ENCLOSURE 2

VOLUME 12

ST. LUCIE PLANT
UNIT 1 AND UNIT 2

IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.7
PLANT SYSTEMS

Revision 0

LIST OF ATTACHMENTS

ATTACHMENT 1

ITS 3.7.1, Main Steam Safety Valves (MSSVs)

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

ITS A01 ITS 3.7.1

3/4.7 PLANT SYSTEMS

3.4.7.1 TURBINE CYCLE

MAIN STEAM (MSSVs)

SAFETY VALVES

LIMITING CONDITION FOR OPERATION

Eight MSSVs per steam generator

LCO 3.7.1 SR 3.7.1.1 3.7.1.1 ~~All main steam line code safety valves~~ shall be OPERABLE with lift settings as specified in Table 4.7-1. A02

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

A03 and

ACTION: Add proposed ACTIONS Note

Add proposed Required Action A.1 A04

required MSSVs O

Action A a. ~~With both reactor coolant loops and associated steam generators in operation and with~~ one or more ~~main steam line code safety valves~~ inoperable, operation in MODES 1, 2 and 3 may proceed provided that within 4 hours, ~~either the inoperable valve is restored to OPERABLE status or~~ the Power Level-High trip setpoint is reduced per Table 3.7-1; ~~otherwise~~, A05

Action B be in at least ~~HOT STANDBY~~ within ~~the next~~ 6 hours and in ~~COLD SHUTDOWN~~ within ~~the following 30~~ hours. A06

MODE 3 within 36 hours L01

MODE 4 12

Required Action and associated Completion Time not met or one or more steam generators with less than five MSSVs OPERABLE

SURVEILLANCE REQUIREMENTS

Add proposed SR Note L02

SR 3.7.1.1 4.7.1.1 Verify each ~~main steam line code safety valve is OPERABLE~~ in accordance with the INSERVICE TESTING PROGRAM. Following testing, ~~as-left~~ lift settings shall be within +/- 1%~~of 1000 psia for valves 8201 through 8208, and within +/- 1% of 1040 psia for valves 8209 through 8216 specified in Table 4.7-1~~. LA01

required MSSV lift setpoint per Table 3.7.1-2

A01

Table 3.7.1-1

TABLE 3.7-1

MAXIMUM ALLOWABLE VARIABLE POWER LEVEL-HIGH TRIP SETPOINT ~~WITH IN~~ VERSUS OPERABLE MAIN STEAM ~~LINE~~ SAFETY VALVES ~~DURING OPERATION WITH BOTH STEAM GENERATORS~~

~~Maximum~~ Minimum Number of ~~Inoperable Safety Valves on Any Operating~~ MSSVs per Steam Generator Required Operable	Maximum Allowable Variable Power Level-High Trip Setpoint (Percent of RATED THERMAL POWER)
~~1~~ 7	88.5
~~2~~ 6	79.8
~~3~~ 5	66.5

A04

TABLE ~~4.7-1~~ 3.7.1-2

~~STEAM LINE SAFETY VALVES PER LOOP~~ Main Steam Safety Valve Lift Settings

Table 3.7.1-2

		VALVE NUMBER		LIFT SETTING*
		Steam Generator 1A ~~Header A~~	Steam Generator 1B ~~Header B~~	
Bank 1	a.	8201	8205	~~≥ 955.3 psig and ≤ 1015.3 psig~~ 985 psig
	b.	8202	8206	~~≥ 955.3 psig and ≤ 1015.3 psig~~
	c.	8203	8207	~~≥ 955.3 psig and ≤ 1015.3 psig~~
	d.	8204	8208	~~≥ 955.3 psig and ≤ 1015.3 psig~~
Bank 2	e.	8209	8213	~~≥ 994.1 psig and ≤ 1046.1 psig~~ 1025 psig
	f.	8210	8214	~~≥ 994.1 psig and ≤ 1046.1 psig~~
	g.	8211	8215	~~≥ 994.1 psig and ≤ 1046.1 psig~~
	h.	8212	8216	~~≥ 994.1 psig and ≤ 1046.1 psig~~
		V	V	

A07

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* +/-3% for ~~valves a through d~~ Bank 1 and +2%/-3% for ~~valves e through h~~ Bank 2

3/4.7 PLANT SYSTEMS

3/4.7.1 TURBINE CYCLE

MAIN STEAM SAFETY VALVES (MSSVs)

LIMITING CONDITION FOR OPERATION

LCO 3.7.1
SR 3.7.1.1 3.7.1.1 Eight MSSVs per steam generator ~~All main steam line code safety valves~~ shall be OPERABLE with lift settings as shown in Table 3.7-2.

A02

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

ACTION:

Add proposed ACTIONS Note

A03

and

Add proposed Required Action A.1

A04

Action A
Action B a. ~~With both reactor coolant loops and associated steam generators in operation and with~~ O one or more ~~main steam line code safety valves~~ required MSSVs inoperable, operation in MODES 1, 2 and 3 may proceed provided that, within 4 hours, ~~either the inoperable valve is restored to OPERABLE status or~~ the Power Level-High trip setpoint is reduced per Table 3.7-1~~, otherwise~~, be in at least ~~HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~COLD SHUTDOWN~~ MODE 4 within ~~the following 30~~ 12 hours.

within 36 hours

Required Action and associated Completion Time not met or one or more steam generators with less than five MSSVs OPERABLE

A05

A06

L01

SURVEILLANCE REQUIREMENTS

Add proposed SR Note

SR 3.7.1.1 4.7.1.1 Verify each ~~main steam line code safety valve is OPERABLE~~ required MSSV lift setpoint per Table 3.7.1-2 in accordance with the INSERVICE TESTING PROGRAM. Following testing, ~~as-left~~ lift settings shall be within +/- 1% ~~of 1000 psia for valves 8201 through 8208, and within +/- 1% of 1040 psia for valves 8209 through 8216 specified in Table 3.7-2~~.

L02

LA01

A01

Table 3.7.1-1

TABLE 3.7-1

MAXIMUM ALLOWABLE VARIABLE POWER LEVEL-HIGH TRIP SETPOINT ~~WITH IN~~ VERSUS OPERABLE MAIN STEAM ~~LINE~~ SAFETY VALVES ~~DURING OPERATION WITH BOTH STEAM GENERATORS~~

~~Maximum~~ Minimum Number of ~~Inoperable Safety Valves on Any Operating~~ MSSVs per Steam Generator Required Operable	Maximum Allowable Variable Power Level-High Trip Setpoint (Percent of RATED THERMAL POWER)
7 ~~1~~	92.8
6 ~~2~~	79.6
5 ~~3~~	66.3

A04

Table 3.7.1-2

TABLE ~~3.7-2~~ 3.7.1-2

Main Steam Safety Valve Lift Settings ~~STEAM LINE SAFETY VALVES PER LOOP~~

		VALVE NUMBER		LIFT SETTING*
		~~Header A~~ Steam Generator 2A	~~Header B~~ Steam Generator 2B	
Bank 1	a.	8201	8205	~~≥ 955.3 psig and ≤ 1015.3 psig~~ 985 psig
	b.	8202	8206	~~≥ 955.3 psig and ≤ 1015.3 psig~~ 985 psig
	c.	8203	8207	~~≥ 955.3 psig and ≤ 1015.3 psig~~ 985 psig
	d.	8204	8208	~~≥ 955.3 psig and ≤ 1015.3 psig~~ 985 psig
Bank 2	e.	8209	8213	~~≥ 994.1 psig and ≤ 1046.1 psig~~ 1025 psig
	f.	8210	8214	~~≥ 994.1 psig and ≤ 1046.1 psig~~ 1025 psig
	g.	8211	8215	~~≥ 994.1 psig and ≤ 1046.1 psig~~ 1025 psig
	h.	8212	8216	~~≥ 994.1 psig and ≤ 1046.1 psig~~ 1025 psig
		V	V	

A07

* +/-3% for ~~valves a through d~~ Bank 1 and +2%/-3% for ~~valves e through h~~ Bank 2

DISCUSSION OF CHANGES
ITS 3.7.1, MAIN STEAM SAFETY VALVES (MSSVs)

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 3.7.1.1 states that "All main steam line code safety valves shall be OPERABLE with lift settings as specified in Table 4.7-1." CTS Table 4.7-1 lists lift setting pressures for eight safety valves in each of the two loops. Unit 2 CTS 3.7.1.1 states that "All main steam line code safety valves shall be OPERABLE with lift settings as shown in Table 3.7-2." CTS Table 3.7-2 lists lift setting pressures for eight safety valves in each of the two loops. ITS LCO 3.7.1 requires the MSSVs specified in Tables 3.7.1-1 and 3.7.1-2 to be OPERABLE. This changes the CTS by combining the current LCO requirement and portions of Unit 1 CTS Table 4.7-1 and Unit 2 CTS Table 3.7-2 into a single ITS LCO requirement for each respective unit.

This change is acceptable because the number of MSSVs required OPERABLE under the various conditions has not changed. This change results in a format change only to comply with the manner in which the ISTS presents the MSSV requirements. This change is designated as an administrative change since it does not result is any technical changes to the CTS.

A03 CTS 3.7.1.1 ACTION provides compensatory actions for one or more inoperable main steam line code safety valves. CTS 3.7.1.1 ACTION requires that within 4 hours the inoperable valve be restored to OPERABLE status or the Power Level-High trip setpoint be reduced per the requirements of CTS Table 3.7-1. CTS 3.7.1.1 ACTION requires a unit shutdown if the requirements of the ACTION are not met. ITS 3.7.1 ACTIONS Note states "Separate Condition entry is allowed for each MSSV." This changes the CTS by explicitly specifying separate condition entry for each inoperable MSSV.

The purpose of the CTS ACTION is to allow separate condition entry for each inoperable MSSV. Each time it is discovered that an MSSV is inoperable, entry is required and the specified Completion Time is allowed to complete the compensatory actions. The ITS 3.7.1 ACTIONS Note allows a separate Completion Time clock for each MSSV that is inoperable. This change is acceptable, because it only provides clarification of the Completion Time when one valve is inoperable and, subsequently, a second valve becomes inoperable. This change is designated as administrative, because it does not result in a technical change to the Specifications.

A04 CTS 3.7.1.1 ACTION states that the Power Level-High trip setpoint must be reduced per CTS Table 3.7-1 when one or more MSSVs are found to be inoperable. CTS Table 3.7-1 provides the maximum allowable Power Level-High trip setpoint corresponding to the maximum number of inoperable MSSVs on any operating steam generator. ITS 3.7.1 ACTION A requires both a reduction in THERMAL POWER and a reduction in the Power Level-High trip setpoint consistent with the requirements of ITS Table 3.7.1-1. The Table has been revised to provide the associated maximum allowable power for the number of OPERABLE MSSVs. This changes the CTS by adding an additional explicit statement to reduce THERMAL POWER consistent with ITS Table 3.7.1-1 and by stating the maximum allowable power as a function of OPERABLE, instead of inoperable, MSSVs.

The purpose of CTS 3.7.1.1 ACTION is to reduce the Power Level-High trip setpoint to within the limits of the safety analyses. Current plant operation dictates that THERMAL POWER is reduced before reducing the setpoints to prevent a reactor trip. Explicitly stating this practice in TS and stating the maximum power level in terms of OPERABLE instead of inoperable MSSVs does not change how the plant is operated. This change is considered administrative because it does not result in technical changes to the CTS.

A05 CTS 3.7.1.1 ACTION states that with one or more MSSVs inoperable, either restore the inoperable valves to OPERABLE status or reduce the Power Level-High trip setpoint. ITS 3.7.1 ACTION A does not include the restoration requirement, only the alternate compensatory measure. This changes the CTS by eliminating the explicit statement to restore the MSSV(s) to OPERABLE status.

This change is acceptable, because it does not result in a technical change to the Technical Specifications. Restoration of compliance with the LCO is always an option in an ACTION, so eliminating the restoration ACTION from the CTS has no effect. In both the CTS and the ITS, if the inoperable MSSV(s) are not restored, actions are taken that result in reducing reactor power to within the relief capability of the OPERABLE MSSVs within 4 hours. This change is designated as administrative, because it does not result in a technical change to the CTS.

A06 CTS 3.7.1.1 ACTION requires in part, “otherwise be in… MODE 5...” when the actions cannot be performed within the required time. ITS 3.7.1 Required Action B.2 requires, when the Required Action and associated Completion Time is not met; or, with one or more steam generators with less than five MSSVs OPERABLE, to be in MODE 4 within 12 hours. This changes the end states in CTS 3.7.1.1 ACTION from MODE 5 to MODE 4.

The purpose of CTS 3.7.1 ACTION is to place the plant in a condition in which the equipment is no longer required. CTS 3.7.1 ACTION provides appropriate actions to take for the MSSVs when the unit is in MODE 1, 2, or 3. The MSSVs are not required to be OPERABLE when in MODE 4. Therefore, in accordance with CTS 3.0.2 (ITS LCO 3.0.2), with the Required Action and Completion time for one or more required MSSVs inoperable or one or more steam generators with less than five MSSVs OPERABLE completion of the Required Action to MODE 5 is not required. These changes are designated as administrative changes and are acceptable because they maintain the current requirement to place the unit in a condition in which the MSSVs are no longer required consistent with the requirements of CTS 3.0.2 (ITS LCO 3.0.2). The 12-hour Completion Time is reasonable based on operating experience to reach the required unit conditions.

A07 Unit 1 CTS Table 4.7-1 and Unit 2 CTS Table 3.7-2 specifies a lift setting band of ≥ 955.3 psig and ≤ 1015.3 psig for Bank 1 Main Steam Safety Valves and ≥ 994.1 psig and ≤ 1046.1 psig for Bank 2 Main Steam Safety Valves (MSSVs). ITS Table 3.7.1-2 a lift setting of 985 psig with a ± 3% tolerance for Bank 1 MSSVs and a lift setting of 1025 psig with a + 2%/− 3% tolerance for Bank 2 MSSVs. This changes the CTS by correcting the nominal lift setpoint to the value assumed in the overpressure protection report and documented in the UFSAR; 985 psig for Bank 1 and 1040 psig for Bank 2.

These changes are designated as administrative changes and are acceptable because they state the specific nominal lift setpoint assumed in the analysis instead of providing a band with an upper and lower value based on a nominal setpoint value.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 (*Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS SR 4.7.1.1 states, in part, "as left lift settings shall be within ± 1% of 1000 psia for valves 8201 through 8208, and within ± 1% of 1040 psia for valves 8209 through 8216 specified in Table 4.7-1." ITS 3.7.1 does not contain the detail "of 1000 psia for valves 8201 through 8208, and within ± 1% of 1040 psia for valves 8209 through 8216 specified in Table 4.7-1" for Unit 1 or "of 1000 psia for valves 8201 through 8208, and within ± 1% of 1040 psia for valves 8209 through 8216 specified in Table 3.7-2" for Unit 2. This changes the CTS by moving details on setting the lift pressure in terms of psia to the ITS Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the lift settings and the definition of OPERABLE states that the components must be capable of performing their safety function. In addition, ITS SR 3.7.1.1 continues to require lift settings to be within + 1% following testing. It is understood that the MSSVs must be adjusted to lift at the settings given under the conditions that the safety analysis assumes the MSSVs will operate. This change is acceptable, because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change, because details for meeting Technical Specification requirements are being removed from the Technical Specifications to the ITS Bases.

LESS RESTRICTIVE CHANGES

L01 (*Category 3 – Relaxation of Completion Time)* CTS 3.7.1.1 ACTION specifies the compensatory actions when one or more main steam line code safety valves are inoperable. The action allows operation to continue provided that within 4 hours, either the inoperable main steam line code safety valves are restored to OPERABLE status or the Power Level-High trip setpoint is reduced per Table 3.7-1. ITS 3.7.1 Required Action A.2 requires the reduction of the Power Level-High trip setpoint to less than or equal to the Maximum Allowable Power Level-High trip setpoint (Percent of RATED THERMAL POWER) specified in Table 3.7-1 within 36 hours. This changes the CTS by extending the time allowed to reduce the Power Level-High trip setpoint. The discussion of the change that deletes the restoration option is discussed in DOC A05.

The purpose of CTS 3.7.1.1 ACTION is to limit the time the unit can operate with inoperable main steam line code safety valves without reducing the Power Level-High trip setpoints. This change is acceptable, because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs, and the low probability of a DBA occurring during the allowed Completion Time. This change extends the time allowed to reduce the Power Level-High trip setpoints when the MSSVs are inoperable. The time extension is from 4 hours to 36 hours. However, the time to reduce THERMAL POWER to within the same limits is maintained in ITS 3.7.1 Required Action A.1, as described in DOC A04. This change is acceptable since the Completion Time of 36 hours is based on a reasonable time to correct the MSSV inoperability, the time required to perform the power reduction, operating experience in resetting the channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period. In addition, the actual reactor power level continues to be required to be reduced within the same limits within 4 hours. Thus, operation of the unit at RATED THERMAL POWER with an inoperable MSSV is still only allowed for 4 hours, consistent with the current allowance. This change is designated as less restrictive, because additional time is allowed to reduce the applicable reactor trip setpoints than was allowed in the CTS.

L02 *(Category 7 – Relaxation of Surveillance Frequency)* CTS 4.7.1.1 requires verification each main steam line code safety valve is OPERABLE in accordance with the INSERVICE TESTING PROGRAM. ITS SR 3.7.1.1 requires the same testing to verify OPERABILITY, however, a Note has been included that only requires the lift setpoint verification to be performed within its Frequency in MODES 1 and 2. This changes the CTS by adding a Note that allows the unit to enter MODE 3 without having performed the MSSV lift setpoint verification.

The purpose of CTS 4.7.1.1 is to perform the MSSV lift setpoint verification in accordance with the INSERVICE TESTING PROGRAM. The SR is modified by a Note that states the Surveillance is only required to be performed in MODES 1 and 2. The Note allows entry into and operation in MODE 3 prior to performing the SR. By allowing entry into MODE 3 prior to performing the SR, testing will be performed at hot conditions. This change is acceptable because the Technical Specifications continue to require the MSSVs to be OPERABLE in MODE 3. In addition, the Surveillance continues to provide an acceptable level of equipment reliability. This change is designated as less restrictive because Surveillances will be performed in fewer operating conditions than in the CTS.

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

CTS

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

3.7.1.1
DOC A02

LCO 3.7.1 ~~The MSSVs~~ Eight MSSVs per steam generator shall be OPERABLE ~~as specified in Table 3.7.1-1 and Table 3.7.1-2~~. ③

Applicability APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

--NOTE--

DOC A03 Separate Condition entry is allowed for each MSSV.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a DOC A04	A. One or more ~~required~~ MSSVs inoperable.	A.1 Reduce power to less than or equal to the applicable % RTP listed in Table 3.7.1-1.	4 hours	①
		AND		
DOC L01		A.2 Reduce the ~~[variable overpower trip - high]~~ Variable Power Level-High trip setpoint ~~[ceiling]~~ in accordance with Table 3.7.1-1.	36 hours	②
Action a	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours	
		AND		
DOC A06	OR	B.2 Be in MODE 4.	~~[~~12~~]~~ hours	②
	One or more steam generators with less than ~~[two]~~ five MSSVs OPERABLE.			

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.7.1.1 DOC L02 SR 3.7.1.1	-------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the INSERVICE TESTING PROGRAM. Following testing, lift settings shall be within ± 1%.	In accordance with the INSERVICE TESTING PROGRAM

CTS

Table 3.7-1

Table 3.7.1-1 (page 1 of 1)
~~[~~Variable Power Level - High ~~Overpower~~ Trip~~]~~ Setpoint versus OPERABLE Main Steam Safety Valves

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MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	~~MAXIMUM POWER (% RTP)~~	MAXIMUM ALLOWABLE ~~[~~VARIABLE Variable Power Level - High ~~OVERPOWER~~ TRIP~~]~~ SETPOINT (~~[CEILING]~~ % RTP)
7 ~~[8]~~	~~[-]~~	88.5 ~~[-]~~
6 ~~[7]~~	~~[-]~~	79.8 ~~[-]~~
5 ~~[6]~~	~~[-]~~	66.5 ~~[-]~~
~~[5]~~	~~[-]~~	~~[-]~~
~~[4]~~	~~[-]~~	~~[-]~~
~~[3]~~	~~[-]~~	~~[-]~~
~~[2]~~	~~[-]~~	~~[-]~~

CTS

Table 4.7-1

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

Valve Bank	VALVE NUMBER		LIFT SETTING (~~psig ± [3]%~~ psig ±3% for Bank 1 psig +2%/−3% for Bank 2)
	1A Steam Generator ~~#1~~	1B Steam Generator ~~#2~~	
1	V8201 V8202 V8203 V8204 ~~[ ]~~ ~~[ ]~~	V8205 V8206 V8207 V8208 ~~[ ]~~ ~~[ ]~~	~~[ ]~~ ~~[ ]~~ 985 psig
2	V8209 V8210 V8211 V8212 ~~[ ]~~ ~~[ ]~~	V8213 V8214 V8215 V8216 ~~[ ]~~ ~~[ ]~~	~~[ ]~~ ~~[ ]~~ 1025 psig

①

②

①

CTS

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

3.7.1.1
DOC A02 LCO 3.7.1 Eight MSSVs per steam generator ~~The MSSVs~~ shall be OPERABLE ~~as specified in Table 3.7.1-1 and Table 3.7.1-2~~. ③

Applicability APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

---NOTE---

DOC A03 Separate Condition entry is allowed for each MSSV.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a DOC A04	A. One or more ~~required~~ MSSVs inoperable.	A.1 Reduce power to less than or equal to the applicable % RTP listed in Table 3.7.1-1.	4 hours	①
		AND		
DOC L01		A.2 Reduce the Variable Power Level-High trip ~~[variable overpower trip - high]~~ setpoint ~~[ceiling]~~ in accordance with Table 3.7.1-1.	36 hours	②
Action a	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours	
		AND		
DOC A06	OR One or more steam generators with less than five ~~[two]~~ MSSVs OPERABLE.	B.2 Be in MODE 4.	~~[~~12~~]~~ hours	②

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.7.1.1 DOC L02 SR 3.7.1.1	-------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the INSERVICE TESTING PROGRAM. Following testing, lift settings shall be within ± 1%.	In accordance with the INSERVICE TESTING PROGRAM

CTS

Table 3.7-1

Table 3.7.1-1 (page 1 of 1)
~~[~~Variable Power Level - High ~~Overpower~~ Trip~~]~~ Setpoint versus OPERABLE Main Steam Safety Valves

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	~~MAXIMUM POWER (% RTP)~~	MAXIMUM ALLOWABLE ~~[~~VARIABLE Variable Power Level - High ~~OVERPOWER~~ TRIP~~]~~ SETPOINT (~~[CEILING]~~ % RTP)
7 ~~[8]~~	~~[ ]~~	92.8 ~~[ ]~~
6 ~~[7]~~	~~[ ]~~	79.6 ~~[ ]~~
5 ~~[6]~~	~~[ ]~~	66.3 ~~[ ]~~
~~[5]~~	~~[ ]~~	~~[ ]~~
~~[4]~~	~~[ ]~~	~~[ ]~~
~~[3]~~	~~[ ]~~	~~[ ]~~
~~[2]~~	~~[ ]~~	~~[ ]~~

②

①

CTS

Table 4.7-1

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

Valve Bank	VALVE NUMBER		psig ±3% for Bank 1 psig +2%/−3% for Bank 2 LIFT SETTING (~~psig ± [3]%~~)
	2A Steam Generator ~~#1~~	2B Steam Generator ~~#2~~	
1	V8201 V8202 ~~[ ]~~ V8203 V8204 ~~[ ]~~	V8205 V8206 ~~[ ]~~ V8207 V8208 ~~[ ]~~	~~[ ]~~ 985 psig ~~[ ]~~
2	V8209 V8210 ~~[ ]~~ V8211 V8212 ~~[ ]~~	V8213 V8214 ~~[ ]~~ V8215 V8216 ~~[ ]~~	~~[ ]~~ 1025 psig ~~[ ]~~

①

②

①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.1, MAIN STEAM SAFETY VALVES (MSSVs)

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

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

3. ISTS LCO 3.7.1 refers to Tables 3.7.1-1 and 3.7.1-2 for MSSV OPERABILITY. Table 3.7.1-1 does not provide information related to MSSV OPERABILITY but rather provides the allowable power level for the THERMAL POWER and trip setpoint reductions as referenced in Required Actions A.1 and A.2. In addition, SR 3.7.1.1 references Table 3.7.1-2 for the MSSV lift settings. Therefore, reference to the tables in the LCO is unnecessary and is changed in the ITS as a presentation preference. ITS LCO 3.7.1 states that eight MSSVs per steam generator are required to be OPERABLE. This presentation preference is also consistent with the presentation used in LCO 3.7.1 of the Westinghouse Engineering ISTS (NUREG-1431, Revision 5).

