASES

ACTIONS

A.1

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

Verification of a minimum water level of 23 ft above the top of the reactor vessel flange ensures that the design basis for the postulated ~~fuel handling accident~~ FHA analysis during refueling operations is met. Water at the required level above the top of the reactor vessel flange limits the consequences of damaged fuel rods that are postulated to result from a ~~fuel handling accident~~ an FHA inside containment (Ref. 2). ①

~~[The Frequency of 24 hours is based on engineering judgment and is considered adequate in view of the large volume of water and the normal procedural controls of valve positions, which make significant unplanned level changes unlikely.~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ②
~~---]~~

REFERENCES

1. Regulatory Guide ~~1.25, March 23, 1972~~ 1.183, July 2000. ①
2. U FSAR, Section ~~[ ]~~ 15.4.3. ②
3. ~~NUREG-0800, Section 15.7.4.~~ NRC Regulatory Issue Summary 2006-04, "Experience with Implementation of Alternate Source Terms," March 7, 2006. ①

~~4. 10 CFR 100.10~~. ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.6, BASES, REFUELING WATER LEVEL

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

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

3. Changes have been made to be consistent with title and number changes made to other Specifications.

Specific No Significant Hazards Considerations (NSHCs)

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

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