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

B 3.7 PLANT SYSTEMS

B 3.7.1 Main Steam Safety Valves (MSSVs)

BASES

BACKGROUND

The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary (RCPB) by providing ~~a heat sink~~ for the removal of energy from the Reactor Coolant System (RCS) if the preferred heat sink, provided by the Condenser and Circulating Water System, is not available. ①

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must have sufficient capacity to limit the secondary system pressure to ≤ 110% of design pressure

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Eight MSSVs are located on each main steam header, outside containment, upstream of the main steam isolation valves, as described in the FSAR, Section ~~[~~5.2~~]~~ (Ref. 1). The MSSV ~~rated capacity passes the full steam flow at 102% RTP (100% + 2% for instrument error) with the valves full open~~. This meets the requirements of the ASME Code, Section III (Ref. 2). The MSSV design includes staggered setpoints, according to Table 3.7.1-~~1~~, in the accompanying LCO, so that only the number of valves needed will actuate. Staggered setpoints reduce the potential for valve chattering because of insufficient steam pressure to fully open all valves following a turbine reactor trip. ①

APPLICABLE SAFETY ANALYSES

100.3

The design basis for the MSSVs comes from Reference 2. The MSSV's purpose is to limit secondary system pressure to ≤ 110% of design pressure when passing ~~100~~% of design steam flow. This design basis is sufficient to cope with any anticipated operational occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis. ①

U

limiting and bounding event is a loss of external load (LOEL).

2744 psia

psia

is within

The events that challenge the MSSV relieving capacity, and thus RCS pressure, are those characterized as decreased heat removal events, and are presented in the FSAR, Section ~~[~~15.2~~]~~ (Ref. 3). Of these, the ~~full power loss of condenser vacuum (LOCV) event is the limiting AOO. An LOCV isolates the turbine and condenser, and terminates normal feedwater flow to the steam generators. Before delivery of auxiliary feedwater to the steam generators,~~ RCS pressure reaches ≤ ~~2630 psig~~. This peak pressure is < 110% of the design pressure of 2500 ~~psig~~, but high enough to actuate the pressurizer safety valves. The maximum relieving rate ~~during the LOCV event is 2.5 E6 lb/hour, which is less than~~ the rated capacity of ~~two~~ MSSVs. ② ①

the

The LOEL event analysis demonstrates that the MSSVs maintain Main Steam System integrity by limiting the maximum steam pressure to less than 110% of the steam generator design pressure. The peak main steam system pressure (steam generator dome) and peak secondary side pressure for the limiting case are less than 110% of design. The peak main steam system pressure (steam generator dome) is 1092 psia.

APPLICABLE SAFETY ANALYSES (continued)

The first bank of four MSSVs per steam generator are assumed to lift at 1000 psia (985 psig) with a maximum tolerance of + 3% and the second bank of four MSSVs per steam generator lift at 1040 psia (1025 psig) with a maximum tolerance of + 2%.

~~The limiting accident for peak RCS pressure is the full power feedwater line break (FWLB), inside containment, with the failure of the backflow check valve in the feedwater line from the affected steam generator. Water from the affected steam generator is assumed to be lost through the break with minimal additional heat transfer from the RCS. With heat removal limited to the unaffected steam generator, the reduced heat transfer causes an increase in RCS temperature, and the resulting RCS fluid expansion causes an increase in pressure. The RCS pressure increases to ≤ 2730 psig, with the pressurizer safety valves providing relief capacity. The maximum relieving rate of the MSSVs during the FWLB event is ≤ 2.5 E6 lb/hour, which is less than the rated capacity of two MSSVs.~~

~~Using conservative analysis assumptions, a small range of FWLB sizes less than a full double ended guillotine break produce an RCS pressure of 2765 psig for a period of 20 seconds; exceeding 110% (2750 psig) of design pressure. This is considered acceptable as RCS pressure is still well below 120% of design pressure where deformation may occur. The probability of this event is in the range of 4 E-6/year.~~

1

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

LCO

This LCO requires all MSSVs to be OPERABLE~~in compliance with Reference 2, even though this is not a requirement of the DBA analysis. This is because operation with less than the full number of MSSVs~~ . The LCO is met when eight MSSVs per steam generator are OPERABLE. Operation with less than the required number of MSSVs per steam generator OPERABLE requires limitations on allowable THERMAL POWER (to meet Reference 2 requirements), and adjustment to the Reactor Protecti~~on~~ve System trip setpoints. These limitations are according to those shown in Table 3.7.1-1, Required Action A.1, and Required Action A.2 in the ~~accompanying LCO~~ ACTIONS. An MSSV is considered inoperable if it fails to open upon demand.

The OPERABILITY of the MSSVs is defined as the ability to open within the setpoint tolerances, relieve steam generator overpressure, and reseat when pressure has been reduced. The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the INSERVICE TESTING PROGRAM.

The lift settings, according to Table 3.7.1-2 ~~in the accompanying LCO,~~ correspond to ambient conditions of the valve at nominal operating temperature and pressure.

1

This LCO provides assurance that the MSSVs will perform their designed safety function to mitigate the consequences of accidents that could result in a challenge to the RCPB.

BASES

s 1, 2, and 3

five

APPLICABILITY

In MODE~~ 1,~~ a minimum of ~~two~~ MSSVs per steam generator are required to be OPERABLE, according to Table 3.7.1-1 ~~in the accompanying LCO,~~ which is limiting and bounds all lower MODES. ~~In MODES 2 and 3, both the ASME Code and the accident analysis require only one MSSV per steam generator to provide overpressure protection.~~ ①

In MODES 4 and 5, there are no credible transients requiring the MSSVs.

The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized; there is no requirement for the MSSVs to be OPERABLE in these MODES.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each MSSV.

A.1 and A.2

THERMAL POWER is limited to the relief capacity of the remaining MSSVs. This is accomplished by restricting THERMAL POWER so that the energy transfer to the steam generators is no greater than the available relief capacity in that steam generator.

Operation at or below the maximum power will ensure the design overpressure limits will not be exceeded.

An alternative to restoring the inoperable MSSV(s) to OPERABLE status is to reduce power so that the available MSSV relieving capacity meets Code requirements for the power level. Operation may continue provided ~~the allowable THERMAL POWER is equal to the product of: 1) the ratio of the number of MSSVs available per steam generator to the total number of MSSVs per steam generator, and 2) the ratio of the available relieving capacity to total steam flow, multiplied by 100%.~~

~~Allowable THERMAL POWER = (8 - N) x 109.2~~
~~8~~

Power Level-High trip setpoint

. The reduced reactor trip allowable values are based on a detailed analysis of the LOEL with a concurrent single failure event. (Ref. 3).

With one or more MSSVs inoperable, the ~~ceiling on the variable overpower trip~~ is reduced ~~to an amount over the allowable THERMAL POWER equal to the band given for this trip, according to Table 3.7.1-1 in the accompanying LCO.~~

~~SP = Allowable THERMAL POWER + 9.8~~

~~where:~~

~~SP = Reduced reactor trip setpoint in percent RTP. This is a ratio of the available relieving capacity over the total steam flow at rated power.~~

~~8 = Total number of MSSVs per steam generator.~~

~~N = Number of inoperable MSSVs on the steam generator with the greatest number of inoperable valves.~~ ①

ACTIONS (continued)

~~109.2 = Ratio of MSSV relieving capacity at 110% steam generator design pressure to calculated steam flow rate at 100% RTP + 2% instrument uncertainty expressed as a percentage (see text above).~~

~~9.8 = Band between the maximum THERMAL POWER and the variable overpower trip setpoint ceiling (Table 3.7.1-1).~~ ①

The operator should limit the maximum steady state power level to some value slightly below this setpoint to avoid an inadvertent overpower trip.

The 4 hour Completion Time for Required Action A.1 is a reasonable time period to reduce power level and is based on the low probability of an event occurring during this period that would require activation of the MSSVs. An additional 32 hours is allowed in Required Action A.2 to reduce the setpoints. The Completion Time of 36 hours for Required Action A.2 is based on a reasonable time to correct the MSSV inoperability, the time required to perform the power reduction, operating experience in resetting all channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period.

B.1 and B.2

If the MSSVs cannot be restored to OPERABLE status in the associated Completion Time, or if one or more steam generators have less than ~~two~~ five ① MSSVs OPERABLE, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within ~~[~~12~~]~~ ② hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoints in accordance with the INSERVICE TESTING PROGRAM. The ASME Code (Ref. 4), requires that safety and relief valve tests be performed in accordance with ANSI/ASME OM~~-1-1987~~ Code 2004/2006a ① (Ref. 5). According to Reference 5, the following tests are required for MSSVs:

SURVEILLANCE REQUIREMENTS (continued)

a. Visual examination,

b. Seat tightness determination,

c. Setpoint pressure determination (lift setting), and

d. Compliance with owner's seat tightness criteria~~, and~~ ①

~~e. Verification of the balancing device integrity on balanced valves~~.

The ANSI/ASME Standard requires that all valves be tested every 5 years, and a minimum of 20% of the valves be tested every 24 months. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7.1-2 allows a ± ~~[~~3~~]~~% setpoint tolerance ② ① for the lower pressure setting valves and +2%/−3% setpoint tolerance for the higher pressure setting valves for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift.

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This is to allow testing of the MSSVs at hot conditions. The MSSVs may be either bench tested or tested in situ at hot conditions using an assist device to simulate lift pressure. If the MSSVs are not tested at hot conditions, the lift setting pressure shall be corrected to ambient conditions of the valve at operating temperature and pressure.

REFERENCES

1. U FSAR, Section ~~[~~5.2~~]~~.
2. ASME, Boiler and Pressure Vessel Code, Section III, Article NC-7000, Class 2 Components.
3. U FSAR, Section ~~[~~15.2~~]~~.
4. ASME Code for Operation and Maintenance of Nuclear Power Plants.
5. ANSI/ASME OM Code 2004/2006a~~-1-1987~~.

② ①

B 3.7 PLANT SYSTEMS

B 3.7.1 Main Steam Safety Valves (MSSVs)

BASES

BACKGROUND

The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary (RCPB) by providing ~~a heat sink~~ for the removal of energy from the Reactor Coolant System (RCS) if the preferred heat sink, provided by the Condenser and Circulating Water System, is not available. ①

U

must have sufficient capacity to limit the secondary system pressure to ≤ 110% of design pressure

s

2

Eight MSSVs are located on each main steam header, outside containment, upstream of the main steam isolation valves, as described in the FSAR, Section ~~[~~5.2~~]~~ (Ref. 1). The MSSV ~~rated capacity passes the full steam flow at 102% RTP (100% + 2% for instrument error) with the valves full open~~. This meets the requirements of the ASME Code, Section III (Ref. 2). The MSSV design includes staggered setpoints, according to Table 3.7.1-~~1~~, in the accompanying LCO, so that only the number of valves needed will actuate. Staggered setpoints reduce the potential for valve chattering because of insufficient steam pressure to fully open all valves following a turbine reactor trip. ①

APPLICABLE SAFETY ANALYSES

100.3

The design basis for the MSSVs comes from Reference 2. The MSSV's purpose is to limit secondary system pressure to ≤ 110% of design pressure when passing ~~100~~% of design steam flow. This design basis is sufficient to cope with any anticipated operational occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis. ①

U

limiting and bounding event is a Loss of Condenser Vacuum (LOCV).

2669 psia

psia

is within

the

The events that challenge the MSSV relieving capacity, and thus RCS pressure, are those characterized as decreased heat removal events, and are presented in the FSAR, Section ~~[~~15.2~~]~~ (Ref. 3). Of these, the ~~full power loss of condenser vacuum (LOCV) event is the limiting AOO. An LOCV isolates the turbine and condenser, and terminates normal feedwater flow to the steam generators. Before delivery of auxiliary feedwater to the steam generators,~~ RCS pressure reaches ≤ ~~2630 psig~~. This peak pressure is < 110% of the design pressure of 2500 ~~psig~~, but high enough to actuate the pressurizer safety valves. The maximum relieving rate ~~during the LOCV event is 2.5 E6 lb/hour, which is less than~~ the rated capacity of ~~two~~ MSSVs. ② ①

The LOCV event analysis demonstrates that the MSSVs maintain Main Steam System integrity by limiting the maximum steam pressure to less than 110% of the steam generator design pressure. The peak main steam system pressure (SG dome) and peak secondary side pressure for the limiting case are less than 110% of design. The peak main steam system pressure (SG dome) is 1094.6 psia.

APPLICABLE SAFETY ANALYSES (continued)

The first bank of four MSSVs per steam generator are assumed to lift at 1000 psia (985 psig) with a maximum tolerance of + 3% and the second bank of four MSSVs per steam generator lift at 1040 psia (1025 psig) with a maximum tolerance of + 2%.

~~The limiting accident for peak RCS pressure is the full power feedwater line break (FWLB), inside containment, with the failure of the backflow check valve in the feedwater line from the affected steam generator. Water from the affected steam generator is assumed to be lost through the break with minimal additional heat transfer from the RCS. With heat removal limited to the unaffected steam generator, the reduced heat transfer causes an increase in RCS temperature, and the resulting RCS fluid expansion causes an increase in pressure. The RCS pressure increases to ≤ 2730 psig, with the pressurizer safety valves providing relief capacity. The maximum relieving rate of the MSSVs during the FWLB event is ≤ 2.5 E6 lb/hour, which is less than the rated capacity of two MSSVs.~~

~~Using conservative analysis assumptions, a small range of FWLB sizes less than a full double ended guillotine break produce an RCS pressure of 2765 psig for a period of 20 seconds; exceeding 110% (2750 psig) of design pressure. This is considered acceptable as RCS pressure is still well below 120% of design pressure where deformation may occur. The probability of this event is in the range of 4 E-6/year.~~

①

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

LCO

This LCO requires all MSSVs to be OPERABLE ~~in compliance with Reference 2, even though this is not a requirement of the DBA analysis. This is because operation with less than the full number of MSSVs~~

. The LCO is met when eight MSSVs per steam generator are OPERABLE. Operation with less than the required number of MSSVs per steam generator OPERABLE

requires limitations on allowable THERMAL POWER (to meet Reference 2 requirements), and adjustment to the Reactor Protecti~~on~~ ve System trip setpoints. These limitations are according to those shown in Table 3.7.1-1, Required Action A.1, and Required Action A.2 in the ~~accompanying LCO~~ ACTIONS. An MSSV is considered inoperable if it fails to open upon demand.

The OPERABILITY of the MSSVs is defined as the ability to open within the setpoint tolerances, relieve steam generator overpressure, and reseat when pressure has been reduced. The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the INSERVICE TESTING PROGRAM.

The lift settings, according to Table 3.7.1-2 ~~in the accompanying LCO,~~ correspond to ambient conditions of the valve at nominal operating temperature and pressure.

①

This LCO provides assurance that the MSSVs will perform their designed safety function to mitigate the consequences of accidents that could result in a challenge to the RCPB.

BASES

APPLICABILITY

In MODE ~~1,~~ s 1, 2, and 3 a minimum of ~~two~~ five MSSVs per steam generator are required to be OPERABLE, according to Table 3.7.1-1 in the accompanying LCO, which is limiting and bounds all lower MODES. ~~In MODES 2 and 3, both the ASME Code and the accident analysis require only one MSSV per steam generator to provide overpressure protection.~~ ①

In MODES 4 and 5, there are no credible transients requiring the MSSVs.

The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized; there is no requirement for the MSSVs to be OPERABLE in these MODES.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each MSSV.

A.1 and A.2

An alternative to restoring the inoperable MSSV(s) to OPERABLE status is to reduce power so that the available MSSV relieving capacity meets Code requirements for the power level. Operation may continue provided

THERMAL POWER is limited to the relief capacity of the remaining MSSVs. This is accomplished by restricting THERMAL POWER so that the energy transfer to the Steam Generators is no greater than the available relief capacity in that Steam Generator.

Operation at or below the maximum power will ensure the design overpressure limits will not be exceeded.

~~the allowable THERMAL POWER is equal to the product of: 1) the ratio of the number of MSSVs available per steam generator to the total number of MSSVs per steam generator, and 2) the ratio of the available relieving capacity to total steam flow, multiplied by 100%.~~

~~Allowable THERMAL POWER = (8 - N) x 109.2~~
~~8~~

With one or more required MSSVs inoperable, the ~~ceiling on the variable overpower trip~~ Variable Power Level-High trip setpoint is reduced. The reduced reactor trip allowable values are based on a detailed analysis of the LOCV Event with a Concurrent Single Failure event. (Ref. 3). ~~to an amount over the allowable THERMAL POWER equal to the band given for this trip, according to Table 3.7.1-1 in the accompanying LCO.~~

~~SP = Allowable THERMAL POWER + 9.8~~

~~where:~~

~~SP = Reduced reactor trip setpoint in percent RTP. This is a ratio of the available relieving capacity over the total steam flow at rated power.~~

~~8 = Total number of MSSVs per steam generator.~~

~~N = Number of inoperable MSSVs on the steam generator with the greatest number of inoperable valves.~~ ①

BASES

ACTIONS (continued)

~~109.2 = Ratio of MSSV relieving capacity at 110% steam generator design pressure to calculated steam flow rate at 100% RTP + 2% instrument uncertainty expressed as a percentage (see text above).~~

~~9.8 = Band between the maximum THERMAL POWER and the variable overpower trip setpoint ceiling (Table 3.7.1-1).~~ ①

The operator should limit the maximum steady state power level to some value slightly below this setpoint to avoid an inadvertent overpower trip.

The 4 hour Completion Time for Required Action A.1 is a reasonable time period to reduce power level and is based on the low probability of an event occurring during this period that would require activation of the MSSVs. An additional 32 hours is allowed in Required Action A.2 to reduce the setpoints. The Completion Time of 36 hours for Required Action A.2 is based on a reasonable time to correct the MSSV inoperability, the time required to perform the power reduction, operating experience in resetting all channels of a protective function, and on the low probability of the occurrence of a transient that could result in steam generator overpressure during this period.

B.1 and B.2

If the MSSVs cannot be restored to OPERABLE status in the associated Completion Time, or if one or more steam generators have less than ~~two~~ five ① MSSVs OPERABLE, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within ~~[~~12~~]~~ hours. ② The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoints in accordance with the INSERVICE TESTING PROGRAM. The ASME Code (Ref. 4), requires that safety and relief valve tests be performed in accordance with ANSI/ASME OM~~-1-1987~~ Code 2004/2006a ① (Ref. 5). According to Reference 5, the following tests are required for MSSVs:

BASES

SURVEILLANCE REQUIREMENTS (continued)

a. Visual examination,

b. Seat tightness determination,

c. Setpoint pressure determination (lift setting),

and

d. Compliance with owner's seat tightness criteria~~, and~~

~~e. Verification of the balancing device integrity on balanced valves~~.

①

The ANSI/ASME Standard requires that all valves be tested every 5 years, and a minimum of 20% of the valves be tested every 24 months. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7.1-2 allows a ± ~~[~~3~~]~~% setpoint tolerance for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift.

for the lower pressure setting valves and +2%/−3% setpoint tolerance for the higher pressure setting valves

②
①

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This is to allow testing of the MSSVs at hot conditions. The MSSVs may be either bench tested or tested in situ at hot conditions using an assist device to simulate lift pressure. If the MSSVs are not tested at hot conditions, the lift setting pressure shall be corrected to ambient conditions of the valve at operating temperature and pressure.

REFERENCES

U

1. FSAR, Section ~~[~~5.2~~]~~.
2. ASME, Boiler and Pressure Vessel Code, Section III, Article NC-7000, Class 2 Components.

U

3. FSAR, Section ~~[~~15.2~~]~~.
4. ASME Code for Operation and Maintenance of Nuclear Power Plants.

Code 2004/2006a

5. ANSI/ASME OM~~-1-1987~~.

②
①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.1 BASES, MAIN STEAM SAFETY VALVES (MSSVs)

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.1, MAIN STEAM SAFETY VALVES (MSSVs)

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

ATTACHMENT 2

ITS 3.7.2, Main Steam Isolation Valves (MSIVs)

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

A01

PLANT SYSTEMS

MAIN STEAM ~~LINE~~ ISOLATION VALVES (MSIVs)

LIMITING CONDITION FOR OPERATION

LCO 3.7.2 3.7.1.5 ~~Each main steam line isolation valve~~ Two MSIVs shall be OPERABLE.

Applicability **APPLICABILITY**: MODES 1, ~~2 and 3.~~ MODES 2 and 3 except when all MSIVs are closed.

L01

ACTION:

Action A

Action B

MODE 1 - With one main steam line isolation valve inoperable, POWER OPERATION may continue provided the inoperable valve is ~~either~~ restored to OPERABLE status ~~or closed~~ within ~~4~~ 8 hours; otherwise, be in MODE 2 within ~~the next~~ 6 hours.

M01

L04

Add proposed Condition C Note

A02

Action C

MODES 2 and 3 - With one or ~~both~~ more main steam isolation valve(s) inoperable, subsequent operation in MODES 2 or 3 may continue provided:

1. The inoperable main steam isolation valves are closed within 8 hours, and
2. The inoperable main steam isolation valves are verified closed once per 7 days.

Action D

Otherwise, be in at least ~~HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 24~~ 12 hours.

M02

SURVEILLANCE REQUIREMENTS

Add proposed SR 3.7.2.1 Note

L02

SR 3.7.2.1 4.7.1.5 ~~Each main steam line isolation valve that is open shall be demonstrated OPERABLE by v~~ V erify~~ing full closure~~ the isolation time of each MSIV is within ~~6.0 seconds when tested pursuant to~~ limits in accordance with the INSERVICE TESTING PROGRAM.

LA01

Add proposed SR 3.7.2.2 and Note

M03

~~Pages 3/4 7-11 through 3/4 7-12 (Amendment No. 86) have been deleted from the Technical Specifications. The next page is 3/4 7-13.~~

ITS A01 ITS 3.7.2

PLANT SYSTEMS

MAIN STEAM ~~LINE~~ ISOLATION VALVES (MSIVs)

LIMITING CONDITION FOR OPERATION

LCO 3.7.2 3.7.1.5 ~~Each main steam line isolation valve~~ Two MSIVs shall be OPERABLE.

Applicability **APPLICABILITY**: MODES 1, ~~2, 3 and 4.~~ MODES 2 and 3 except when all MSIVs are closed. L03 L01

ACTION:

Action A
Action B

MODE 1 - With one main steam line isolation valve inoperable ~~but open~~, POWER OPERATION may continue provided the inoperable valve is restored to OPERABLE status within ~~4~~ 8 hours; otherwise, be in at least MODE 2 within ~~the next~~ 6 hours. M01 L04

Add proposed Condition C Note A02 L03

Action C

MODES 2, 3 and 4 - With one or ~~both~~ more main steam isolation valve(s) inoperable, subsequent operation in MODES 2~~,~~ 3 ~~or 4~~ may proceed provided:

1. The inoperable main steam isolation valves are closed within 8 hours, and
2. The inoperable main steam isolation valves are verified closed once per 7 days.

Action D

Otherwise, be in at least ~~HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~COLD SHUTDOWN~~ MODE 4 within ~~the following 24~~ 12 hours. L03

SURVEILLANCE REQUIREMENTS

Add proposed SR 3.7.2.1 Note L02

SR 3.7.2.1 4.7.1.5 ~~Each main steam line isolation valve shall be demonstrated OPERABLE by v~~ V erify~~ing full closure~~ the isolation time of each MSIV is within ~~6.75 seconds when tested pursu~~ limits in accordance with ant to the INSERVICE TESTING PROGRAM. LA01

Add proposed SR 3.7.2.2 and Note M03

DISCUSSION OF CHANGES
ITS 3.7.2, MAIN STEAM ISOLATION VALVES (MSIVs)

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 3.7.1.5 Action for MODES 2 and 3 and Unit 2 CTS 3.7.1.5 Action for MODES 2, 3 and 4 requires entry when one or both main steam isolation valves are inoperable. ITS 3.7.2 ACTION C includes a Condition Note that specifies separate Condition entry is allowed for each MSIV. This changes the CTS by explicitly specifying separate entry Condition for each inoperable MSIV.

The purpose of the Unit 1 CTS 3.7.1.5 Action for MODES 2 and 3 and Unit 2 CTS 3.7.1.5 Action for MODES 2, 3 and 4 is to ensure the appropriate compensatory actions are in place for when one or more MSIVs are not OPERABLE. This change is acceptable because the intent of the CTS Action is to allow separate entry for each inoperable MSIV. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 Unit 1 CTS 3.7.1.5 Action for MODE 1 compensatory measure states, in part, “provided the inoperable valve is either restored to OPERABLE status or closed” and Unit 2 CTS 3.7.1.5 Action for MODE 1 compensatory measure states when one MSIV is inoperable "but open." ITS 3.7.2 ACTION A provides compensatory actions for when an MSIV is inoperable, regardless of whether the valve is open or closed. This changes Unit 1 CTS 3.7.1.5 by deleting the compensatory measure allowing closure of the inoperable valve to fully satisfy the Action and changes the Unit 2 CTS 3.7.1.5 condition for entry into the action from "inoperable but open" to "inoperable."

The purpose of the CTS 3.7.1.5 Action for MODE 1 is to ensure that appropriate compensatory actions are in place when an MSIV valve will not close within the time specified. This change is necessary because the proposed Condition requires entry regardless of whether the MSIV is open or closed. Operation in MODE 1 with a steam generator isolated would result in an asymmetrical steam generator reactor trip. In addition, two Reactor Coolant System (RCS) loops are required to be in operation in MODE 1 and if an MSIV is closed, the steam generator would not be performing its design function to provide a heat sink to the associated RCS loop. The closure of the MSIV could cause the associated main steam safety valves to open with an associated transient requiring operator action. Nevertheless, if an MSIV is found inoperable, entry into the Condition would still be necessary in MODE 1 because MODE 1 operation cannot continue with a closed MSIV. ITS 3.7.2 ACTION A requires restoring the MSIV to

OPERABLE status within 8 hours. This change is acceptable because the MSIVs are associated with a containment penetration with a closed system (i.e., steam generator tubes). The Completion Time is consistent with safe operation under the specified Condition, the capacity and capability of remaining features (i.e., a closed system), a reasonable time for repairs of required features, and the low probability of a DBA occurring during the allowed Completion Time. This change is designated as more restrictive since it requires entry into the Condition regardless of the status (open or closed) of the inoperable MSIV and does not allow closure of the MSIV as a remedial action in MODE 1. (See DOC L04 for discussion Completion Time change.)

M02 **Unit 1 only:** CTS 3.7.1.5 Action requires, when other actions cannot be performed, to be in HOT STANDBY (MODE 3) within 6 hours and in HOT SHUTDOWN (MODE 4) within the following 24 hours. When a shutdown of the unit is required due to one or more inoperable MSIVs, ITS 3.7.2 ACTION D requires the unit to be in MODE 3 within 6 hours and MODE 4 within 12 hours. This changes the CTS Action from MODE 4 within the following 24 hours (i.e., 30 hours total) to within 12 hours.

The purpose of the time to reach the lower MODES of operation is to reach from full power conditions in an orderly manner and without challenging plant systems. The proposed Completion Time to reach MODE 4 is consistent with the other CTS actions to reach Hot Shutdown (e.g., CTS 3.6.1.3, Action a.3) and consistent with the ISTS. This change is designated as more restrictive because it requires less time to reach Hot Shutdown conditions than in the CTS.

M03 The CTS does not require testing to verify that the MSIVs close on an actuation signal. ITS SR 3.7.2.2 requires verification that each MSIV actuates to the isolation position on an actual or simulated actuation signal with a Frequency in accordance with the Surveillance Frequency Control Program (SFCP). A Note is included that requires the Surveillance to only be performed in MODES 1 and 2. This changes the CTS by requiring verification that each MSIV actuates to the isolation position on an actual or simulated actuation signal.

The purpose of the ITS SR 3.7.2.2 is to verify the MSIV can close on an actual or simulated actuation signal. This change is acceptable because the test is periodically conducted to ensure that the MSIV will perform its safety function. 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 3.7.2.2 will be performed at a periodic Frequency in accordance with the SFCP with an initial Frequency of 18 months consistent with ISTS SR 3.7.2.2. This Frequency based on the refueling cycle. Industry operating experience has shown that these components usually pass the Surveillance when performed at 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).

The Note to ITS SR 3.7.2.2 allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, in order to establish conditions consistent with those under which the acceptance criterion was generated. As specified in ITS Section 1.4, once the unit reaches MODE 1 or 2, the requirement for the Surveillance to be performed within its specified Frequency applies and would require that the Surveillance had been performed.

This change is designated as more restrictive because it adds additional requirements to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 4 – Removal of LCO, SR, or other TS Requirement to the TRM, UFSAR, ODCM, NQAP, CLRT Program, IST Program, or ISI Program)* Unit 1 CTS SR 3.7.2.1 requires verification that the closure time of each MSIV is ≤ 6.0 seconds. Unit 2 CTS SR 3.7.2.1 requires verification that the closure time of each MSIV is ≤ 6.75 seconds. ITS SR 3.7.2.1 requires verification that the closure time of each MSIV is within limits. This changes the CTS by moving the MSIV closure time limit to the UFSAR.

The removal of MSIV closure times from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications in order to provide adequate protection of public health and safety. The ITS retains the requirement to verify that the isolation time of each MSIV is within limits. Also, this change is acceptable because these types of details will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59 which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because a detail for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* Unit 1 CTS 3.7.1.5 is applicable in MODES 1, 2, and 3. Unit 2 CTS 3.7.1.5 is applicable, in part, in MODES 1, 2, and 3. ITS LCO 3.7.2 is applicable in MODE 1, and in MODES 2 and 3 except when all MSIVs are closed. This changes the CTS by making the Specification not applicable in MODES 2 and 3 when all MSIVs are closed.

The purpose of the CTS 3.7.1.5 Applicability is to ensure the MSIVs can be isolated in the event of a high energy secondary system pipe rupture (e.g., main steam line break (MSLB)). The exception to MODE 2 and 3 is added to clarify that the MSIVs are not required to be OPERABLE when they are in a position that supports the safety analyses. When the valves are in the closed position, they are in their assumed accident position. This change is consistent with the ISTS. This change is acceptable, because when the MSIVs are closed, the adverse effects of a high energy secondary system pipe rupture are precluded and 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. This change is 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 4.7.1.5 requires the full closure time of each main steam isolation valve verified to be within the specified isolation time when tested pursuant to the INSERVICE TESTING PROGRAM. ITS SR 3.7.2.1 requires a similar test. However, a Note modifies the SR, stating the SR is only required to be performed in MODES 1 and 2. This changes the CTS by requiring Surveillance Requirement performance only in MODES 1 and 2; allowing entry into MODE 3 without performing the Surveillance Requirement.

The purpose of CTS 4.7.1.5 is to demonstrate that the closure time of each MSIV is within the limits assumed in the containment and accident analyses. This test should normally be conducted in MODE 3 with the unit at operating temperature and pressure. Addition of the Note modifying the Surveillance Requirement allows a delay in testing until plant temperature and pressure conditions are established consistent with the conditions assumed for the acceptance criterion basis. As specified in ITS Section 1.4, once the unit reaches MODE 1 or 2, the requirement for the Surveillance to be performed within its specified Frequency applies and would require that the Surveillance had been performed. The CTS change is designated as less restrictive because the ITS Surveillance Requirement is required to be performed in fewer operating conditions than in the CTS.

L03 **Unit 2 only:** *(Category 2 – Relaxation of Applicability)* CTS 3.7.1.5 is applicable, in part, in MODE 4. ITS LCO 3.7.2 is applicable in MODE 1, and in MODES 2 and 3 except when all MSIVs are closed. As a result of the elimination of MODE 4 from the Applicability, ITS 3.7.2 ACTION D requires, in part, for the unit to be in MODE 4 within 12 hours. This changes the CTS by deleting the requirement for the Specification to be applicable in MODE 4. As a result, this also changes the action end state from Cold Shutdown (MODE 5) to MODE 4 with a Completion Time of 12 hours.

The purpose of the CTS 3.7.1.5 Applicability is to ensure the MSIVs can be isolated in the event of a high energy secondary system pipe rupture (e.g., main steam line break (MSLB)). In MODE 4, the steam generator and main steam line energy is low and, therefore, MSIV isolation is not required. This change is consistent with the ISTS. This change is acceptable, because the MSIV requirements continue to ensure that the structures, systems, and components are maintained in the MODES and other specified conditions assumed in the safety analyses. In addition, the deletion of the MODE 4 Applicability is acceptable due to the low steam generator and main steam line energy and the low probability of high energy secondary system pipe rupture occurring in MODE 4.

The change in the end state is acceptable because once the unit reaches MODE 4, the MSIVs are no longer required to be OPERABLE. Therefore, it is unnecessary to cool the unit to MODE 5 conditions. The proposed time to reach MODE 4 is consistent with other CTS Actions to reach MODE 4 (e.g., CTS 3.7.1.6 Actions a and b) and the ISTS. The proposed Completion Time is reasonable, based on operating experience, to reach MODE 4 from full power conditions in an orderly manner and without challenging plant systems. This change is designated as less restrictive because the ITS LCO requirements are applicable in fewer operating conditions than in the CTS and the Action end state is changed from Cold Shutdown (MODE 5) to MODE 4.

L04 *(Category 3 – Relaxation of Completion Time)* CTS 3.7.1.5 Action MODE 1 requires restoration of an inoperable MSIV to OPERABLE status or closure of the MSIV within 4 hours. ITS 3.7.2 ACTION A requires restoring the MSIV to OPERABLE status within 8 hours. (See DOC M01 for further discussion.) This increases the CTS action time to restore an inoperable MSIV from 4 hours to 8 hours consistent with the ISTS.

This change is acceptable because the MSIVs are associated with a containment penetration with a closed system (i.e., steam generator tubes). The Completion Time is consistent with safe operation under the specified Condition, the capacity and capability of remaining features (i.e., a closed system), a reasonable time for repairs of required features, and the low probability of a DBA occurring during the allowed Completion Time. The Completion Time of 8 hours is reasonable considering the relative stability of the closed system to act as a penetration isolation boundary. This change is designated as less restrictive because the time allowed for restoration of an MSIV to OPERABLE status has been increased.

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

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

3.7.1.5 LCO 3.7.2 ~~[~~Two~~]~~ MSIVs shall be OPERABLE. ②

Applicability
DOC L01 APPLICABILITY: MODE 1,
MODES 2 and 3 except when all MSIVs are closed ~~[and de-activated]~~. ②

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action MODE 1 DOC M01 DOC L04	A. One MSIV inoperable in MODE 1.	A.1 Restore MSIV to OPERABLE status.	~~[~~8~~]~~ hours ~~[OR~~ ~~In accordance with the Risk Informed Completion Time Program]~~	②
Action MODE 1	B. Required Action and Associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours	
Action MODEs 2 and 3 DOC A02	C. ------------NOTE------------ Separate Condition entry is allowed for each MSIV. --------------------------------- One or more MSIVs inoperable in MODE 2 or 3.	C.1 Close MSIV. AND C.2 Verify MSIV is closed.	~~[~~8~~]~~ hours Once per 7 days	②
Action MODEs 2 and 3 DOC M02	D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours ~~[~~12~~]~~ hours	②

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.1.5 DOC L02	SR 3.7.2.1	-------------------------------NOTE------------------------------- Only required to be performed in MODES 1 and 2. --- Verify the isolation time of each MSIV is within limits.	In accordance with the INSERVICE TESTING PROGRAM	
DOC M03	SR 3.7.2.2	-------------------------------NOTE------------------------------- Only required to be performed in MODES 1 and 2. --- Verify each MSIV actuates to the isolation position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~	②

CTS

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs)

3.7.1.5 LCO 3.7.2 ~~[~~Two~~]~~ MSIVs shall be OPERABLE. ②

Applicability
DOC L01
DOC L03

APPLICABILITY: MODE 1,
MODES 2 and 3 except when all MSIVs are closed ~~[and de-activated]~~. ②

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action MODE 1 DOC M01 DOC L04	A. One MSIV inoperable in MODE 1.	A.1 Restore MSIV to OPERABLE status.	~~[~~8~~]~~ hours ~~[OR~~ ~~In accordance with the Risk Informed Completion Time Program]~~	②
Action MODE 1	B. Required Action and Associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours	
Action MODEs 2 and 3 DOC A02 DOC L02	C. ------------NOTE------------ Separate Condition entry is allowed for each MSIV. -------------------------------- One or more MSIVs inoperable in MODE 2 or 3.	C.1 Close MSIV. AND C.2 Verify MSIV is closed.	~~[~~8~~]~~ hours Once per 7 days	②
Action MODEs 2 and 3 DOC L03	D. Required Action and associated Completion Time of Condition C not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours ~~[~~12~~]~~ hours	②

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.1.5 DOC L02	SR 3.7.2.1	-------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify the isolation time of each MSIV is within limits.	In accordance with the INSERVICE TESTING PROGRAM	
DOC M03	SR 3.7.2.2	-------------------------------NOTE------------------------------ Only required to be performed in MODES 1 and 2. --- Verify each MSIV actuates to the isolation position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.2, MAIN STEAM ISOLATION VALVES (MSIVs)

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

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

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

B 3.7 PLANT SYSTEMS

B 3.7.2 Main Steam Isolation Valves (MSIVs)

BASES

BACKGROUND

The MSIVs isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). MSIV closure terminates flow from the unaffected (intact) steam generator.

One MSIV is located in each main steam line outside, but close to, containment. The MSIVs are downstream from the main steam safety valves (MSSVs), atmospheric dump valves, and auxiliary feedwater pump turbine steam supplies to prevent their being isolated from the steam generators by MSIV closure. Closing the MSIVs isolates each steam generator from the other, and isolates the turbine, Steam Bypass System, and other auxiliary steam supplies from the steam generators.

in either steam generator

During normal at power operation the MSIVs fail open on loss of power to the solenoid actuator due to residual hydraulic pressure. On a loss of instrument air pressure, the MSIV remains open for at least 8 hours on residual hydraulic pressure.

(MSIS)

The MSIVs close on a main steam isolation signal generated by ~~either~~ low steam generator pressure ~~or high containment pressure~~. ~~The MSIVs fail closed on loss of control or actuation power.~~ The MSIS also actuates the main feedwater isolation valves (MFIVs) to close. The MSIVs may also be actuated manually. ①

U

A description of the MSIVs is found in the FSAR, Section ~~[~~10.3~~]~~ (Ref. 1). ① ②

APPLICABLE SAFETY ANALYSES

U

U

15.4.6

The design basis of the MSIVs is established by the containment analysis for the large steam line break (SLB) inside containment, as discussed in the FSAR, Section ~~[~~6.2~~]~~ (Ref. 2). It is also influenced by the accident analysis of the SLB events presented in the FSAR, Section ~~[15.1.5]~~ (Ref. 3). The design precludes the blowdown of more than one steam generator, assuming a single active component failure ~~(e.g., the failure of one MSIV to close on demand)~~. ① ②

full

one containment spray pump.

Full power conditions maximize

MSIVs are assumed in the analysis to function as designed.

The limiting case for the containment analysis is the hot ~~zero~~ power SLB inside containment with a ~~loss of offsite power following turbine trip, and~~ failure of ~~the MSIV on the affected steam generator to close~~. ~~At zero power, the steam generator inventory and temperature are at their maximum, maximizing~~ the analyzed mass and energy release to the containment. ~~Due to reverse flow, failure of the MSIV to close contributes to the total release of the additional mass and energy in the steam headers, which are downstream of the other MSIV.~~ With the most reactive rod ~~cluster control assembly~~ assumed stuck in the fully ①

BASES

APPLICABLE SAFETY ANALYSES (continued)

withdrawn position, there is an increased possibility that the core will become critical and return to power. The core is ultimately shut down by the borated water injection delivered by the Emergency Core Cooling System. Other failures considered are the failure of an MFIV to close, and failure of a ~~emergency diesel generator to start~~ main feedwater pump (MFP) to trip.

The cases considered for in-containment MSLB analysis include various power levels ranging from 0 to 100.3% power. Cases for SLBs inside and outside containment were analyzed with offsite and control room dose within the regulatory acceptance criteria

~~The accident analysis compares several different SLB events against different acceptance criteria. The large SLB outside containment upstream of the MSIV is limiting for offsite dose, although a break in this short section of main steam header has a very low probability. The large SLB inside containment at hot zero power is the limiting case for a post trip return to power. The analysis includes scenarios with offsite power available and with a loss of offsite power following turbine trip.~~

The analysis assumes ~~With offsite power available,~~ the reactor coolant pumps continue to circulate coolant through the steam generators, maximizing the Reactor Coolant System (RCS) cooldown. With a loss of offsite power, the response of mitigating systems, such as the ~~high pressure safety injection (HPSI)~~ containment spray pumps, is delayed. Significant single failures considered include: failure of a ~~MSIV~~ MFIV to close, failure of a~~n emergency diesel generator~~ MFP to trip, and failure of a ~~HPSI~~ containment spray pump. 1

The MSIVs serve only a safety function to close and remain open during power operation. These valves operate under the following situations: 3

a. An HELB inside containment. ~~In order to maximize the mass and energy release into the containment, the analysis assumes that the MSIV in the affected steam generator remains open. For this accident scenario, steam is discharged into containment from both steam generators until closure of the MSIV in the intact steam generator occurs. After MSIV closure, steam is discharged into containment only from the affected steam generator, and from the residual steam in the main steam header downstream of the closed MSIV in the intact loop~~. The location of this break is at the steam generator outlet nozzle, upstream of the MSIVs. This location results in the largest possible steam flow for a given break size. The blowdown is limited to one steam generator due to the reverse flow check valve, which prevents flow from the intact steam generator. A MSIS occurs on low steam generator pressure to initiate the closure of the MSIVs.

b. A break outside of containment and upstream from the MSIVs. This scenario is not a containment pressurization concern. The uncontrolled blowdown of more than one steam generator must be prevented to limit the potential for uncontrolled RCS cooldown and positive reactivity addition. Closure of the MSIVs isolates the break, and limits the blowdown to a single steam generator.

APPLICABLE SAFETY ANALYSES (continued)

c. A break downstream of the MSIVs. This type of break will be isolated by the closure of the MSIVs. Events such as increased steam flow through the turbine or the steam bypass valves will also terminate on closure of the MSIVs.

d. A steam generator tube rupture. For this scenario, closure of the MSIV~~[s]~~ isolates the affected steam generator from the intact steam generator. In addition to minimizing radiological releases, this enables the operator to maintain the pressure of the steam generator with the ruptured tube below the MSSV setpoints, a necessary step toward isolating the flow through the rupture. ②

e. The MSIVs are also utilized during other events such as a feedwater line break. These events are less limiting so far as MSIV OPERABILITY is concerned.

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

LCO

This LCO requires that the MSIV in each of the ~~[~~two~~]~~ steam lines be OPERABLE. The MSIVs are considered OPERABLE when the isolation times are within limits, and they close on an isolation actuation signal. ②

This LCO provides assurance that the MSIVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the ~~10 CFR 100~~ 10 CFR 50.67 (Ref. 4) limits ~~or the NRC staff approved licensing basis~~. ①

APPLICABILITY

The MSIVs must be OPERABLE in MODE 1 and in MODES 2 and 3 except when all MSIVs are closed~~ and [deactivated]~~. In these MODES there is significant mass and energy in the RCS and steam generators. When the MSIVs are closed, they are already performing their safety function. ① ②

~~In MODE 4, the steam generator energy is low; therefore, the MSIVs are not required to be OPERABLE.~~ ①

In MODES 4, 5 and 6, the steam generator~~s do not contain much~~ energy is low ~~because their temperature is below the boiling point of water~~; therefore, the MSIVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

BASES

ACTIONS

A.1

With one MSIV inoperable in MODE 1, time is allowed to restore the component to OPERABLE status. Some repairs can be made to the MSIV with the unit hot. The ~~[~~8~~]~~ hour Completion Time is reasonable, considering the probability of an accident occurring during the time period that would require closure of the MSIVs. ~~[Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.]~~ ②

The ~~[~~8~~]~~ hour Completion Time is greater than that normally allowed for containment isolation valves because the MSIVs are valves that isolate a closed system penetrating containment. These valves differ from other containment isolation valves in that the closed system provides an additional means for containment isolation. ②

B.1

If the MSIV cannot be restored to OPERABLE status within ~~[~~8~~]~~ hours, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and Condition C would be entered. The Completion Time is reasonable, based on operating experience, to reach MODE 2, and close the MSIVs in an orderly manner and without challenging unit systems. ②

C.1~~, C.2.1,~~ and C.2~~.2~~ ④

Condition C is modified by a Note indicating that separate Condition entry is allowed for each MSIV.

Since the MSIVs are required to be OPERABLE in MODES 2 and 3, the inoperable MSIVs may either be restored to OPERABLE status or closed. When closed, the MSIVs are already in the position required by the assumptions in the safety analysis.

The ~~[~~8~~]~~ hour Completion Time is consistent with that allowed in Condition A. ②

Inoperable MSIVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, MSIV status indications available in the control room, and other administrative controls, to ensure these valves are in the closed position.

BASES

ACTIONS (continued)

D.1 and D.2

If the MSIVs cannot be restored to OPERABLE status, or closed, within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within ~~[~~12~~]~~ hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems. ②

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

This SR verifies that the closure time of each MSIV is within the limit given in Reference ~~5~~ 1 and is within that assumed in the accident and containment analyses. This SR also verifies the valve closure time is in accordance with the INSERVICE TESTING PROGRAM. This SR is normally performed upon returning the unit to operation following a refueling outage. The MSIVs should not be tested at power since even a part stroke exercise increases the risk of a valve closure with the unit generating power. As the MSIVs are not tested at power, they are exempt from the ASME Code (Ref. ~~6~~ 5), requirements during operation in MODES 1 and 2. ① ①

The Frequency for this SR is in accordance with the INSERVICE TESTING PROGRAM.

This test is conducted in MODE 3, with the unit at operating temperature and pressure. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, in order to establish conditions consistent with those under which the acceptance criterion was generated.

SR 3.7.2.2

This SR verifies that each MSIV can close on an actual or simulated actuation signal. This Surveillance is normally performed upon returning the plant to operation following a refueling outage. ~~[The Frequency of MSIV testing is every [18] months. The [18] month Frequency for testing is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, this Frequency is acceptable from a reliability standpoint.~~ ②

This test is conducted in MODE 3, with the unit at operating temperature and pressure. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, in order to establish conditions consistent with those under which the acceptance criterion was generated. ④

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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.~~ ⑤
~~--~~ ~~]~~ ②

REFERENCES

1. U FSAR, Section ~~[~~10.3~~]~~. ①
2. U FSAR, Section ~~[~~6.2~~]~~. ①
3. U FSAR, Section ~~[15.1. 5]~~ 15.4.6. ②
4. ~~10 CFR 100.11~~ 10 CFR 50.67.
5. ~~[Technical Requirements Manual].~~
~~6~~ 5. ASME Code for Operation and Maintenance of Nuclear Power Plants. ①

B 3.7 PLANT SYSTEMS

B 3.7.2 Main Steam Isolation Valves (MSIVs)

BASES

BACKGROUND

The MSIVs isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). MSIV closure terminates flow from the unaffected (intact) steam generator.

One MSIV is located in each main steam line outside, but close to, containment. The MSIVs are downstream from the main steam safety valves (MSSVs), atmospheric dump valves, and auxiliary feedwater pump turbine steam supplies to prevent their being isolated from the steam generators by MSIV closure. Closing the MSIVs isolates each steam generator from the other, and isolates the turbine, Steam Bypass System, and other auxiliary steam supplies from the steam generators.

The MSIVs close on a main steam isolation signal (MSIS) generated by either low steam generator pressure or high containment pressure. The MSIVs fail ~~closed~~ open on loss of DC control ~~or actuation~~ power. MSIVs fail closed on a loss of Instrument Air. The MSIS also actuates the main feedwater isolation valves (MFIVs) to close. The MSIVs may also be actuated manually. ①

A description of the MSIVs is found in the U FSAR, Section ~~[~~10.3~~]~~ (Ref. 1). ① ②

APPLICABLE SAFETY ANALYSES

The design basis of the MSIVs is established by the containment analysis for the large steam line break (SLB) inside containment, as discussed in the U FSAR, Section ~~[~~6.2~~]~~ (Ref. 2). It is also influenced by the accident analysis of the SLB events presented in the U FSAR, Section ~~[15.1.5]~~ 15.1.6 (Ref. 3). The design precludes the blowdown of more than one steam generator, assuming a single active component failure (e.g., the failure of one MSIV to close on demand). ① ②

The limiting case for the containment analysis is the hot zero power SLB inside containment . The failure of one train of the containment heat removal system with offsite power available is the most limiting active failure. ~~with a loss of offsite power following turbine trip, and failure of the MSIV on the affected steam generator to close.~~ At zero power, the steam generator inventory and temperature are at their maximum, maximizing the analyzed mass and energy release to the containment. ~~Due to reverse flow, failure of the MSIV to close contributes to the total release of the additional mass and energy in the steam headers, which are downstream of the other MSIV.~~ MSIVs are assumed in the analysis to function as designed. Initial conditions assume all rods are in the fully withdrawn position with the With the most reactive rod cluster control assembly assumed stuck in the fully ①

BASES

APPLICABLE SAFETY ANALYSES (continued)

or safety injection tank actuation

withdrawn position, there is an increased possibility that the core will become critical and return to power. The core is ultimately shut down by the borated water injection delivered by the Emergency Core Cooling System. Other failures considered are the failure of an MFIV to close, and failure of a emergency diesel generator to start. ①

The cases considered for in-containment MSLB analysis include various power levels ranging from 0 to 100.3% power. Cases for SLBs inside and outside containment were analyzed with offsite and control room dose within the regulatory acceptance criteria.

~~The accident analysis compares several different SLB events against different acceptance criteria. The large SLB outside containment upstream of the MSIV is limiting for offsite dose, although a break in this short section of main steam header has a very low probability. The large SLB inside containment at hot zero power is the limiting case for a post trip return to power. The analysis includes scenarios with offsite power available and with a loss of offsite power following turbine trip.~~

The analysis assumes

~~With offsite power available,~~ the reactor coolant pumps continue to circulate coolant through the steam generators, maximizing the Reactor Coolant System (RCS) cooldown. With a loss of offsite power, the response of mitigating systems, such as the ~~high pressure safety injection (HPSI)~~ pumps, is delayed. Significant single failures considered include: failure of a ~~MSIV~~ to close, failure of a~~n emergency diesel generator~~, and failure of a ~~HPSI pump~~.

containment spray

MFIV

MSIV to close

containment cooling train

to close

The MSIVs serve only a safety function and remain open during power operation. These valves operate under the following situations:

① ③

a. An HELB inside containment. ~~In order to maximize the mass and energy release into the containment, the analysis assumes that the MSIV in the affected steam generator remains open. For this accident scenario, steam is discharged into containment from both steam generators until closure of the MSIV in the intact steam generator occurs. After MSIV closure, steam is discharged into containment only from the affected steam generator, and from the residual steam in the main steam header downstream of the closed MSIV in the intact loop~~.

The location of this break is upstream of the MSIVs. The location results in the largest possible steam flow for a given break size. Blowdown of the other steam generator by backflow is prevented by closure of the steam isolation valve in the broken steam line. Blowdown of the intact steam generator is prevented by the steam isolation valve in the unbroken steam line. A MSIS occurs on low steam generator pressure to initiate the closure of the MSIVs.

b. A break outside of containment and upstream from the MSIVs. This scenario is not a containment pressurization concern. The uncontrolled blowdown of more than one steam generator must be prevented to limit the potential for uncontrolled RCS cooldown and positive reactivity addition. Closure of the MSIVs isolates the break, and limits the blowdown to a single steam generator.

APPLICABLE SAFETY ANALYSES (continued)

c. A break downstream of the MSIVs. This type of break will be isolated by the closure of the MSIVs. Events such as increased steam flow through the turbine or the steam bypass valves will also terminate on closure of the MSIVs.

d. A steam generator tube rupture. For this scenario, closure of the MSIV~~[s]~~ isolates the affected steam generator from the intact steam generator. In addition to minimizing radiological releases, this enables the operator to maintain the pressure of the steam generator with the ruptured tube below the MSSV setpoints, a necessary step toward isolating the flow through the rupture. ②

e. The MSIVs are also utilized during other events such as a feedwater line break. These events are less limiting so far as MSIV OPERABILITY is concerned.

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

LCO

This LCO requires that the MSIV in each of the ~~[~~two~~]~~ steam lines be OPERABLE. The MSIVs are considered OPERABLE when the isolation times are within limits, and they close on an isolation actuation signal. ②

This LCO provides assurance that the MSIVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the ~~10 CFR 100~~ 10 CFR 50.67 (Ref. 4) limits ~~or the NRC staff approved licensing basis~~. ①

APPLICABILITY

The MSIVs must be OPERABLE in MODE 1 and in MODES 2 and 3 except when all MSIVs are closed ~~and [deactivated]~~. In these MODES there is significant mass and energy in the RCS and steam generators. When the MSIVs are closed, they are already performing their safety function. ① ②

~~In MODE 4, the steam generator energy is low; therefore, the MSIVs are not required to be OPERABLE.~~

In MODES 4, 5 and 6, the steam generator~~s do not contain much~~ energy is low ~~because their temperature is below the boiling point of water~~; therefore, the MSIVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES. ①

BASES

ACTIONS

A.1

With one MSIV inoperable in MODE 1, time is allowed to restore the component to OPERABLE status. Some repairs can be made to the MSIV with the unit hot. The ~~[~~8~~]~~ hour Completion Time is reasonable, considering the probability of an accident occurring during the time period that would require closure of the MSIVs. ~~[Alternatively, a Completion Time can be determined in accordance with the Risk Informed Completion Time Program.]~~ ②

The ~~[~~8~~]~~ hour Completion Time is greater than that normally allowed for containment isolation valves because the MSIVs are valves that isolate a closed system penetrating containment. These valves differ from other containment isolation valves in that the closed system provides an additional means for containment isolation. ②

B.1

If the MSIV cannot be restored to OPERABLE status within ~~[~~8~~]~~ hours, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and Condition C would be entered. The Completion Time is reasonable, based on operating experience, to reach MODE 2, and close the MSIVs in an orderly manner and without challenging unit systems. ②

C.1~~, C.2.1,~~ and C.2~~.2~~ ④

Condition C is modified by a Note indicating that separate Condition entry is allowed for each MSIV.

Since the MSIVs are required to be OPERABLE in MODES 2 and 3, the inoperable MSIVs may either be restored to OPERABLE status or closed. When closed, the MSIVs are already in the position required by the assumptions in the safety analysis.

The ~~[~~8~~]~~ hour Completion Time is consistent with that allowed in Condition A. ②

Inoperable MSIVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, MSIV status indications available in the control room, and other administrative controls, to ensure these valves are in the closed position.

BASES

ACTIONS (continued)

D.1 and D.2

If the MSIVs cannot be restored to OPERABLE status, or closed, within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within ~~[~~12~~]~~ hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems. ②

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

This SR verifies that the closure time of each MSIV is within the limit given in Reference ~~5~~ 1 and is within that assumed in the accident and containment analyses. This SR also verifies the valve closure time is in accordance with the INSERVICE TESTING PROGRAM. This SR is normally performed upon returning the unit to operation following a refueling outage. The MSIVs should not be tested at power since even a part stroke exercise increases the risk of a valve closure with the unit generating power. As the MSIVs are not tested at power, they are exempt from the ASME Code (Ref. ~~6~~ 5), requirements during operation in MODES 1 and 2. ① ①

The Frequency for this SR is in accordance with the INSERVICE TESTING PROGRAM.

This test is conducted in MODE 3, with the unit at operating temperature and pressure. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, in order to establish conditions consistent with those under which the acceptance criterion was generated.

SR 3.7.2.2

This SR verifies that each MSIV can close on an actual or simulated actuation signal. This Surveillance is normally performed upon returning the plant to operation following a refueling outage. ~~[The Frequency of MSIV testing is every [18] months. The [18] month Frequency for testing is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, this Frequency is acceptable from a reliability standpoint.~~ ②

This test is conducted in MODE 3, with the unit at operating temperature and pressure. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, in order to establish conditions consistent with those under which the acceptance criterion was generated.

④

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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.~~ ⑤
~~---~~] ②

REFERENCES

1. U FSAR, Section ~~[~~10.3~~]~~. ①
2. FSAR, Section ~~[~~6.2~~]~~. ①
3. U FSAR, Section ~~[15.1. 5]~~ 15.1.6. ②
4. ~~10 CFR 100.11~~ 10 CFR 50.67.
~~5.~~ ~~[Technical Requirements Manual].~~

~~6~~ 5. ASME Code for Operation and Maintenance of Nuclear Power Plants. ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.2 BASES, MAIN STEAM ISOLATION VALVES (MSIVs)

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

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

3. Editorial/grammatical changes made for enhanced clarity.

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.2, MAIN STEAM ISOLATION VALVES (MSIVs)

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

ATTACHMENT 3

ITS 3.7.3, Main Feedwater Isolation Valves (MFIVs)

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

3.7 PLANT SYSTEMS

Add proposed ITS 3.7.3

M01

PLANT SYSTEMS

MAIN FEEDWATER ISOLATION VALVES (MFIVs)

LIMITING CONDITION FOR OPERATION

LCO 3.7.3 3.7.1.6 Four ~~main feedwater isolation valves (~~MFIVs~~)~~ shall be OPERABLE.

ACTIONS Note Applicability **APPLICABILITY**:* MODES 1, 2 and 3, except when ~~the~~ MFIV is closed and deactivated.

ACTION:

Action A a. O ~~With o~~ne or more MFIVs ~~MFIV~~ inoperable ~~in one or more main feedwater lines, OPERATION may continue provided each inoperable valve is restored to OPERABLE status,~~ close~~d,~~ inoperable MFIV or isolate~~d~~ within 72 hours. A02

Action C Otherwise, be in HOT STANDBY within ~~the next~~ 6 hours and in HOT SHUTDOWN within ~~the following 6~~ 12 hours.

Action B b. T ~~With t~~wo valves ~~MFIVs inoperable~~ in the same flowpath inoperable, ~~restore at least one of the inoperable MFIVs to OPERABLE status or close one of the inoperable valves~~ isolate affected flow path within ~~4~~ 8 hours. A02 L01

Action C Otherwise, be in HOT STANDBY within ~~the next~~ 6 hours and in HOT SHUTDOWN ~~within the following 6~~ 12 hours.

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1 4.7.1.6.a V ~~Each MFIV shall be demonstrated OPERABLE by v~~erify the isolation time of each MFIV is within limits ~~ing full closure within 5.15 seconds when tested pursuant to~~ in accordance with the INSERVICE TESTING PROGRAM. ~~The provisions of Specification 4.0.4 are not applicable for entry into MODE 3.~~ LA01 M02

Required Actions A.2 and B.2 4.7.1.6.b Verify ~~For each~~ inoperable MFIV~~, verify that it~~ is closed or isolated once per 7 days.

Add proposed SR 3.7.3.2 M03

ACTIONS Note * ~~Each MFIV shall be treated independently.~~ Separate Condition entry is allowed for each valve.

DISCUSSION OF CHANGES
ITS 3.7.3, MAIN FEEDWATER ISOLATION VALVES (MFIVs)

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 2 only:** CTS 3.7.1.6 Action a requires the restoration of each inoperable valve to OPERABLE status or close or isolate the inoperable MFIV within 72 hours. CTS 3.7.1.6 Action b requires that at least one of the inoperable MFIVs be restored to OPERABLE status or close one of the inoperable valves within 4 hours. ITS 3.7.3 does not state a requirement to restore an inoperable valve to OPERABLE status but includes other compensatory Required Actions to take within 72 hours or 4 hours, as applicable. This changes the CTS by not explicitly stating the requirement to restore an inoperable valve to OPERABLE status.

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

MORE RESTRICTIVE CHANGES

M01 **Unit 1 only**: CTS does not have a requirement for Main Feedwater Isolation Valves (MFIVs) to be OPERABLE, Required Actions or Surveillance Requirements.

ITS LCO 3.7.3 requires MFIVs to be OPERABLE in MODES 1, 2 and 3, except when a MFIV is closed and deactivated. In addition, ITS 3.7.3 provides the necessary Required Actions and Surveillance Requirement that support MFIV OPERABILITY. SR 3.7.3.1 will be performed at a Frequency in accordance with the INSERVICE TESTING PROGRAM. SR 3.7.3.2 will be performed at a frequency in accordance with the Surveillance Frequency Control Program with an initial Frequency of 18 months consistent with the ISTS. In addition, PSL controls periodic Frequencies for Surveillances in accordance with the Surveillance Frequency Control Program per CTS 6.8.4.o. Industry operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. This changes the CTS by incorporating the requirements of ITS 3.7.3.

The safety related function of MFIVs is to provide isolation of the feedwater system from the steam generators and AFW system during normal and emergency conditions. This change is acceptable because the safety analyses assume the MFIVs function as designed. This change is designated as more restrictive because it adds new requirements to the CTS.

M02 **Unit 2 only:** CTS 4.7.1.6.a states that the provisions of Specification 4.0.4 are not applicable for entry into MODE 3, and thereby provides an allowance for entering the next higher MODE of Applicability when the Surveillance is not met. ITS 3.7.3 does not provide a Surveillance Note that states that the provisions of LCO 4.0.4 are not applicable. LCO 4.0.4 states that entry into a MODE or other specified condition in the Applicability of a Limiting Condition for Operation (LCO) shall only be made when the LCO's Surveillances have been met within their specified Frequency, except as provided by Surveillance Requirement 4.0.3. LCO 4.0.3 provides the provisions for a missed surveillance and does not apply to a surveillance known to not be met within its specified Frequency prior to entering the Mode of Applicability.

The purpose of CTS 4.7.1.6.a is to provide an allowance for entering the MODE of applicability when any Surveillance is not met. This changes CTS by allowing entry into the MODE of Applicability by only deferring the performance of the Surveillance Requirements instead of deferring compliance with the LCO. This change is designated as more restrictive because the CTS 4.0.4 MODE change allowance is deleted and entry into the applicable MODES shall only be made when the LCO's surveillances have been met within their specified Frequency.

M03 **Unit 2 only:** Unit 2 CTS does not require testing to verify that MFIVs close on an actuation signal. ITS SR 3.7.3.2 requires verification that each MFIV actuates to the isolation position on an actual or simulated actuation signal. PSL controls periodic Frequencies for Surveillances in accordance with the Surveillance Frequency Control Program (SFCP) per CTS 6.8.4.q. Therefore, SR 3.7.3.2 will be performed at a Frequency in accordance with the Surveillance Frequency Control Program with an initial Frequency of 18 months consistent with the ISTS SR 3.7.3.2 and considers operating practice to regularly assess potential degradation and verify operation within the safety analysis. This changes the CTS by requiring verification that each MFIV actuates to the isolation position on an actual or simulated actuation signal.

The purpose of the ITS SR 3.7.3.2 is to verify each MFIV can close on an actual or simulated actuation signal. This change is acceptable because the test is conducted to ensure that the MFIV will perform its safety function. 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 designated as more restrictive because it adds additional requirements to the CTS.

DISCUSSION OF CHANGES
ITS 3.7.3, MAIN FEEDWATER ISOLATION VALVES (MFIVs)

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 **Unit 2 only:** *(Type 3 - Removing Procedural Detail for Meeting TS Requirements or Reporting Requirements)* CTS SR 3.7.3.1 requires verification that the closure time of each MFIV is within 5.15 seconds. ITS SR 3.7.3.1 requires verification that the closure time of each MFIV is within limits. This changes the CTS by moving the MFIV closure time limit to the UFSAR.

The removal of MFIV closure time 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 to verify that the closure time of each MFIV is within limits. This change is acceptable because these types of procedural details will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59 which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because a procedural detail for meeting Technical Specification requirements are being removed from the Technical Specifications. This change is designated as less restrictive, because the ITS LCO requirements are applicable in fewer operating conditions than in the CTS.

LESS RESTRICTIVE CHANGES

L01 **Unit 2 only:** *(Category 4 – Relaxation of Required Action)* CTS 3.7.1.6 Action b states that with two MFIVs inoperable in the same flow path restore at least one of the inoperable MFIVs to OPERABLE status or close one of the inoperable valves within 4 hours. ITS ACTION B when two valves in the same flow path inoperable requires isolating the affected flow path within 8 hours. This changes the CTS 3.7.1.6 time to isolate an affected flow path from 4 hours to 8 hours.

The purpose of the CTS Action 3.7.1.6 is to return the system to the condition where at least one valve in each flow path is performing the required safety function. The CTS action time of 4 hours is consistent with the time required to close an inoperable containment isolation valve. This change is consistent with the ISTS and acceptable because the MFIVs are associated with a containment penetration with a closed system (i.e., steam generator tubes). The relaxed Completion Time is consistent with safe operation under the specified Condition, the capacity and capability of remaining features (i.e., a closed system), a reasonable time for repairs of required features, and the low probability of a DBA occurring during the allowed Completion Time. In the case of two inoperable MFIVs, 8 hours is a reasonable time period considering the relative stability of the closed system to act as a penetration isolation boundary. This change is designated as less restrictive because additional time is allowed to isolate the affected flow path than was allowed in the CTS.

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

CTS

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs) ~~[and [MFIV] Bypass Valves]~~

DOC M01 LCO 3.7.3 ~~[~~Two~~]~~ MFIVs ~~[and [MFIV] bypass valves]~~ shall be OPERABLE. ②

DOC M01 APPLICABILITY: MODES 1, 2, ~~[~~and 3~~]~~ except when MFIV ~~[or [MFIV] bypass valve]~~ is closed and ~~[~~de-activated~~] or [isolated by a closed manual valve]~~.

ACTIONS

---NOTE---

DOC M01 Separate Condition entry is allowed for each valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC M01 A. One or more MFIVs ~~[or [MFIV] bypass valves]~~ inoperable. DOC M01	A.1 Close or isolate inoperable MFIV ~~[or [MFIV] bypass valve]~~. AND A.2 Verify inoperable MFIV ~~[or [MFIV] bypass valve]~~ is closed or isolated.	~~[~~8~~ or 72]~~ hours ② Once per 7 days
~~B. [[Two] valves in the same flow path inoperable.~~	~~B.1 Isolate affected flow path.~~ ~~AND~~ ~~B.2 Verify inoperable MFIV [or [MFIV] bypass valve] is closed or isolated.~~	~~8 hours~~ ③ ② ~~Once per 7 days]~~
DOC M01 B ~~C~~. Required Action and associated Completion Time not met.	B ~~C~~.1 Be in MODE 3. ~~[~~ AND B ~~C~~. 2 Be in MODE 4.	6 hours ③ ~~[~~12~~]~~ hours ~~]~~ ②

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
DOC M01	SR 3.7.3.1	Verify the isolation time of each MFIV ~~[and [MFIV] bypass valve]~~ is within limits.	In accordance with the INSERVICE TESTING PROGRAM	②
DOC M01	SR 3.7.3.2	Verify each MFIV ~~[and [MFIV] bypass 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

CTS

3.7 PLANT SYSTEMS

3.7.3 Main Feedwater Isolation Valves (MFIVs) ~~[and [MFIV] Bypass Valves]~~

3.7.1.6 LCO 3.7.3 Four ~~[Two]~~ MFIVs ~~[and [MFIV] bypass valves]~~ shall be OPERABLE. ②

Applicability APPLICABILITY: MODES 1, 2, [and 3] except when MFIV ~~[or [MFIV] bypass valve]~~ is closed and [de-activated] ~~or [isolated by a closed manual valve]~~.

ACTIONS

Footnote * ---NOTE---
Separate Condition entry is allowed for each valve.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a	A. One or more MFIVs ~~[or [MFIV] bypass valves]~~ inoperable.	A.1 Close or isolate inoperable MFIV ~~[or [MFIV] bypass valve]~~.	~~[8 or~~ 72] hours	②
		<u>AND</u>		
SR 4.7.1.6.b		A.2 Verify inoperable MFIV ~~[or [MFIV] bypass valve]~~ is closed or isolated.	Once per 7 days	
Action b DOC L01	B. ~~[~~ [Two] valves in the same flow path inoperable.	B.1 Isolate affected flow path.	8 hours	① ②
		<u>AND</u>		
SR 4.7.1.6.b		B.2 Verify inoperable MFIV ~~[or [MFIV] bypass valve]~~ is closed or isolated.	Once per 7 days ~~]~~	
Action a Action b	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3.	6 hours	
		[<u>AND</u>		
		C.2 Be in MODE 4.	[12] hours ~~]~~	②

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
SR 4.7.1.6.a DOC LA01 DOC M02	SR 3.7.3.1	Verify the isolation time of each MFIV ~~[and [MFIV] bypass valve]~~ is within limits.	In accordance with the INSERVICE TESTING PROGRAM	②
DOC M03	SR 3.7.3.2	Verify each MFIV ~~[and [MFIV] bypass 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

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.3, MAIN FEEDWATER ISOLATION VALVES (MFIVs)

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

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

3. **Unit 1 Only:** ISTS ACTION B is bracketed and deleted based on the Unit 1 design that includes only one MFIV in each feedwater line to its respective steam generator. ISTS ACTION C is renumbered in conformance.

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

B 3.7 PLANT SYSTEMS

B 3.7.3 Main Feedwater Isolation Valves (MFIVs) ~~[and [MFIV] Bypass Valves]~~ ①

BASES

BACKGROUND

The MFIVs isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break (HELB). Closure of the MFIVs ~~and the bypass valves~~ terminates flow to both steam generators, terminating the event for feedwater line breaks (FWLBs) occurring upstream of the MFIVs. The consequences of events occurring in the main steam lines or in the MFW lines downstream of the MFIVs will be mitigated by their closure. Closure of the MFIVs ~~and bypass valves~~ effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks (SLBs) or FWLBs inside containment, and reducing the cooldown effects for SLBs. ①

The MFIVs ~~and bypass valves~~ isolate the nonsafety related portions from the safety related portion of the system. In the event of a secondary side pipe rupture inside containment, the valves limit the quantity of high energy fluid that enters containment through the break, and provide a pressure boundary for the controlled addition of auxiliary feedwater (AFW) to the intact loop. ①

One MFIV is located on each ~~A~~MFW line, outside, but close to, containment. The MFIVs are located upstream of the AFW injection point so that AFW may be supplied to a steam generator following MFIV closure. The piping volume from the valve to the steam generator must be accounted for in calculating mass and energy releases, and refilled prior to AFW reaching the steam generator following either an SLB or FWLB. ①

The MFIVs ~~and its bypass valves~~ close on receipt of a main steam isolation signal (MSIS) generated by ~~either~~ low steam generator pressure and safety injection actuation signal (SIAS) on low-low pressurizer pressure or high containment pressure ~~or high containment pressure~~. The MSIS also actuates the main steam isolation valves (MSIVs) to close. The MFIVs ~~and bypass valves~~ may also be actuated manually. In addition to the MFIVs ~~and the bypass valves~~, a check valve inside containment is available to isolate the feedwater line penetrating containment, and to ensure that the consequences of events do not exceed the capacity of the containment heat removal systems. ①

~~A description of the~~ MFIV~~s~~ design is ~~found~~ discussed in the UFSAR, Section ~~[~~10.4.~~7]~~6 (Ref. 1). ① ②

BASES

APPLICABLE SAFETY ANALYSES

The design basis of the MFIVs is established by the analysis for the large SLB. It is also influenced by the accident analysis for the large FWLB. Closure of the MFIVs ~~and their bypass valves~~ may also be relied on to terminate a steam line break for core response analysis ~~and an excess feedwater flow event~~ upon receipt of a MSIS on ~~high~~ low steam generator ~~level~~ pressure. ①

Failure of an MFIV ~~and the bypass valve~~ to close following an SLB, FWLB, or excess feedwater flow event can result in additional mass and energy to the steam generators contributing to cooldown. This failure also results in additional mass and energy releases following an SLB or FWLB event. ①

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

LCO

This LCO ensures that the MFIVs ~~and the bypass valves~~ will isolate MFW flow to the steam generators. Following an FWLB or SLB, these valves will also isolate the nonsafety related portions from the safety related portions of the system. This LCO requires that ~~[two]~~ one MFIV~~s [and [MFIV] bypass valves]~~ in each feedwater line be OPERABLE. The MFIVs ~~and the bypass valves~~ are considered OPERABLE when the isolation times are within limits, and ~~are~~ will close~~d~~ on an ~~isolation actuation signal~~ MSIS and SIAS. ① ② ①

Failure to meet the LCO requirements can result in additional mass and energy being released to containment following an SLB or FWLB inside containment. ~~If an MSIS on high steam generator level is relied on to terminate an excess feedwater flow event, failure to meet the LCO may result in the introduction of water into the main steam lines.~~ ②

APPLICABILITY

The MFIVs ~~and the bypass valves~~ must be OPERABLE whenever there is significant mass and energy in the Reactor Coolant System and steam generators. This ensures that, in the event of an HELB, a single failure cannot result in the blowdown of more than one steam generator. ①

In MODES 1, 2, and 3, the MFIVs ~~[or [MFIV] bypass valves]~~ are required to be OPERABLE, except when they are closed and deactivated ~~or isolated by a closed manual valve~~, in order to limit the amount of available fluid that could be added to containment in the case of a secondary system pipe break inside containment. When the valves are closed and deactivated ~~or isolated by a closed manual valve~~, they are already performing their safety function. ② ①

In MODES 4, 5, and 6, steam generator energy is low. Therefore, the MFIVs ~~and the bypass valves~~ are normally closed since MFW is not required. ②

BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each value.

A.1 and A.2

With one or more MFIVs ~~or the bypass valve~~ inoperable, action must be taken to close or isolate the inoperable valves within ~~[~~8 ~~or 72]~~ hours. When these valves are closed or isolated, they are performing their required safety function (e.g., to isolate the line). ① ②

~~For units with only one MFIV per feedwater line:~~ The ~~[~~8~~]~~ hour Completion Time is reasonable to close the MFIV ~~or its bypass valve, which includes performing a controlled unit shutdown to MODE 2~~. ②

~~The [72] hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves, and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths.~~ ①

~~B.1~~

~~If more than one MFIV or [MFIV] bypass valve in the same flow path cannot be restored to OPERABLE status, then there may be no redundant system to operate automatically and perform the required safety function. Although the containment can be isolated with the failure of two valves in parallel in the same flow path, the double failure can be an indication of a common mode failure in the valves of this flow path, and as such is treated the same as a loss of the isolation capability of this flow path. Under these conditions, valves in each flow path must be restored to OPERABLE status, closed, or the flow path isolated within 8 hours. This action returns the system to the condition where at least one valve in each flow path is performing the required safety function. The 8 hour Completion Time is reasonable to close the MFIV or its bypass valve, or otherwise isolate the affected flow path.~~ ①

~~Inoperable MFIVs and [MFIV] bypass valves that cannot be restored to OPERABLE status within the Completion Time, but are closed or isolated, must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of valve status indications available in the control room, and other administrative controls to ensure that these valves are closed or isolated~~.

BASES

ACTIONS (continued)

B ~~C~~.1 and ~~[C~~.2~~]~~ ③ ②

If the MFIVs ~~and their bypass valves~~ cannot be restored to OPERABLE status, closed, or isolated in the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours ~~[,~~ and in MODE 4 within ~~[~~12~~]~~ hours~~]~~. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ① ②

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

This SR verifies that the closure time of each MFIV ~~[and [MFIV] bypass valve]~~ is within the limit given in Reference 2 and is within that assumed in the accident and containment analyses. This SR also verifies that the valve closure time is in accordance with the INSERVICE TESTING PROGRAM. This SR is normally performed upon returning the unit to operation following a refueling outage. The MFIVs should not be tested at power since even a part stroke exercise increases the risk of a valve closure with the unit generating power. As these valves are not tested at power, they are exempt from the ASME Code (Ref. 3) requirements during operation in MODES 1 and 2. ②

The Frequency is in accordance with the INSERVICE TESTING PROGRAM.

SR 3.7.3.2

This SR verifies that each MFIV ~~[and [MFIV] bypass valve]~~ can close on an actual or simulated actuation signal. This Surveillance is normally performed upon returning the plant to operation following a refueling outage. ②

~~[The Frequency for this SR is every [18] months. The [18] month Frequency for testing is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, this Frequency is acceptable from a reliability standpoint.~~ ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

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.~~
~~--]~~ ④

REFERENCES

1. U FSAR, Section ~~[~~10.4.~~7~~ 6~~]~~.

2. ~~[~~Technical Requirements Manual~~]~~.

3. ASME Code for Operation and Maintenance of Nuclear Power Plants.

② ①

B 3.7 PLANT SYSTEMS

B 3.7.3 Main Feedwater Isolation Valves (MFIVs) ~~[and [MFIV] Bypass Valves]~~ ①

BASES

BACKGROUND

The MFIVs isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break (HELB). Closure of the MFIVs ~~and the bypass valves~~ terminates flow to both steam generators, terminating the event for feedwater line breaks (FWLBs) occurring upstream of the MFIVs. The consequences of events occurring in the main steam lines or in the MFW lines downstream of the MFIVs will be mitigated by their closure. Closure of the MFIVs ~~and bypass valves~~ effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks (SLBs) or FWLBs inside containment, and reducing the cooldown effects for SLBs. ①

The MFIVs ~~and bypass valves~~ isolate the nonsafety related portions from the safety related portion of the system. In the event of a secondary side pipe rupture inside containment, the valves limit the quantity of high energy fluid that enters containment through the break, and provide a pressure boundary for the controlled addition of auxiliary feedwater (AFW) to the intact loop. ①

Two ~~One~~ MFIVs are ~~is~~ located on each M~~A~~FW line, outside, but close to, containment. The MFIVs are located upstream of the AFW injection point so that AFW may be supplied to a steam generator following MFIV closure. The piping volume from the valve to the steam generator must be accounted for in calculating mass and energy releases, and refilled prior to AFW reaching the steam generator following either an SLB or FWLB. ①

The MFIVs ~~and its bypass valves~~ close on receipt of a main steam isolation signal (MSIS) generated by ~~either~~ low steam generator pressure and Auxiliary Feedwater Actuation Signal (AFAS) on low steam generator level or high containment pressure. The MSIS also actuates the main steam isolation valves (MSIVs) to close. The MFIVs ~~and bypass valves~~ may also be actuated manually. In addition to the MFIVs ~~and the bypass valves~~, a check valve inside containment is available to isolate the feedwater line penetrating containment, and to ensure that the consequences of events do not exceed the capacity of the containment heat removal systems. ①

A description of the MFIVs is found in the UFSAR, Section ~~[~~10.4.7~~]~~ (Ref. 1). ① ②

BASES

APPLICABLE SAFETY ANALYSES

The design basis of the MFIVs is established by the analysis for the large SLB. It is also influenced by the accident analysis for the large FWLB. Closure of the MFIVs ~~and their bypass valves~~ may also be relied on to terminate a steam line break for core response analysis and an excess feedwater flow event upon receipt of a MSIS on ~~high~~ low steam generator ~~level~~ pressure or high containment pressure. ①

Failure of an MFIV ~~and the bypass valve~~ to close following an SLB, FWLB, or excess feedwater flow event can result in additional mass and energy to the steam generators contributing to cooldown. This failure also results in additional mass and energy releases following an SLB or FWLB event. ①

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

LCO

This LCO ensures that the MFIVs ~~and the bypass valves~~ will isolate MFW flow to the steam generators. Following an FWLB or SLB, these valves will also isolate the nonsafety related portions from the safety related portions of the system. This LCO requires that ~~[~~two~~]~~ MFIV~~s [and [MFIV] bypass valves]~~ in each feedwater line be OPERABLE. The MFIVs ~~and the bypass valves~~ are considered OPERABLE when the isolation times are within limits, and ~~are~~ will close~~d~~ on an ~~isolation actuation signal~~ MSIS and AFAS. ① ②

Failure to meet the LCO requirements can result in additional mass and energy being released to containment following an SLB or FWLB inside containment. ~~If an MSIS on high steam generator level is relied on to terminate an excess feedwater flow event, failure to meet the LCO may result in the introduction of water into the main steam lines.~~ ②

APPLICABILITY

The MFIVs ~~and the bypass valves~~ must be OPERABLE whenever there is significant mass and energy in the Reactor Coolant System and steam generators. This ensures that, in the event of an HELB, a single failure cannot result in the blowdown of more than one steam generator. ①

In MODES 1, 2, and 3, the MFIVs ~~[or [MFIV] bypass valves]~~ are required to be OPERABLE, except when they are closed and deactivated ~~or isolated by a closed manual valve~~, in order to limit the amount of available fluid that could be added to containment in the case of a secondary system pipe break inside containment. When the valves are closed and deactivated ~~or isolated by a closed manual valve~~, they are already performing their safety function. ② ①

In MODES 4, 5, and 6, steam generator energy is low. Therefore, the MFIVs ~~and the bypass valves~~ are normally closed since MFW is not required. ②

BASES

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each value.

A.1 and A.2

With one or more MFIVs ~~or the bypass valve~~ inoperable, action must be taken to close or isolate the inoperable valves within ~~[8 or~~ 72~~]~~ hours. When these valves are closed or isolated, they are performing their required safety function (e.g., to isolate the line). ① ②

~~For units with only one MFIV per feedwater line: The [8] hour Completion Time is reasonable to close the MFIV or its bypass valve, which includes performing a controlled unit shutdown to MODE 2.~~ ①

The ~~[~~72~~]~~ hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves, and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. ②

B.1

If more than one MFIV ~~or [MFIV] bypass valve~~ in the same flow path cannot be restored to OPERABLE status, then there may be no redundant system to operate automatically and perform the required safety function. Although the containment can be isolated with the failure of two valves in parallel in the same flow path, the double failure can be an indication of a common mode failure in the valves of this flow path, and as such is treated the same as a loss of the isolation capability of this flow path. Under these conditions, valves in each flow path must be restored to OPERABLE status, closed, or the flow path isolated within 8 hours. This action returns the system to the condition where at least one valve in each flow path is performing the required safety function. The 8 hour Completion Time is reasonable to close the MFIV or its bypass valve, or otherwise isolate the affected flow path. ② ①

Inoperable MFIVs ~~and [MFIV] bypass valves~~ that cannot be restored to OPERABLE status within the Completion Time, but are closed or isolated, must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of valve status indications available in the control room, and other administrative controls to ensure that these valves are closed or isolated. ① ②

BASES

ACTIONS (continued)

C.1 and ~~[~~C.2~~]~~ ②

If the MFIVs ~~and their bypass valves~~ cannot be restored to OPERABLE status, closed, or isolated in the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours ~~[,~~ and in MODE 4 within ~~[~~12~~]~~ hours~~]~~. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ① ②

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

This SR verifies that the closure time of each MFIV ~~[and [MFIV] bypass valve]~~ is within the limit given in Reference 2 and is within that assumed in the accident and containment analyses. This SR also verifies that the valve closure time is in accordance with the INSERVICE TESTING PROGRAM. This SR is normally performed upon returning the unit to operation following a refueling outage. The MFIVs should not be tested at power since even a part stroke exercise increases the risk of a valve closure with the unit generating power. As these valves are not tested at power, they are exempt from the ASME Code (Ref. 3) requirements during operation in MODES 1 and 2. ②

The Frequency is in accordance with the INSERVICE TESTING PROGRAM.

SR 3.7.3.2

This SR verifies that each MFIV ~~[and [MFIV] bypass valve]~~ can close on an actual or simulated actuation signal. This Surveillance is normally performed upon returning the plant to operation following a refueling outage. ②

~~[The Frequency for this SR is every [18] months. The [18] month Frequency for testing is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, this Frequency is acceptable from a reliability standpoint.~~ ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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.~~
~~--]~~ ④

REFERENCES

1. U FSAR, Section ~~[~~10.4.7~~]~~. ① ②

2. ~~[~~Technical Requirements Manual~~]~~.

3. ASME Code for Operation and Maintenance of Nuclear Power Plants.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.3 BASES, MAIN FEEDWATER ISOLATION VALVES (MFIVs)

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

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

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.3, MAIN FEEDWATER ISOLATION VALVES (MFIVs)

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

ATTACHMENT 4

ITS 3.7.4, Atmospheric Dump Valves (ADVs)

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

3.7 PLANT SYSTEMS

Add proposed ITS 3.7.4

M01

ITS A01 ITS 3.7.4

PLANT SYSTEMS

ATMOSPHERIC DUMP VALVES (ADVs)

LIMITING CONDITION FOR OPERATION

LCO 3.7.4 3.7.1.7 Two ADV lines ~~The atmospheric dump and associated block valves~~ shall be OPERABLE ~~with:~~ LA01

~~a. All atmospheric dump valves in manual control above 15% of RATED THERMAL POWER, and~~

~~b. No more than one atmospheric dump valve per steam generator in automatic control below 15% of RATED THERMAL POWER~~. L01

Applicability **APPLICABILITY:** MODE 1~~.~~ , 2, and 3, M02

Add proposed second Applicability

ACTION:

Action A a. One ADV line inoperable ~~With less than one atmospheric dump and associated block valve per steam generator OPERABLE,~~ restore ~~the required atmospheric dump and associated block valve~~ ADV line to OPERABLE status within 72 hours, or LA01

Action C be in ~~at least~~ HOT STANDBY within ~~the next~~ 6 hours. AND be in MODE 4 without reliance upon steam generator for heat removal within 24 hours M03

~~b. With more than the permissible number of atmospheric dump valves in automatic control, return the atmospheric dump valves to manual control within 1 hour, or be in at least HOT STANDBY within the next 6 hours.~~ L01

Add proposed ACTION B M04

SURVEILLANCE REQUIREMENTS

~~4.7.1.7 Each atmospheric dump valve shall be verified to be in the manual operation mode in accordance with the Surveillance Frequency Control Program during operation at ≥ 15% of RATED THERMAL POWER.~~ L01

Add proposed SR 3.7.4.1

Add proposed SR 3.7.4.2

M05

DISCUSSION OF CHANGES
ITS 3.7.4, ATMOSPHERIC DUMP VALVES (ADVs)

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.

MORE RESTRICTIVE CHANGES

M01 **Unit 1 only**: CTS does not have a Specification for Atmospheric Dump Valves (ADVs). ITS LCO 3.7.4 requires ADV lines to be OPERABLE in MODES 1, 2, 3, and MODE 4 when the steam generator is being relied upon for heat removal. In addition, ITS 3.7.4 provides the necessary Required Actions to provide appropriate remedial actions when the LCO is not met and Surveillance Requirement that support ADV line OPERABILITY. PSL controls periodic Frequencies for Surveillances in accordance with the Surveillance Frequency Control Program per CTS 6.8.4.o. Therefore, SR 3.7.4.1 and SR 3.7.4.2 will be performed at a frequency in accordance with the Surveillance Frequency Control Program with an initial Frequency of 18 months consistent with the ISTS. This changes the CTS by incorporating requirements for ADVs in ITS 3.7.4.

The safety related function of ADVs is to provide the capability to cool the unit to Shutdown Cooling (SDC) System entry conditions. The ADVs are assumed to be used by the operator to cool down the unit to SDC entry conditions for accidents accompanied by a loss of offsite power. This change is necessary because the safety analyses assume the ADVs function, coincident with a loss of offsite power, in the main steam line break upstream of the main steam isolation valves, a feedwater line break, and a steam generator tube rupture event. This change is designated as more restrictive because it adds new requirements to the CTS.

M02 **Unit 2 only:** CTS 3.7.1.7 is applicable in MODE 1. ITS 3.7.4 Applicability states MODES 1, 2, and 3, and MODE 4 when steam generator is being relied upon for heat removal. This changes the CTS to require OPERABILITY of the ADV lines, which include ADVs and associated block valves, in additional MODES of operation. The purpose of CTS 3.7.1.7 is to ensure the capability to cool the unit to SDC System entry conditions. These changes are acceptable because they ensure the necessary decay heat removal capacity is available when a steam generator is relied upon for heat removal to support the safety analysis and licensing basis.

These changes are designated as more restrictive because they add additional Applicability requirements that are not required by the CTS.

M03 **Unit 2 only:** CTS 3.7.1.7 Action a states, in part, to be in at least HOT STANDBY (MODE 3) within the next 6 hours. ITS 3.7.4 ACTION C requires the unit to be in

MODE 3 within 6 hours and in MODE 4 without reliance upon steam generator for heat removal within 24 hours. This changes the CTS by adding an additional requirement to be in MODE 4 without reliance upon steam generator for heat removal within 24 hours.

The purpose of the shutdown Actions is to place the unit outside of the Applicability of the Specification. ITS 3.7.4 ACTION C accomplishes this purpose by adding the additional requirement. (See DOC M02 for discussion of changes to the Applicability.) This change is acceptable because the requirement to be in MODE 4 without reliance upon steam generator for heat removal places the unit outside of the Applicability and the time required to be in MODE 4 is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. This change is designated as more restrictive because additional Required Actions are now required that were not required in CTS.

M04 **Unit 2 only:** CTS 3.7.1.7 action a allows 72 hours to restore the required atmospheric dump and associated block valve to OPERABLE status with less than one ADV and associated block valve per steam generator OPERABLE. ITS 3.7.4 ACTION B requires the restoration of at least one ADV line to OPERABLE status within 24 hours whenever two ADV lines are inoperable. This changes CTS by adding an additional Required Action and Completion time when two ADV lines are inoperable.

The purpose of ITS 3.7.4 ACTION B is to restore one of the ADV lines to OPERABLE status when both ADV lines are inoperable (e.g., one or more ADVs or one or more block valves in both ADV lines are inoperable). Because the block valve can be closed to isolate an ADV line, repair may be possible with the unit at power and the 24 hour Completion Time is reasonable based on the availability of the steam bypass system and MSSVs, and the low probability of an event occurring during the period requiring the ADV lines. This change is designated as more restrictive because additional requirements are being added to the ITS than are required by the CTS.

M05 **Unit 2 only:** CTS LCO 3.7.4 requires the atmospheric dump and associated block valves shall be OPERABLE. The CTS does not include any Surveillance to verify the ADVs and associated block valves are capable of performing their safety function (i.e., manually open to cooldown the unit during accidents with a loss of offsite power and close to preclude an uncontrolled steam release). ITS SR 3.7.4.1 requires verification of one complete cycle of each ADV and SR 3.7.4.2 requires verification of one complete cycle of each ADV block valve. PSL controls periodic Frequencies for Surveillances in accordance with the Surveillance Frequency Control Program (SFCP) per CTS 6.8.4.q. Therefore, ITS SRs 3.7.4.1 and 3.7.4.2 will be performed at a Frequency in accordance with the Surveillance Frequency Control Program with an initial Frequency of 18 months consistent with the ISTS and considers industry operating experience that has shown that components of this type usually pass the SR when performed at an 18 month Frequency. This changes the CTS by adding SRs to verify one complete cycle of each ADV and associated block valve.

The purpose of ITS 3.7.4 is to ensure a safety grade method for cooling the unit to shutdown cooling entry conditions is available should the preferred method, via the steam bypass system to the condenser, not be available. This change is necessary because the ADV line is required to be OPERABLE to ensure the unit can be cooled to shutdown cooling entry conditions in the event of one of the steam generators becomes unavailable coincident with a loss of offsite power. SR 3.7.4.1 is being added to verify the function of the ADV, which is to be opened and throttled through its full range. Cycling the ADV closed and open demonstrates its capability to perform this function. SR 3.7.4.2 is being added to verify the function of the ADV block valve, which is to isolate a failed open ADV. Cycling the block valve closed and open demonstrates its capability to perform this function. 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 designated as more restrictive because additional requirements are being added to the ITS than are required by the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 **Unit 2 only:** *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* CTS 3.7. 1.7 requires, in part, the atmospheric dump and associated block valves to be OPERABLE. CTS 3.7.1.7 Action a requires, with less than one atmospheric dump and associated block valve per steam generator OPERABLE, the required atmospheric dump and associated block valve be restored to OPERABLE status within 72 hours. ITS LCO 3.7.4 requires two ADV lines to be OPERABLE. ITS 3.7.4 ACTION A requires, with one ADV line inoperable, restoration of the inoperable ADV line to OPERABLE status within 72 hours. ITS 3.7.4 does not include the detail of what constitutes an OPERABLE ADV line. This changes the CTS by moving the details of what constitutes an OPERABLE ADV line to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that the ADVs and associated block valves (i.e., ADV line) be OPERABLE and provides sufficient remedial actions to restore these components to OPERABLE status. 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 **Unit 2 only:** *(Category 1 – Relaxation of LCO Requirements)* CTS 3.7.1.7 requires that the atmospheric dump and associated block valves shall be OPERABLE with: a) all atmospheric dump valves in manual control above 15% of RATED THERMAL POWER; and b) no more than one atmospheric dump valve per steam generator in automatic control below 15% of RATED THERMAL POWER. CTS 3.7.1.7 Action b and CTS 4.7.1.7 also provide requirements in support of CTS LCO 3.7.1.7.a and b. ITS 3.7.4 requires that two ADV lines shall be OPERABLE. Refer to DOC LA01 for additional description of changes. This changes the CTS by deleting procedural operating detail from the Technical Specifications, including CTS 3.7.1.7 Action b and CTS 4.7.1.7.

The purpose of CTS 3.7.1.7 is to ensure that sufficient ADV capacity is available for an operator to conduct a unit cooldown following an event with a loss of offsite power. This change is acceptable because the LCO and Surveillance requirements continue to ensure that the ADV capability is maintained consistent with the safety analysis and licensing basis. To support a unit cooldown during an accident concurrent with a loss of offsite power, the operator manually opens the ADV and, if necessary, the associated block valve. This can be accomplished whether the ADV controller is in automatic or manual. Additionally, if the ADV spuriously opens while THERMAL POWER is above 15% RTP, an OPERABLE block valve can be closed to isolate the uncontrolled steam release. The deleted procedural detail is a prudent operational consideration and more appropriately addressed and controlled in plant operating procedures. This change is designated as less restrictive because less stringent LCO requirements, Actions, and Surveillance Requirements are being applied in ITS than were applied in the CTS.

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

3.7 PLANT SYSTEMS

3.7.4 Atmospheric Dump Valves (ADVs)

DOC M01 LCO 3.7.4 ~~[~~Two~~]~~ ADV lines shall be OPERABLE. ②

DOC M01 APPLICABILITY: MODES 1, 2, and 3,
~~[~~MODE 4 when steam generator is being relied upon for heat removal~~]~~. ②

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M01	~~A. One required ADV line inoperable.~~	~~A.1 Restore ADV line to OPERABLE status.~~	~~7 days~~ ~~[OR~~ ~~In accordance with the Risk Informed Completion Time Program]~~	①
DOC M01	~~B~~ A. ~~Two~~ One or more ~~[required]~~ ADV lines inoperable.	~~B~~ A.1 Restore all ~~but one~~ ADV line s to OPERABLE status.	24 hours	① ②
DOC M01	~~C~~ B. Required Action and associated Completion Time not met.	~~C~~ B.1 Be in MODE 3. ~~[~~ AND ~~C~~ B.2 Be in MODE 4 without reliance upon steam generator for heat removal.	6 hours ~~[~~24~~]~~ hours ~~]~~	① ②

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
DOC M01	SR 3.7.4.1	Verify one complete cycle of each ADV.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	②
DOC M01	SR 3.7.4.2	~~[~~ Verify one complete cycle of each ADV block valve.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	②

3.7 PLANT SYSTEMS

3.7.4 Atmospheric Dump Valves (ADVs)

3.7.1.7
DOC LA01
DOC L01

LCO 3.7.4 ~~[~~Two~~]~~ ADV lines shall be OPERABLE. ②

Applicability
DOC M02

APPLICABILITY: MODES 1, 2, and 3,
~~[~~MODE 4 when steam generator is being relied upon for heat removal~~]~~. ②

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a DOC LA01	A. One ~~required~~ ADV line inoperable.	A.1 Restore ADV line to OPERABLE status.	72 hours ~~7 days~~ ~~[OR~~ ~~In accordance with the Risk Informed Completion Time Program]~~	① ②
Action b DOC M04	B. Two ~~or more [required]~~ ADV lines inoperable.	B.1 Restore ~~all but~~ one ADV line to OPERABLE status.	24 hours	① ②
Actions a and b DOC M03	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. ~~[~~ AND C.2 Be in MODE 4 without reliance upon steam generator for heat removal.	6 hours ~~[~~24~~]~~ hours~~]~~	②

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
DOC M05	SR 3.7.4.1	Verify one complete cycle of each ADV.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	②
DOC M05	SR 3.7.4.2	~~[~~ Verify one complete cycle of each ADV block valve.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.4, ATMOSPHERIC DUMP VALVES (ADVs)

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

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

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

B 3.7 PLANT SYSTEMS

B 3.7.4 Atmospheric Dump Valves (ADVs)

BASES

BACKGROUND

U

The ADVs provide a ~~safety grade~~ method for cooling the unit to Shutdown Cooling (SDC) System entry conditions, should the preferred heat sink via the Steam Bypass System to the condenser not be available, as discussed in the FSAR, Section ~~[~~10.3~~]~~ (Ref. 1). This is done in conjunction with the Auxiliary Feedwater System providing cooling water from the condensate storage tank (CST). The ADVs may also be required to meet the design cooldown rate during a normal cooldown when steam pressure drops too low for maintenance of a vacuum in the condenser to permit use of the Steam Bypass System. ① ① ②

Two

, one

in the safety analysis

,

~~Four~~ ADV lines are provided. Each ADV line consists of one ADV and an associated block valve. Two ADV lines per steam generator are required to meet ~~single failure~~ assumptions following an event ~~rendering one steam generator unavailable~~ for Reactor Coolant System (RCS) heat removal. ①

The ADVs are provided with upstream block valves to permit their being tested at power, and to provide an alternate means of isolation. The ADVs are equipped with pneumatic controllers to permit control of the cooldown rate.

The ADVs have a non-safety automatic pressure control capability. However, the only function of the ADVs required by the safety analyses is the ability to cool down the plant following a design basis event.

~~The ADVs are usually provided with a pressurized gas supply of bottled nitrogen that, on a loss of pressure in the normal instrument air supply, automatically supplies nitrogen to operate the ADVs. The nitrogen supply is sized to provide sufficient pressurized gas to operate the ADVs for the time required for RCS cooldown to the SDC System entry conditions~~. ①

air operated valves designed to fail closed on loss of instrument air. The valves are operated from the control room.

A description of the ADVs is found in Reference 1. The ADVs are ~~OPERABLE with only a DC power source available~~. In addition, hand wheels are provided for local manual operation.

APPLICABLE SAFETY ANALYSES

The design basis of the ADVs is established by the capability to cool the unit to SDC System entry conditions. A cooldown rate of 75°F per hour is obtainable by ~~one or~~ both steam generators. This design is adequate to cool the unit to SDC System entry conditions ~~with only one ADV and one steam generator,~~ utilizing the cooling water supply available in the CST. ①

BASES

APPLICABLE SAFETY ANALYSES (continued)

U

In the accident analysis presented in the FSAR, the ADVs are assumed to be used by the operator to cool down the unit to SDC System entry conditions for accidents accompanied by a loss of offsite power. Prior to the operator action, the main steam safety valves (MSSVs) are used to maintain steam generator pressure and temperature at the MSSV setpoint. ~~This is typically 30 minutes following the initiation of an event. (This may be less for a steam generator tube rupture (SGTR) event.)~~ The limiting events are those that render one steam generator unavailable for RCS heat removal, with a coincident loss of offsite power; this results from a turbine trip and the single failure of one ADV on the unaffected steam generator. Typical initiating events falling into this category are a main steam line break upstream of the main steam isolation valves, a feedwater line break, and ~~an SGTR~~ event ~~(although the ADVs on the affected steam generator may still be available following a SGTR event)~~. ①

(MSLB)

(MFLB)

a steam generator tube rupture (SGTR)

The ADVs are not designed to meet redundancy requirements (each steam generator is provided with a single ADV). The short term consequences of design basis events that result in the loss of ADV capability (e.g., SGTR) are not bounded. Manual (local) operation is provided to address long term consequences.

~~The design must accommodate the single failure of one ADV to open on demand; thus, each steam generator must have at least two ADVs.~~ The ADVs are equipped with block valves in the event an ADV spuriously opens, or fails to close during use.

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

, each with an OPERABLE ADV and an OPERABLE block valve. This ensures

---

LCO

two ADVs are

~~[~~Two~~]~~ ADV lines are required to be OPERABLE ~~on each steam generator to ensure~~ that at least ~~one ADV is~~ OPERABLE to conduct a unit cooldown following an event ~~in which one steam generator becomes unavailable, accompanied by a single active failure of one ADV line on the unaffected steam generator~~. The block valves must be OPERABLE to isolate a failed open ADV. A closed block valve does not render it or its ADV line inoperable if operator action time to open the block valve is supported in the accident analysis. ② ①

Failure to meet the LCO can result in the inability to cool the unit to SDC System entry conditions following an event in which the condenser is unavailable for use with the Steam Bypass System.

An ADV is considered OPERABLE when it is capable of providing a controlled relief of the main steam flow, and is capable of fully opening and closing on demand.

BASES

APPLICABILITY

In MODES 1, 2, and 3, ~~[~~and in MODE 4, when steam generator is being relied upon for heat removal,~~]~~ the ADVs are required to be OPERABLE.

In MODES 5 and 6, an MSLB, MFLB or SGTR ~~is~~ are not ~~a~~ credible events.

ACTIONS

A.1 ①

~~With one required ADV line inoperable, action must be taken to restore the OPERABLE status within 7 days [or in accordance with the Risk Informed Completion Time Program]. The 7 day Completion Time takes into account the redundant capability afforded by the remaining OPERABLE ADV lines, and a nonsafety grade backup in the Steam Bypass System and MSSVs.~~

~~B.1~~ ③

With one ~~[two]~~ or more ~~[required]~~ ADV lines inoperable, action must be taken to restore ~~[one] of~~ the ADV lines to OPERABLE status. As the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable ADV lines, based on the availability of the Steam Bypass System and MSSVs, and the low probability of an event occurring during this period that requires the ADV lines. ②

~~C~~B.1 and ~~C~~B.2 ③

If the ADV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance upon the steam generator for heat removal, within ~~[~~24~~]~~ hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ②

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the ADVs must be able to be opened and throttled through their full range. This SR ensures the ADVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of an ADV during a unit cooldown may satisfy this requirement. ~~[Operating experience has shown that these components usually pass the SR when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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.~~ ④
~~---]~~ ②

~~[~~ SR 3.7.4.2

The function of the ADV block valve is to isolate a failed open ADV. Cycling the block valve closed and open demonstrates its capability to perform this function. ~~Performance of inservice testing or use of the block valve during unit cooldown may satisfy this requirement. [Operating experience has shown that these components usually pass the SR when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ ① 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.~~ ④
~~---]]~~ ②

REFERENCES 1. U FSAR, Section ~~[~~10.3~~]~~. ① ②

B 3.7 PLANT SYSTEMS

B 3.7.4 Atmospheric Dump Valves (ADVs)

BASES

BACKGROUND

The ADVs provide a safety grade method for cooling the unit to Shutdown Cooling (SDC) System entry conditions, should the preferred heat sink via the Steam Bypass System to the condenser not be available, as discussed in the UFSAR, Section ~~[~~10.3~~]~~ (Ref. 1). This is done in conjunction with the Auxiliary Feedwater System providing cooling water from the condensate storage tank (CST). The ADVs may also be required to meet the design cooldown rate during a normal cooldown when steam pressure drops too low for maintenance of a vacuum in the condenser to permit use of the Steam Bypass System. ① ②

~~Four~~ Two ADV lines are provided. Each ADV line consists of ~~one~~ two 50% capacity, AC/DC motor operated ADVs and ~~an~~ associated block valves. Two ADVs ~~lines~~ per steam ~~generator~~ line are required to meet single failure assumptions following an event rendering one steam generator unavailable for Reactor Coolant System (RCS) heat removal or a loss of one DC electrical power distribution train concurrent with a loss of offsite power. ①

The ADVs are provided with upstream block valves to permit their being tested at power, and to provide an alternate means of isolation. The ADVs are equipped with ~~pneumatic~~ controllers to permit control of the cooldown rate. ①

The ADVs are capable of automatic modulation using AC power and open and close capability from the control room using AC or DC power only ~~usually provided with a pressurized gas supply of bottled nitrogen that, on a loss of pressure in the normal instrument air supply, automatically supplies nitrogen to operate the ADVs. The nitrogen supply is sized to provide sufficient pressurized gas to operate the ADVs for the time required for RCS cooldown to the SDC System entry conditions~~. ①

A description of the ADVs is found in Reference 1. The ADVs are OPERABLE with only a DC power source available. In addition, hand wheels are provided for local manual operation.

APPLICABLE SAFETY ANALYSES

The design basis of the ADVs is established by the capability to cool the unit to SDC System entry conditions. A cooldown rate of 75°F per hour is obtainable by one or both steam generators. This design is adequate to cool the unit to SDC System entry conditions with ~~only one~~ two ADVs and one steam generator, utilizing the cooling water supply available in the CST. ①

BASES

APPLICABLE SAFETY ANALYSES (continued)

U

is the loss of one DC emergency train

This event results in a loss of two ADVs, one in each ADV line. The remaining ADV in each line is sufficient to support the capability to cool the unit to SDC entry conditions

a steam generator tube rupture (

)

that results in the failure of two ADVs, one in each ADV line,

or failure of one ADV line to support single generator cooldown

①

In the accident analysis presented in the FSAR, the ADVs are assumed to be used by the operator to cool down the unit to SDC System entry conditions for accidents accompanied by a loss of offsite power. Prior to the operator action, the main steam safety valves (MSSVs) are used to maintain steam generator pressure and temperature at the MSSV setpoint. ~~This is typically 30 minutes following the initiation of an event. (This may be less for a steam generator tube rupture (SGTR) event.)~~ The limiting event~~s are those that render one steam generator unavailable for RCS heat removal~~, with a coincident loss of offsite power~~; this results from a turbine trip and the single failure of one ADV on the unaffected steam generator~~. Typical initiating events ~~falling into this category~~ are a main steam line break upstream of the main steam isolation valves, a feedwater line break, and ~~an~~ SGTR event ~~(although the ADVs on the affected steam generator may still be available following a SGTR event)~~.

The design must accommodate the single failure ~~of one ADV~~ to open on demand; thus, each steam generator must have at least two ADVs. The ADVs are equipped with block valves in the event an ADV spuriously opens, or fails to close during use.

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

LCO

, each with two OPERABLE ADVs and two OPERABLE block valves in each line. This ensures

two ADVs are

② ①

~~[~~Two~~]~~ ADV lines are required to be OPERABLE ~~on each steam generator to ensure~~ that at least ~~one ADV is~~ OPERABLE to conduct a unit cooldown following an event ~~in which one steam generator becomes unavailable~~, accompanied by a single ~~active~~ failure ~~of one ADV line on the unaffected steam generator~~. The block valves must be OPERABLE to isolate a failed open ADV. A closed block valve does not render it or its ADV line inoperable if operator action time to open the block valve is supported in the accident analysis.

Failure to meet the LCO can result in the inability to cool the unit to SDC System entry conditions following an event in which the condenser is unavailable for use with the Steam Bypass System.

An ADV is considered OPERABLE when it is capable of providing a controlled relief of the main steam flow, and is capable of fully opening and closing on demand.

BASES

APPLICABILITY

In MODES 1, 2, and 3, ~~[~~and in MODE 4, when steam generator is being relied upon for heat removal,~~]~~ the ADVs are required to be OPERABLE. ②

main steam line break, main feedwater line break or

are

s

In MODES 5 and 6, an SGTR ~~is~~ not ~~a~~ credible event. ①

ACTIONS

A.1

(e.g., one or more ADVs or one or more block valves inoperable)

72 hours

line to

72 hour

With one ~~required~~ ADV line inoperable, action must be taken to restore the OPERABLE status within ~~7 days [or in accordance with the Risk Informed Completion Time Program]~~. The ~~7 day~~ Completion Time takes into account the redundant capability afforded by the remaining OPERABLE ADV line~~s~~, and a nonsafety grade backup in the Steam Bypass System and MSSVs. ② ①

B.1

(e.g., two ADVs or two block valves inoperable on each steam generator)

With ~~[~~two~~]~~ ~~or more [required]~~ ADV lines inoperable, action must be taken to restore ~~[~~one~~]~~ of the ADV lines to OPERABLE status. As the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable ADV lines, based on the availability of the Steam Bypass System and MSSVs, and the low probability of an event occurring during this period that requires the ADV lines. ② ①

C.1 and C.2

If the ADV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance upon the steam generator for heat removal, within ~~[~~24~~]~~ hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ②

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the ADVs must be able to be opened and throttled through their full range. This SR ensures the ADVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of an ADV during a unit cooldown may satisfy this requirement. ~~[Operating experience has shown that these components usually pass the SR when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~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.~~
~~-----~~ ~~]~~ ④

~~[~~ SR 3.7.4.2

The function of the ADV block valve is to isolate a failed open ADV. Cycling the block valve closed and open demonstrates its capability to perform this function. Performance of inservice testing or use of the block valve during unit cooldown may satisfy this requirement. ~~[Operating experience has shown that these components usually pass the SR when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ 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.~~
~~-----~~ ~~]]~~ ④ ②

REFERENCES

U 1. FSAR, Section ~~[~~10.3~~]~~. ① ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.4 BASES, ATMOSPHERIC DUMP VALVES (ADVs)

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

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

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.4, ATMOSPHERIC DUMP VALVES (ADVs)

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

ATTACHMENT 5

ITS 3.7.5, Auxiliary Feedwater (AFW) System

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

A01

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM (AFW)

LIMITING CONDITION FOR OPERATION

LCO 3.7.5 3.7.1.2 ~~At least~~ T three ~~independent~~ steam generator auxiliary feedwater ~~pumps and~~ trains ~~associated flow paths~~ shall be OPERABLE ~~with:~~ LA01 M01 LA01

Add proposed LCO Note

~~a. Two motor driven feedwater pumps, and~~

~~b. One feedwater pump capable of being powered from an OPERABLE steam supply system~~.

Applicability **APPLICABILITY**: MODES 1, 2 and 3~~.~~ ,

Add proposed second Applicability M01

ACTION: L01 LA01

Turbine driven AFW train inoperable due to one

Add proposed Action A Note and second Condition

affected equipment

Action A a. ~~With one auxiliary feedwater pump~~ steam supply inoperable, restore ~~the inoperable auxiliary feedwater pump steam supply~~ to OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program, or

Action D be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours.

in MODE 1, 2, or 3 for reasons other than Condition A

Action B b. With train one auxiliary feedwater ~~pump~~ train inoperable, restore the auxiliary feedwater ~~pump~~ to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, L02 LA01

Action D or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours.

Turbine driven AFW train inoperable due to one

Action C c. ~~With one auxiliary feedwater pump~~ steam supply inoperable and one motor-driven auxiliary feedwater ~~pump~~ train inoperable, either restore the inoperable auxiliary feedwater ~~pump~~ steam supply OR restore the inoperable motor-driven auxiliary feedwater ~~pump~~ to OPERABLE status within 24 hours LA01

Action D or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours.

in MODE 1, 2, or 3 for reasons other than Condition C

Action D d. With two auxiliary feedwater ~~pumps~~ trains inoperable, be in ~~at least HOT STANDBY~~ MODE 3 within 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours. LA01

Action E Note

> **NOTE**
>
> LCO 3.0.3 and all other LCO Actions requiring MODE changes are suspended until one AFW ~~pump~~ train is restored to OPERABLE status.

Action E e. With three auxiliary feedwater ~~pumps~~ trains inoperable in MODE 1, 2, or 3, immediately initiate corrective action to restore at least one auxiliary feedwater ~~pump~~ train to OPERABLE status. LA01

Actions NOTE f. LCO 3.0.4.b is not applicable.

Add proposed Action F M01

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater ~~pump~~ train shall be demonstrated OPERABLE:

SR 3.7.5.1 a. In accordance with the Surveillance Frequency Control Program by:

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

and

SR 3.7.5.1 1. Verify~~ing that~~ each ~~valve (~~manual, power operated ~~or~~ automatic~~)~~ in ~~the flow path~~ that is not locked, sealed, or otherwise secured in position, is in its correct position.

valve

each water flow path and in both steam flow paths to the steam turbine driven pump,

b. In accordance with the Surveillance Frequency Control Program during shutdown by:

L03 M01

Add proposed SR 3.7.5.3 Notes 1 and 2

SR 3.7.5.3 1. Verify~~ing that~~ each automatic valve ~~in the flowpath~~ actuates to its correct position ~~upon receipt of the Auto Start actuation test signal~~.

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

L04

on an actual or simulated actuation signal

Add proposed SR 3.7.5.4 Notes 1 and 2

L03 M01

SR 3.7.5.4 2. Verify~~ing that~~ each auxiliary feedwater pump starts automatically ~~as designed upon receipt of the Auto Start actuation test signal~~.

on an actual or simulated actuation signal when in MODE 1, 2, or 3

L05

V

SR 3.7.5.2 c. ~~By v~~erify~~ing~~ the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head when tested in accordance with the INSERVICE TESTING PROGRAM.

M01

SR 3.7.5.2 Note The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 when testing the steam turbine-driven AFW pump and this Surveillance must be performed within 24 hours after entering MODE 3~~ and prior to entering MODE 2~~.

L03

M02

Add proposed SR 3.7.5.5

ITS A01 ITS 3.7.5

PLANT SYSTEMS

AUXILIARY FEEDWATER SYSTEM (AFW)

LIMITING CONDITION FOR OPERATION

LCO 3.7.5 LA01 M01 LA01

3.7.1.2 ~~At least~~ T ~~t~~hree ~~independent~~ steam generator auxiliary feedwater ~~pumps and associated flow paths~~ trains shall be OPERABLE ~~with:~~

Add proposed LCO Note

~~a. Two feedwater pumps, each capable of being powered from separate OPERABLE emergency busses, and~~

~~b. One feedwater pump capable of being powered from an OPERABLE steam supply system~~.

Applicability M01

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

Add proposed second Applicability

ACTION:

L01 LA01

Action A / Action D

a. ~~With one auxiliary feedwater pump~~ Turbine driven AFW train inoperable due to one steam supply inoperable, Add proposed Action A Note and second Condition restore ~~the inoperable auxiliary feedwater pump steam supply~~ affected equipment to OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program, or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours.

in MODE 1, 2, or 3 for reasons other than Condition A

L02 LA01

Action B / Action D

b. With train one auxiliary feedwater ~~pump~~ train inoperable, restore the auxiliary feedwater ~~pump~~ to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours.

LA01

Action C / Action D

c. ~~With one auxiliary feedwater pump~~ Turbine driven AFW train inoperable due to one steam supply inoperable and one motor-driven auxiliary feedwater ~~pump~~ train inoperable, either restore the inoperable auxiliary feedwater ~~pump~~ steam supply OR restore the inoperable motor-driven auxiliary feedwater ~~pump~~ train to OPERABLE status within 24 hours or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours.

in MODE 1, 2, or 3 for reasons other than Condition C

LA01

Action D

d. With two auxiliary feedwater ~~pumps~~ trains inoperable, be in ~~at least HOT STANDBY~~ MODE 3 within 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours.

Action E Note

> **NOTE**
>
> LCO 3.0.3 and all other LCO Actions requiring MODE changes are suspended until one AFW ~~pump~~ train is restored to OPERABLE status.

LA01

Action E

e. With three auxiliary feedwater ~~pumps~~ trains inoperable in MODE 1, 2, or 3, immediately initiate corrective action to restore at least one auxiliary feedwater ~~pump~~ train to OPERABLE status.

M01

Actions NOTE

f. LCO 3.0.4.b is not applicable.

Add proposed Action F

SURVEILLANCE REQUIREMENTS

4.7.1.2 Each auxiliary feedwater ~~pump~~ train shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by:

SR 3.7.5.1

1. Verify~~ing that~~ each ~~valve (~~manual, power-operated, ~~or~~ and automatic~~)~~ valve in ~~the flow path~~ each water flow path and in both steam flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in its correct position.

A01

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

b. In accordance with the Surveillance Frequency Control Program during shutdown by: L03 M01

Add proposed SR 3.7.5.3 Notes 1 and 2

SR 3.7.5.3 1. Verify~~ing that~~ each automatic valve ~~in the flowpath path~~ that is not locked, sealed, or otherwise secured in position, actuates to its correct position ~~upon receipt of an auxiliary feedwater actuation test signal~~ on an actual or simulated actuation signal. L04

Add proposed SR 3.7.5.4 Notes 1 and 2

SR 3.7.5.4 2. Verify~~ing that~~ each pump starts automatically ~~upon receipt of an auxiliary feedwater actuation test signal~~ on an actual or simulated actuation signal when in MODE 1, 2, or 3. L03 M01 L05

SR 3.7.5.5 c. Following an extended cold shutdown (30 days or longer) and prior to entering MODE 2, a flow test shall be performed to verify the normal flow path from the condensate storage tank (CST) to the steam generators.

SR 3.7.5.2 d. ~~By v~~Verify~~ing~~ the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head when tested in accordance with the INSERVICE TESTING PROGRAM. M01

SR 3.7.5.2 Note: The provisions of Specification 4.0.4 are not applicable for entry into MODE 3 when testing the steam turbine-driven AFW pump and this Surveillance must be performed within 24 hours after entering MODE 3~~ and prior to entering MODE 2~~. L03

DISCUSSION OF CHANGES
ITS 3.7.5, AUXILIARY FEEDWATER (AFW) SYSTEM

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.

MORE RESTRICTIVE CHANGES

M01 CTS LCO 3.7.1.2 is applicable in MODES 1, 2, and 3. ITS LCO 3.7.5 is applicable in MODES 1, 2, and 3, and MODE 4 when the steam generator is relied upon for heat removal. To support this change in the Applicability, the following additional requirements are added to the CTS:

- A Note is added to the LCO that requires only one AFW train, which includes a motor driven pump, to be OPERABLE in MODE 4;
- A new ACTION F is added which requires immediate action to restore a required inoperable AFW train to OPERABLE status when the steam generator (SG) is relied upon for heat removal in MODE 4; and
- CTS 4.7.1.2.a, b, and c, which are applicable in MODES 1, 2, and 3, are now applicable in MODE 4 when the SG is relied upon for heat removal (ITS SR 3.7.5.1 and SR 3.7.5.2) for the required AFW train.

These changes are acceptable because they ensure the necessary support systems are available when a steam generator is being relied upon for heat removal in MODE 4. The CTS does not have specific requirements for an AFW train to be OPERABLE in MODE 4 when a steam generator is relied upon for heat removal. One AFW train, supplied by a motor driven pump, will provide sufficient water to the SG to remove decay heat in MODE 4. If the required AFW train is inoperable, ITS 3.7.5 ACTION F requires the initiation of action to restore the AFW train to OPERABLE status immediately. ITS SR 3.7.5.1 and SR 3.7.5.2 ensure the required AFW train is OPERABLE. This is acceptable because without the SG it may not be possible to cool down the unit and exit the MODE of Applicability. A modifying Note (Note 2) is added to ITS SR 3.7.5.3 (CTS 4.7.1.2.b.1) and ITS SR 3.7.5.4 (CTS 4.7.1.2.b.2) that state the SRs are not required to be met while in MODE 4 when the steam generator is relied upon for heat removal. This is acceptable because in MODE 4 the heat removal requirements are less providing more time for operator action to manually start a required AFW pump or the required AFW train is already aligned and operating. These changes are designated as more restrictive because they place additional requirements on unit operations in MODE 4 that are not required by the CTS.

M02 **Unit 1 only:** CTS 3.7.1.2 does not provide a surveillance requirement to verify proper alignment of the required AFW flowpaths prior to entering MODE 2 when the unit has been in MODE 5, MODE 6, or defueled for a cumulative period greater than 30 days. ITS SR 3.7.5.5 requires verification of the proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator prior to entering MODE 2 whenever the unit has been in MODE 5, MODE 6, or defueled for a cumulative period of greater than 30 days. This changes CTS 3.7.1.2 by adding a specific surveillance requirement (ITS SR 3.7.5.5) to verify alignment of the required AFW flow paths from the condensate storage tank to each steam generator prior to entering MODE 2 when the unit has been in MODE 5, MODE 6, or defueled for a cumulative period of greater than 30 days.

The purpose of ITS 3.7.5.5 is to verify that the AFW system is properly aligned by verifying the flow path to each steam generator prior to entering MODE 2 operation after 30 days in any combination of MODE 5 or 6, or defueled. This change is acceptable because it verifies the flow path from the CST to the steam generators is properly aligned by requiring verification that the minimum flow capacity is satisfied. This change is designated as more restrictive because ITS 3.7.5.5 contains surveillance requirements not previously specified in CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS LCO 3.7.1.2 requires three "independent" steam generator AFW "pumps and associated flow paths" to be OPERABLE. This includes two motor driven AFW pumps powered from separate emergency buses, and the steam turbine driven AFW pump capable of being powered from an OPERABLE steam supply system. ITS LCO 3.7.5 states "Three AFW trains shall be OPERABLE." The ITS does not include design details or define the components and associated flow paths that comprise an OPERABLE AFW train. CTS 3.7.1.2 Actions a, b, c, d and e cover the inoperabilities associated with the auxiliary feedwater pump(s). ITS 3.7.5 ACTIONS A, B, C, D, and E cover the inoperabilities of the train(s) which includes both the pump and the associated flow path. This changes the CTS by moving the description of the AFW System to the Bases.

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

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.7.1.2 Action a requires with one auxiliary feedwater pump steam supply inoperable to be restored to an OPERABLE status within 7 days or in accordance with the Risk Informed Completion Time Program. CTS 3.7.1.2 Action b requires an inoperable AFW pump to be restored to an OPERABLE status within 72 hours for any condition of inoperability. ITS 3.7.5 ACTION A permits 7 days to restore the affected equipment to OPERABLE status when the turbine driven AFW pump is inoperable due to an inoperable steam supply valve or if the turbine driven AFW pump is inoperable in MODE 3 following refueling. In addition, the Condition is modified by a Note that restricts the Condition to "only applicable if MODE 2 has not been entered following refueling." This changes the CTS by adding the Condition of the turbine driven AFW pump inoperable in MODE 3 following refueling with restoration of the affected equipment to OPERABLE status required within 7 days or in accordance with the Risk Informed Completion Time and restricts the applicability of the condition to only if MODE 2 has not been entered.

The purpose of CTS 3.7.1.2 Action a is to provide a limit on the length of time the unit may remain in the MODES of Applicability with the turbine driven AFW pump inoperable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions to minimize risk associated with continued operation while providing time to repair the inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. An inoperable turbine driven AFW pump in MODE 3 following a refueling is acceptable because the remaining motor driven AFW pumps remain capable of supplying additional redundant trains of AFW and the decay heat in the Reactor Coolant System is low. The probability of an event occurring during the extended outage time that would require the inoperable turbine driven AFW pump to function is low. The ACTION provides adequate assurance that the AFW System will continue to meet the assumptions stated in the safety analyses for the AFW system to mitigate postulated accidents. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.7.1.2 Action b states that with one AFW pump inoperable in MODE 1, 2, or 3, restore the inoperable AFW train to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program; or, be in HOT STANDBY within 6 hours and HOT SHUTDOWN within the following 6 hours. CTS 3.7.1.2.a allows 7 days for restoration of an inoperable AFW pump steam supply which also results in inoperability of the AFW pump for which CTS 3.7.1.2.b requires restoration to OPERABLE status within 72 hours. ITS 3.7.5 ACTION B requires the restoration of one inoperable AFW train in MODES 1, 2, or 3 in 72 hours when the AFW train is inoperable for reasons other than Condition A. ITS LCO 3.7.5 ACTION A states that with the turbine driven AFW train inoperable because of one inoperable steam supply or, if MODE 2 has not been entered following refueling, turbine driven AFW pump inoperable in MODE 3 following refueling, to restore affected equipment to OPERABLE status within 7 days. This changes the CTS by allowing a longer Completion Time (reasons other than Condition A) if the inoperable AFW train is the turbine driven AFW train or if the plant condition is following the refueling prior to entering MODE 2. (See DOC L01 for additional discussion)

The purpose of CTS 3.7.1.2, AFW system, is to provide redundant, independent, and diverse means of supplying feedwater to the SGs for cooling the RCS under emergency conditions. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features, the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the repair period. An inoperable turbine driven AFW pump in MODE 3 following a refueling is acceptable because the remaining motor driven AFW trains remain capable of supplying additional redundant trains of AFW and the decay heat in the Reactor Coolant System is low. The probability of an event occurring during the extended outage time that would require the turbine driven AFW pump to function is low. The ACTION provides adequate assurance that the AFW System will continue to meet the assumptions stated in the safety analyses for the AFW system to mitigate postulated accidents. 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 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.7.1.2.b.1 requires that each automatic valve in the flow path actuates to its correct position upon receipt of actuation signal and CTS 4.7.1.2.b.2 requires that each auxiliary feedwater pump starts automatically as designed. ITS SR 3.7.5.3 and SR 3.7.5.4, respectively, require similar Surveillances. However, they are modified by a Note that states the SR is not required to be performed for the turbine driven AFW pump until 24 hours after entering MODE 3. This changes the CTS by removing the specific text “and prior to entering MODE 2” from the surveillance requirement and providing an allowance to delay the performance of required testing without requiring the associated AFW train to be declared inoperable.

The purpose of CTS 4.7.1.2.b.1 and CTS 4.7.1.2.b.2 is to ensure the AFW train is OPERABLE in MODES 1, 2, and 3. The allowance provides for entry into MODE 3 before requiring the testing of the turbine driven AFW pump automatic valves or automatic pump start. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. This change is necessary because the steam generator pressure may be insufficient in MODE 4 to properly test the AFW train. One manner of performing this SR would be to combine the tests. The majority of SRs demonstrate equipment is, in fact, OPERABLE when the tests are performed. Inconsistent testing results may occur if testing of the AFW train is required before establishing sufficient conditions for the test. The allowance will permit the establishment of stable unit conditions and sufficient steam generator pressure to test the turbine driven AFW pump and valves and will allow an accurate and consistent method for the testing. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L04 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.7.1.2.b.1 requires the verification that each automatic valve in the flow path actuates to its correct position. ITS SR 3.7.5.3 requires verifying that each AFW automatic valve "not locked, sealed, or otherwise secured in position," actuates to the correct position. This changes the CTS by only requiring the testing of AFW valves that are not locked, sealed or otherwise secured in position.

The purpose of CTS 4.7.1.2.b.1 is to verify that the automatic valves in the AFW System flow paths align to the correct position. 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. The testing of automatic valves that are aligned and secured into the required safety position is unnecessary. Valves secured in the safety position will satisfy the safety analyses assumptions for the mitigation of analyzed accidents. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L05 *(Category 6 – Relaxation of Surveillance Requirement Acceptance Criteria)* CTS 4.7.1.2.b.1 and CTS 4.7.1.2.b.2 require verification of actuation of automatic auxiliary feedwater components automatically upon receipt of an Auto Start actuation “test” signal. ITS SR 3.7.5.3 and SR 3.7.5.4 specify that the signal may be from either an "actual or simulated actuation” signal.

The purpose of CTS 4.7.1.2.b.1 and CTS 4.7.1.2.b.2 is to ensure that the auxiliary feedwater components operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

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

CTS

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

3.7.1.2 LCO 3.7.5 [Three] AFW trains shall be OPERABLE. ①

---NOTE---

DOC M01 Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4.

Applicability
DOC M01 APPLICABILITY: MODES 1, 2, and 3,
[MODE 4 when steam generator is relied upon for heat removal]. ①

ACTIONS

---NOTE---

Action f LCO 3.0.4.b is not applicable.

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a DOC L01	A. [Turbine driven AFW train inoperable due to one inoperable steam supply. OR ------------NOTE------------ Only applicable if MODE 2 has not been entered following refueling. -------------------------------- T ~~One t~~urbine driven AFW pump inoperable in MODE 3 following refueling.	A.1 Restore affected equipment to OPERABLE status.	7 days [OR In accordance with the Risk Informed Completion Time Program]]	① ②

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action b DOC L02	B. One AFW train inoperable in MODE 1, 2, or 3 ~~[~~for reasons other than Condition A~~]~~.	B.1 Restore AFW train to OPERABLE status.	72 hours ~~[~~<u>OR</u> In accordance with the Risk Informed Completion Time Program~~]~~	1
Action c	C. Turbine driven AFW train inoperable due to one inoperable steam supply. <u>AND</u> One motor driven AFW train inoperable.	C.1 Restore the steam supply to the turbine driven train to OPERABLE status. <u>OR</u> C.2 Restore the motor driven AFW train to OPERABLE status.	~~[~~24~~ or 48]~~ hours ~~[~~24~~ or 48]~~ hours	1
Action a Action b Action c Action d	D. Required Action and associated Completion Time of Condition A~~[~~, B, or C~~]~~ not met. ~~[~~<u>OR</u> ~~[~~Two~~]~~ AFW trains inoperable in MODE 1, 2, or 3 for reasons other than Condition C.~~]~~	D.1 Be in MODE 3. <u>AND</u> D.2 Be in MODE 4.	6 hours 12 ~~[18]~~ hours	1

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
Action e and NOTE	E. ~~[[~~Three~~]~~ AFW trains inoperable in MODE 1, 2, or 3.	E.1	---------------NOTE-------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ------------------------------------- Initiate action to restore one AFW train to OPERABLE status.	Immediately~~]~~	① ①
DOC M01	F. Required AFW train inoperable in MODE 4.	F.1	---------------NOTE-------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ------------------------------------- Initiate action to restore one AFW train to OPERABLE status.	Immediately	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.1.2.a.1	SR 3.7.5.1	Verify each AFW manual, power operated, and automatic valve in each water flow path and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~	①

CTS

SURVEILLANCE REQUIREMENTS (continued)

4.7.1.2.c
DOC M01

DOC L03

DOC M01

4.7.1.2.b.1
DOC L04

SURVEILLANCE		FREQUENCY
SR 3.7.5.2	------------------------------NOTE------------------------------ Not required to be performed for the turbine driven AFW pump until ~~[~~24~~]~~ hours after ~~reaching [800] psig in the steam generators~~ entering MODE 3. --- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM
SR 3.7.5.3	----------------------------NOTES---------------------------- 1. Not required to be performed for the turbine driven AFW pump until ~~[~~24~~]~~ hours after ~~reaching [800] psig in the steam generators~~ entering MODE 3. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. --- Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~

① ②

②

①

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY	
DOC L03 DOC M01 4.7.1.2.b.2 DOC L05	SR 3.7.5.4	----------NOTES---------- 1. Not required to be performed for the turbine driven AFW pump until ~~[~~24~~]~~ hours after ~~reaching [800] psig in the steam generators~~ entering MODE 3. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. -------------------- Verify each AFW pump starts automatically on an actual or simulated actuation signal when in MODE 1, 2, or 3.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ①
DOC M02	SR 3.7.5.5	Verify the proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator.	Prior to entering MODE 2 whenever unit has been in MODE 5, MODE 6, or defueled for a cumulative period of > 30 days	

CTS

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

3.7.1.2 LCO 3.7.5 ~~[~~Three~~]~~ AFW trains shall be OPERABLE. ①

---NOTE---

DOC M01 Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4.

Applicability
DOC M01 APPLICABILITY: MODES 1, 2, and 3,
~~[~~MODE 4 when steam generator is relied upon for heat removal~~]~~. ①

ACTIONS

---NOTE---

Action f LCO 3.0.4.b is not applicable.

Action a

DOC L01

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~[~~Turbine driven AFW train inoperable due to one inoperable steam supply. OR ------------NOTE------------ Only applicable if MODE 2 has not been entered following refueling. --------------------------------- T ~~One t~~urbine driven AFW pump inoperable in MODE 3 following refueling.	A.1 Restore affected equipment to OPERABLE status.	7 days ~~[~~OR In accordance with the Risk Informed Completion Time Program~~]~~~~]~~

① ②

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action b DOC L02	B. One AFW train inoperable in MODE 1, 2, or 3 ~~[~~for reasons other than Condition A~~]~~.	B.1 Restore AFW train to OPERABLE status.	72 hours ~~[~~OR In accordance with the Risk Informed Completion Time Program~~]~~	①
Action c	C. Turbine driven AFW train inoperable due to one inoperable steam supply. AND One motor driven AFW train inoperable.	C.1 Restore the steam supply to the turbine driven train to OPERABLE status. OR C.2 Restore the motor driven AFW train to OPERABLE status.	~~[~~24~~ or 48]~~ hours ~~[~~24~~ or 48]~~ hours	①
Action a Action b Action c Action d	D. Required Action and associated Completion Time of Condition A~~[~~, B, or C~~]~~ not met. ~~[~~OR ~~[~~Two~~]~~ AFW trains inoperable in MODE 1, 2, or 3 for reasons other than Condition C.~~]~~	D.1 Be in MODE 3. AND D.2 Be in MODE 4.	6 hours 12 ~~[18]~~ hours	①

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action e and NOTE	E. ~~[[~~Three~~]~~ AFW trains inoperable in MODE 1, 2, or 3.	E.1 ---------------NOTE-------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ------------------------------------- Initiate action to restore one AFW train to OPERABLE status.	Immediately~~]~~	① ①
DOC M01	F. Required AFW train inoperable in MODE 4.	F.1 ---------------NOTE-------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ------------------------------------- Initiate action to restore one AFW train to OPERABLE status.	Immediately	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY	
4.7.1.2.a.1	SR 3.7.5.1 Verify each AFW manual, power operated, and automatic valve in each water flow path and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~	①

SURVEILLANCE REQUIREMENTS (continued)

CTS	SURVEILLANCE		FREQUENCY	
4.7.1.2.c DOC M01	SR 3.7.5.2	------------------------------NOTE------------------------------ Not required to be performed for the turbine driven AFW pump until ~~[~~24~~]~~ hours after ~~reaching [800] psig in the steam generators~~ entering MODE 3. --- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	In accordance with the INSERVICE TESTING PROGRAM	① ②
DOC L03 DOC M01 4.7.1.2.b.1 DOC L04	SR 3.7.5.3	----------------------------NOTES---------------------------- 1. Not required to be performed for the turbine driven AFW pump until ~~[~~24~~]~~ hours after ~~reaching [800] psig in the steam generators~~ entering MODE 3. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. --- Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~	② ①

CTS

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
DOC L03 DOC M01	SR 3.7.5.4	-----------------------------NOTES---------------------------- 1. Not required to be performed for the turbine driven AFW pump until ~~[~~24~~]~~ hours after ~~reaching [800] psig in the steam generators~~ entering MODE 3. 2. Not required to be met in MODE 4 when steam generator is relied upon for heat removal. ---		②
4.7.1.2.b.2 DOC L05		Verify each AFW pump starts automatically on an actual or simulated actuation signal when in MODE 1, 2, or 3.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	①
4.7.1.2.c	SR 3.7.5.5	Verify the proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator.	Prior to entering MODE 2 whenever unit has been in MODE 5, MODE 6, or defueled for a cumulative period of > 30 days	

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.5, AUXILIARY FEEDWATER (AFW) SYSTEM

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

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

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

B 3.7 PLANT SYSTEMS

B 3.7.5 Auxiliary Feedwater (AFW) System

BASES

BACKGROUND

The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The AFW pumps take suction ~~through separate and independent suction lines~~ from the condensate ① storage tank (CST) (LCO 3.7.6, "Condensate Storage Tank (CST)") and pump to the steam generator secondary side via separate and independent connections to the main feedwater (MFW) piping outside containment. ① The steam generators function as a heat sink for core decay heat. The heat load is dissipated by releasing steam to the atmosphere from the steam generators via the main steam safety valves (MSSVs) (LCO 3.7.1, "Main Steam Safety Valves (MSSVs)") or atmospheric dump valves (ADVs) (LCO 3.7.4, "Atmospheric Dump Valves (ADVs)"). If the main condenser is available, steam may be released via the steam bypass valves and recirculated to the CST.

A normally closed line also allows Unit 1 AFW pumps to take suction from the Unit 2 CST if the Unit 1 CST is not available.

The AFW System consists of ~~[~~two~~]~~ motor driven AFW pumps and one steam turbine driven pump configured into three trains. Each motor driven pump provides 100% of AFW flow capacity; the turbine driven pump provides 100% of the required capacity to the steam generators as assumed in the accident analysis. ② ① The pumps are equipped with independent recirculation lines to prevent pump operation against a closed system.

full capacity

greater than full flow capacity

A train consisting of a pump and its associated flow path.

the required

Each motor driven AFW pump is powered from an independent Class 1E power supply, and feeds one steam generator, although each pump has ① the capability to be realigned from the control room to feed the other steam generator.

normally

One pump at full flow is sufficient to remove decay heat and cool the unit to Shutdown Cooling (SDC) System entry conditions.

A cross connection is provided to enable the routing of flow from the motor-driven pumps to either steam generator. However, the full-flow capacity of the motor-driven AFW pumps does not assure delivery of 100% of the flow credited in the feedwater line break and main steam line break analyses by means of the cross-connection (accident analyses does not explicitly credit AFW flow via the cross-connection).

The steam turbine driven AFW pump receives steam from either main steam header upstream of the main steam isolation valve (MSIV). Each of the steam feed lines will supply 100% of the requirements of the turbine driven AFW pump. The turbine driven AFW pump supplies a common header capable of feeding both steam generators, with DC powered control valves actuated to the appropriate steam generator by the ~~Emergency~~ Feedwater Actuation System (~~E~~FAS). ①

and relies solely on DC power for operation

Auxiliary

A

The AFW System supplies feedwater to the steam generators during normal unit startup, shutdown, and hot standby conditions.

BASES

BACKGROUND (continued)

The AFW System is designed to supply sufficient water to the steam generator(s) to remove decay heat with steam generator pressure at the setpoint of the MSSVs. Subsequently, the AFW System supplies sufficient water to cool the unit to SDC entry conditions, and steam is released through the ADVs.

The AFW System actuates automatically on low steam generator level by the ~~E~~ A FAS as described in LCO 3.3.~~4~~ 3, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation." The ~~E~~ A FAS logic is designed to feed either or both steam generators with low levels, but will isolate the AFW System from a steam generator having a significantly lower steam pressure than the other steam generator. The ~~E~~ A FAS automatically actuates the AFW turbine driven pump and associated DC operated valves and controls when required, to ensure an adequate feedwater supply to the steam generators. ~~DC~~ Safety related AC operated valves are provided for each AFW line to control the AFW flow to each steam generator. ①

The AFW System is discussed in the U FSAR, Section ~~[~~10.~~4.9]~~ 5.2 (Ref. 1). ②

APPLICABLE SAFETY ANALYSES

The AFW System mitigates the consequences of any event with a loss of normal feedwater.

The design basis of the AFW System is to supply water to the steam generator to remove decay heat and other residual heat, by delivering at least the minimum required flow rate to the steam generators at pressures corresponding to the lowest MSSV set pressure ~~plus 3%~~. ①

The limiting Design Basis Accidents (DBAs) and transients for the AFW System are as follows:

a. Feedwater Line Break (FWLB) and

b. Loss of normal feedwater.

In addition, the minimum available AFW flow and system characteristics are serious considerations in the analysis of a small break loss of coolant accident.

The AFW System design is such that it can perform its function following a~~n~~ loss of feedwater ~~FWLB between the MFW isolation valve and containment,~~ combined with a loss of offsite power following turbine trip, and a single active failure of the steam turbine driven AFW pump. ~~In such a case, the EFAS logic might not detect the affected steam generator if the backflow check valve to the affected MFW header worked properly~~. ~~One motor driven AFW pump would deliver to the broken MFW header at the pump runout~~ A complete and instantaneous loss of feedwater flow that provides the greatest reduction in steam generator liquid inventory is assumed for the analysis. ①

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~flow until the problem was detected, and flow was terminated by the operator. Sufficient flow would be delivered to the intact steam generator by the redundant AFW pump~~. In such a case, the motor driven pumps deliver sufficient flow to the steam generators. ①

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

LCO

This LCO requires that ~~[~~three~~]~~ AFW trains be OPERABLE to ensure that the AFW System will perform the design safety function to mitigate the consequences of accidents that could result in overpressurization of the reactor coolant pressure boundary. Three independent AFW pumps, in two diverse trains, ensure availability of residual heat removal capability for all events accompanied by a loss of offsite power and a single failure. This is accomplished by powering two pumps from independent emergency buses. The third AFW pump is powered by a diverse means, a steam driven turbine supplied with steam from a source not isolated by the closure of the MSIVs. ②

The AFW System is considered to be OPERABLE when the components and flow paths required to provide AFW flow to the steam generators are OPERABLE. This requires that the two motor driven AFW pumps be OPERABLE in two diverse paths, each supplying AFW to a separate steam generator. The turbine driven AFW pump shall be OPERABLE with redundant steam supplies from each of the two main steam lines upstream of the MSIVs and capable of supplying AFW flow to either of the two steam generators. The piping, valves, instrumentation, and controls in the required flow paths shall also be OPERABLE.

The LCO is modified by a Note indicating that only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4. This is because of reduced heat removal requirements, the short period of time in MODE 4 during which AFW is required, and the insufficient steam supply available in MODE 4 to power the turbine driven AFW pump.

APPLICABILITY

In MODES 1, 2, and 3, the AFW System is required to be OPERABLE and to function in the event that ~~the MFW~~ normal feedwater is lost. In addition, the AFW System is required to supply enough makeup water to replace steam generator secondary inventory, lost as the unit cools to MODE 4 conditions. ①

In MODE 4, the AFW System may be used for heat removal via the steam generator.

In MODES 5 and 6, the steam generators are not normally used for decay heat removal, and the AFW System is not required.

BASES

ACTIONS

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

~~[~~A.1

If the turbine driven AFW pump is inoperable due to one inoperable steam supply, or if a turbine driven pump is inoperable for any reason while in MODE 3 immediately following refueling, action must be taken to restore the inoperable equipment to an OPERABLE status within 7 days [or in accordance with the Risk Informed Completion Time Program]. The 7 day Completion Time is reasonable based on the following reasons: ②

a. For the inoperability of the turbine driven AFW pump due to one inoperable steam supply, the 7 day Completion Time is reasonable since there is a redundant steam supply line for the turbine driven pump and the turbine driven train is still capable of performing its specified function for most postulated events.

b. For the inoperability of a turbine driven AFW pump while in MODE 3 immediately subsequent to a refueling outage, the 7 day Completion Time is reasonable due to the minimal decay heat levels in this situation.

c. For both the inoperability of the turbine driven pump due to one inoperable steam supply and an inoperable turbine driven AFW pump while in MODE 3 immediately following a refueling outage, the 7 day Completion Time is reasonable due to the availability of redundant OPERABLE motor driven AFW pumps; and due to the low probability of an event requiring the use of the turbine driven AFW pump.

Condition A is modified by a Note which limits the applicability of the Condition for an inoperable turbine driven AFW pump in MODE 3 to when the unit has not entered MODE 2 following a refueling. Condition A allows one AFW train to be inoperable for 7 days vice the 72 hour Completion Time in Condition B. This longer Completion Time is based on the reduced decay heat following refueling and prior to the reactor being critical.~~]~~ ②

ACTIONS (continued)

B.1

With one of the required AFW trains (pump or flow path) inoperable in MODE 1, 2, or 3 ~~[~~for reasons other than Condition A~~]~~, action must be taken to restore OPERABLE status within 72 hours ~~[~~or in accordance with the Risk Informed Completion Time Program~~]~~. This Condition includes the loss of two steam supply lines to the turbine driven AFW pump. The 72 hour Completion Time is reasonable based on the redundant capabilities afforded by the AFW System, the time needed for repairs, and the low probability of a DBA event occurring during this period. Two AFW pumps and flow paths remain to supply feedwater to the steam generators. ②

C.1 and C.2

With one of the required motor driven AFW trains (pump or flow path) inoperable and the turbine driven AFW train inoperable due to one inoperable steam supply, action must be taken to restore the affected equipment to OPERABLE status within ~~[~~24~~] [48]~~ hours. ② Assuming no single active failures when in this condition, the accident (a FLB or MSLB) could result in the loss of the remaining steam supply to the turbine driven AFW pump due to the faulted steam generator (SG). In this condition, the AFW system may no longer be able to meet the required flow to the SGs assumed in the safety analysis~~, [either due to the analysis requiring flow from two AFW pumps or due to the remaining AFW pump having to feed a faulted SG]~~. ②

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Licensees should adopt the appropriate Completion Time based on their plant design. The 24 hour Completion Time is applicable to plants that can no longer meet the safety analysis requirement of 100% AFW flow to the SG(s) assuming no single active failure and a FLB or MSLB resulting in the loss of the remaining steam supply to the turbine driven AFW pump. The 48 hour Completion Time is applicable to plants that can still meet the safety analysis requirement of 100% AFW flow to the SG(s) assuming no single active failure and a FLB or MSLB resulting in the loss of the remaining steam supply to the turbine driven AFW pump.~~
~~--~~ ③

~~[~~The 24 hour Completion Time is reasonable based on the remaining OPERABLE steam supply to the turbine driven AFW pump, the availability of the remaining OPERABLE motor driven AFW pump, and the low probability of an event occurring that would require the inoperable steam supply to be available for the turbine driven AFW pump.~~]]~~ ②

ACTIONS (continued)

~~[The 48 hour Completion Time is reasonable based on the fact that the remaining motor driven AFW train is capable of providing 100 % of the AFW flow requirements, and the low probability of an event occurring that would challenge the AFW system.]~~ ②

D.1 and D.2

When Required Action A.1,~~[~~ B.1, C.1, or C.2~~]~~ cannot be completed within the required Completion Time, ~~[~~or if two AFW trains are inoperable in MODE 1, 2, or 3 for reasons other than Condition C~~]~~, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in ⑫ MODE 4 within ~~[18]~~ hours. ②

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

In MODE 4, with ~~[~~two AFW trains inoperable ~~in MODE 1, 2, or 3]~~, operation is allowed to continue because only one motor driven AFW pump is required in accordance with the Note that modifies the LCO. Although it is not required, the unit may continue to cool down and start the SDC System. ②

E.1

Required Action E.1 is modified by a Note indicating that all required MODE changes are suspended until one AFW train is restored to OPERABLE status.

With all ~~[three]~~ AFW trains inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with nonsafety grade equipment. In such a condition, the unit should not be perturbed by any action, including a power change, that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW train to OPERABLE status. LCO 3.0.3 is not applicable, as it could force the unit into a less safe condition. ②

BASES

ACTIONS (continued)

F.1

Required Action F.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW train is restored to OPERABLE status.

the required

With ~~one~~ AFW train inoperable, action must be taken to immediately restore the inoperable train to OPERABLE status or to immediately verify, by administrative means, the OPERABILITY of a second train. LCO 3.0.3 is not applicable, as it could force the unit into a less safe condition.

In MODE 4, either the reactor coolant pumps or the SDC loops can be used to provide forced circulation as discussed in LCO 3.4.6, "RCS Loops - MODE 4."

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AFW water and steam supply flow paths provides assurance that the proper flow paths exist for AFW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulations; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position.

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

~~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.~~
~~]~~

③

②

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.2

Verifying that each AFW pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of pump performance required by the ASME Code (Ref. 2). Because it is undesirable to introduce cold AFW into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing, as discussed in the ASME Code (Ref. 2) and the INSERVICE TESTING PROGRAM, satisfies this requirement.

This SR is modified by a Note indicating that the turbine driven AFW pump SR should be deferred until suitable test conditions are established. This deferral is required because there is an insufficient steam pressure to perform the test. ①

SR 3.7.5.3

This SR ensures that AFW can be delivered to the appropriate steam generator, in the event of any accident or transient that generates an A~~E~~FAS signal, by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ①
~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month Frequency is acceptable, based on the design reliability and operating experience of the equipment.~~ 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
~~---]~~ ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

turbine driven AFW pump

This SR is modified by a Note indicating that the SR should be deferred until suitable test conditions have been established. This deferral is required because there is an insufficient steam pressure to perform the test. ①

Also, this SR is modified by a Note that states the SR is not required to be met in MODE 4. In MODE 4, the required AFW train is already aligned and operating.

SR 3.7.5.4

This SR ensures that the AFW pumps will start in the event of any accident or transient that generates an ~~E~~FAS signal by demonstrating that each AFW pump starts automatically on an actual or simulated actuation signal~~. [The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month Frequency is acceptable, based on the design reliability and operating experience of the equipment.~~ ②

A

~~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
~~--]~~

turbine driven AFW pump

~~[~~This SR is modified by two Notes. Note 1 indicates that the SR be deferred until suitable test conditions are established. This deferral is ~~required~~ acceptable because there is insufficient steam pressure to perform the test. Note 2 states that the SR is not required to be met in MODE 4. ~~[~~In MODE 4, the required pump is already operating and the autostart function is not required.~~]~~ ~~[In MODE 4,~~ and if a pump is not already operating the heat removal requirements would be less providing more time for operator action to manually start the required AFW pump.~~]~~ ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Some plants may not routinely use the AFW for heat removal in MODE 4. The second justification is provided for plants that use a startup feedwater pump rather than AFW for startup and shutdown.~~
~~--~~ ③

SR 3.7.5.5

This SR ensures that the AFW System is properly aligned by verifying the flow path to each steam generator prior to entering MODE 2 operation, after 30 days in any combination of MODE 5 or 6, or defueled. OPERABILITY of AFW flow paths must be verified before sufficient core heat is generated that would require the operation of the AFW System during a subsequent shutdown. The Frequency is reasonable, based on engineering judgment, and other administrative controls to ensure that flow paths remain OPERABLE. To further ensure AFW System alignment, the OPERABILITY of the flow paths is verified following extended outages to determine that no misalignment of valves has occurred. This SR ensures that the flow path from the CST to the steam generators is properly aligned by requiring a verification of minimum flow capacity of 296 ~~750~~ gpm at ~~1270~~ 985 psia ~~psi~~. ~~(This SR is not required by those units that use AFW for normal startup and shutdown.)~~ ①

REFERENCES

1. U FSAR, Section ~~[~~10.~~4.9]~~ 5.2. ① ②

2. ASME Code for Operation and Maintenance of Nuclear Power Plants.

B 3.7 PLANT SYSTEMS

B 3.7.5 Auxiliary Feedwater (AFW) System

BASES

BACKGROUND

The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The AFW pumps take suction ~~through separate and independent suction lines~~ from the condensate storage tank (CST) (LCO 3.7.6, "Condensate Storage Tank (CST)") and pump to the steam generator secondary side via separate and independent connections to the main feedwater (MFW) piping outside containment. The steam generators function as a heat sink for core decay heat. The heat load is dissipated by releasing steam to the atmosphere from the steam generators via the main steam safety valves (MSSVs) (LCO 3.7.1, "Main Steam Safety Valves (MSSVs)") or atmospheric dump valves (ADVs) (LCO 3.7.4, "Atmospheric Dump Valves (ADVs)"). If the main condenser is available, steam may be released via the steam bypass valves and recirculated to the CST. ① ①

full capacity

greater than full flow capacity

A train consisting of a pump and its associated flow path.

the required

The AFW System consists of ~~[two]~~ motor driven AFW pumps and one steam turbine driven pump configured into three trains. Each motor driven pump provides 100% of AFW flow capacity; the turbine driven pump provides 100% of the required capacity to the steam generators as assumed in the accident analysis. The pumps are equipped with independent recirculation lines to prevent pump operation against a closed system. ② ①

normally

Each motor driven AFW pump is powered from an independent Class 1E power supply, and feeds one steam generator, although each pump has the capability to be realigned ~~from the control room~~ to feed the other steam generator. ①

A cross connection is provided to enable the routing of flow from the motor-driven pumps to either steam generator. However, the full-flow capacity of the motor-driven AFW pumps does not assure delivery of 100% of the flow credited in the feedwater line break and main steam line break analyses by means of the cross-connection (accident analyses does not explicitly credit AFW flow via the cross-connection).

One pump at full flow is sufficient to remove decay heat and cool the unit to Shutdown Cooling (SDC) System entry conditions.

and relies solely on DC power for operation

The steam turbine driven AFW pump receives steam from either main steam header upstream of the main steam isolation valve (MSIV). Each of the steam feed lines will supply 100% of the requirements of the turbine driven AFW pump. The turbine driven AFW pump supplies a common header capable of feeding both steam generators, with DC powered control valves actuated to the appropriate steam generator by the ~~Emergency~~ Feedwater Actuation System (~~E~~FAS). ①

Auxiliary

A

The AFW System supplies feedwater to the steam generators during normal unit startup, shutdown, and hot standby conditions.

BASES

BACKGROUND (continued)

The AFW System is designed to supply sufficient water to the steam generator(s) to remove decay heat with steam generator pressure at the setpoint of the MSSVs. Subsequently, the AFW System supplies sufficient water to cool the unit to SDC entry conditions, and steam is released through the ADVs.

3

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A

The AFW System actuates automatically on low steam generator level by the ~~E~~FAS as described in LCO 3.3.~~4~~, "Engineered Safety Feature Actuation System (ESFAS) Instrumentation." The ~~E~~FAS logic is designed to feed either or both steam generators with low levels, but will isolate the AFW System from a steam generator having a significantly lower steam pressure than the other steam generator. The ~~E~~FAS automatically actuates the AFW turbine driven pump and associated DC operated valves and controls when required, to ensure an adequate feedwater supply to the steam generators. ~~DC~~ operated valves are provided for each AFW line to control the AFW flow to each steam generator. ①

Safety related AC

motor driven

U

The AFW System is discussed in the FSAR, Section ~~[~~10.4. 9~~]~~ (Ref. 1). ②

APPLICABLE SAFETY ANALYSES

The AFW System mitigates the consequences of any event with a loss of normal feedwater.

The design basis of the AFW System is to supply water to the steam generator to remove decay heat and other residual heat, by delivering at least the minimum required flow rate to the steam generators at pressures corresponding to the lowest MSSV set pressure ~~plus 3%~~. ①

The limiting Design Basis Accidents (DBAs) and transients for the AFW System are as follows:

a. Feedwater Line Break (FWLB) and

b. Loss of normal feedwater.

In addition, the minimum available AFW flow and system characteristics are serious considerations in the analysis of a small break loss of coolant accident.

The loss of main feedwater is the limiting event in terms of decay heat removal by the AFW system.

loss of main feedwater and FWLB events both with and without offsite power

The FWLB event with a non-isolable break between the steam generator and feedwater line check valve results in the lowest capacity of AFW to the intact steam generator

The AFW System design is such that it can perform its function following a~~n~~ ~~FWLB between the MFW isolation valve and containment, combined with a loss of offsite power following turbine trip,~~ and a single active failure of the steam turbine driven AFW pump. ~~In such a case, the EFAS logic might not detect the affected steam generator if the backflow check valve to the affected MFW header worked properly~~. ~~One motor driven AFW pump would deliver to the broken MFW header at the pump runout~~ ①

BASES

APPLICABLE SAFETY ANALYSES (continued)

In such a case, a faulted steam generator is sensed by steam generator pressure differences and main feedwater pressure differences and the available motor driven pump delivers sufficient flow to the intact steam generator.

~~flow until the problem was detected, and flow was terminated by the operator. Sufficient flow would be delivered to the intact steam generator by the redundant AFW pump~~. ①

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

LCO

This LCO requires that ~~[~~three~~]~~ AFW trains be OPERABLE to ensure that the AFW System will perform the design safety function to mitigate the consequences of accidents that could result in overpressurization of the reactor coolant pressure boundary. Three independent AFW pumps, in two diverse trains, ensure availability of residual heat removal capability for all events accompanied by a loss of offsite power and a single failure. This is accomplished by powering two pumps from independent emergency buses. The third AFW pump is powered by a diverse means, a steam driven turbine supplied with steam from a source not isolated by the closure of the MSIVs. ②

The AFW System is considered to be OPERABLE when the components and flow paths required to provide AFW flow to the steam generators are OPERABLE. This requires that the two motor driven AFW pumps be OPERABLE in two diverse paths, each supplying AFW to a separate steam generator. The turbine driven AFW pump shall be OPERABLE with redundant steam supplies from each of the two main steam lines upstream of the MSIVs and capable of supplying AFW flow to either of the two steam generators. The piping, valves, instrumentation, and controls in the required flow paths shall also be OPERABLE.

The LCO is modified by a Note indicating that only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4. This is because of reduced heat removal requirements, the short period of time in MODE 4 during which AFW is required, and the insufficient steam supply available in MODE 4 to power the turbine driven AFW pump.

APPLICABILITY

In MODES 1, 2, and 3, the AFW System is required to be OPERABLE and to function in the event that ~~the MFW~~ normal feedwater is lost. In addition, the AFW System is required to supply enough makeup water to replace steam generator secondary inventory, lost as the unit cools to MODE 4 conditions. ①

In MODE 4, the AFW System may be used for heat removal via the steam generator.

In MODES 5 and 6, the steam generators are not normally used for decay heat removal, and the AFW System is not required.

BASES

ACTIONS

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

~~[~~A.1

If the turbine driven AFW pump is inoperable due to one inoperable steam supply, or if a turbine driven pump is inoperable for any reason while in MODE 3 immediately following refueling, action must be taken to restore the inoperable equipment to an OPERABLE status within 7 days ~~[~~or in accordance with the Risk Informed Completion Time Program~~]~~. The 7 day Completion Time is reasonable based on the following reasons: ②

a. For the inoperability of the turbine driven AFW pump due to one inoperable steam supply, the 7 day Completion Time is reasonable since there is a redundant steam supply line for the turbine driven pump and the turbine driven train is still capable of performing its specified function for most postulated events.

b. For the inoperability of a turbine driven AFW pump while in MODE 3 immediately subsequent to a refueling outage, the 7 day Completion Time is reasonable due to the minimal decay heat levels in this situation.

c. For both the inoperability of the turbine driven pump due to one inoperable steam supply and an inoperable turbine driven AFW pump while in MODE 3 immediately following a refueling outage, the 7 day Completion Time is reasonable due to the availability of redundant OPERABLE motor driven AFW pumps; and due to the low probability of an event requiring the use of the turbine driven AFW pump.

Condition A is modified by a Note which limits the applicability of the Condition for an inoperable turbine driven AFW pump in MODE 3 to when the unit has not entered MODE 2 following a refueling. Condition A allows one AFW train to be inoperable for 7 days vice the 72 hour Completion Time in Condition B. This longer Completion Time is based on the reduced decay heat following refueling and prior to the reactor being critical.~~]~~ ②

ACTIONS (continued)

B.1

With one of the required AFW trains (pump or flow path) inoperable in MODE 1, 2, or 3 ~~[~~for reasons other than Condition A~~]~~, action must be taken to restore OPERABLE status within 72 hours ~~[~~or in accordance with the Risk Informed Completion Time Program~~]~~. This Condition includes the loss of two steam supply lines to the turbine driven AFW pump. The 72 hour Completion Time is reasonable based on the redundant capabilities afforded by the AFW System, the time needed for repairs, and the low probability of a DBA event occurring during this period. Two AFW pumps and flow paths remain to supply feedwater to the steam generators. ②

C.1 and C.2

With one of the required motor driven AFW trains (pump or flow path) inoperable and the turbine driven AFW train inoperable due to one inoperable steam supply, action must be taken to restore the affected equipment to OPERABLE status within ~~[~~24~~]~~ ~~[48]~~ hours. ② Assuming no single active failures when in this condition, the accident (a FLB or MSLB) could result in the loss of the remaining steam supply to the turbine driven AFW pump due to the faulted steam generator (SG). In this condition, the AFW system may no longer be able to meet the required flow to the SGs assumed in the safety analysis~~, [either due to the analysis requiring flow from two AFW pumps or due to the remaining AFW pump having to feed a faulted SG]~~. ②

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Licensees should adopt the appropriate Completion Time based on their plant design. The 24 hour Completion Time is applicable to plants that can no longer meet the safety analysis requirement of 100% AFW flow to the SG(s) assuming no single active failure and a FLB or MSLB resulting in the loss of the remaining steam supply to the turbine driven AFW pump. The 48 hour Completion Time is applicable to plants that can still meet the safety analysis requirement of 100% AFW flow to the SG(s) assuming no single active failure and a FLB or MSLB resulting in the loss of the remaining steam supply to the turbine driven AFW pump.~~
~~---~~ ③

~~[~~The 24 hour Completion Time is reasonable based on the remaining OPERABLE steam supply to the turbine driven AFW pump, the availability of the remaining OPERABLE motor driven AFW pump, and the low probability of an event occurring that would require the inoperable steam supply to be available for the turbine driven AFW pump.~~]]~~ ②

BASES

ACTIONS (continued)

~~[The 48 hour Completion Time is reasonable based on the fact that the remaining motor driven AFW train is capable of providing 100 % of the AFW flow requirements, and the low probability of an event occurring that would challenge the AFW system.]~~ ②

D.1 and D.2

When Required Action A.1,~~ [~~ B.1, C.1, or C.2~~]~~ cannot be completed within the required Completion Time, ~~[~~or if two AFW trains are inoperable in MODE 1, 2, or 3 for reasons other than Condition C~~]~~, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 ~~[18]~~ hours. ②

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

In MODE 4, with ~~[~~two AFW trains inoperable~~ in MODE 1, 2, or 3]~~, operation is allowed to continue because only one motor driven AFW pump is required in accordance with the Note that modifies the LCO. Although it is not required, the unit may continue to cool down and start the SDC System. ②

E.1

Required Action E.1 is modified by a Note indicating that all required MODE changes are suspended until one AFW train is restored to OPERABLE status.

With all ~~[~~three~~]~~ AFW trains inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with nonsafety grade equipment. In such a condition, the unit should not be perturbed by any action, including a power change, that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW train to OPERABLE status. LCO 3.0.3 is not applicable, as it could force the unit into a less safe condition. ②

BASES

ACTIONS (continued)

F.1

Required Action F.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW train is restored to OPERABLE status.

the required

With ~~one~~ AFW train inoperable, action must be taken to immediately restore the inoperable train to OPERABLE status or to immediately verify, by administrative means, the OPERABILITY of a second train. LCO 3.0.3 is not applicable, as it could force the unit into a less safe condition.

In MODE 4, either the reactor coolant pumps or the SDC loops can be used to provide forced circulation as discussed in LCO 3.4.6, "RCS Loops - MODE 4."

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AFW water and steam supply flow paths provides assurance that the proper flow paths exist for AFW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulations; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position.

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~

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

③

②

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.2

Verifying that each AFW pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of pump performance required by the ASME Code (Ref. 2). Because it is undesirable to introduce cold AFW into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing, as discussed in the ASME Code (Ref. 2) and the INSERVICE TESTING PROGRAM, satisfies this requirement.

turbine driven AFW pump ①

This SR is modified by a Note indicating that the SR should be deferred until suitable test conditions are established. This deferral is required because there is an insufficient steam pressure to perform the test.

SR 3.7.5.3

This SR ensures that AFW can be delivered to the appropriate steam generator, in the event of any accident or transient that generates an A ~~E~~FAS signal, by demonstrating that each automatic valve in the flow path ① actuates to its correct position on an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month Frequency is acceptable, based on the design reliability and operating experience of the equipment.~~ 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
~~--]~~ ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

turbine driven AFW pump ①

This SR is modified by a Note indicating that the SR should be deferred until suitable test conditions have been established. This deferral is required because there is an insufficient steam pressure to perform the test.

Also, this SR is modified by a Note that states the SR is not required to be met in MODE 4. In MODE 4, the required AFW train is already aligned and operating.

<u>SR 3.7.5.4</u>

Ⓐ This SR ensures that the AFW pumps will start in the event of any accident or transient that generates an ~~E~~FAS signal by demonstrating that each AFW pump starts automatically on an actual or simulated actuation signal~~. [The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 18 month Frequency is acceptable, based on the design reliability and operating experience of the equipment.~~ ②

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~ ③
~~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.~~
~~--]~~

turbine driven AFW pump

acceptable

and if a pump is not already operating

~~[~~This SR is modified by two Notes. Note 1 indicates that the SR be deferred until suitable test conditions are established. This deferral is ~~required~~ because there is insufficient steam pressure to perform the test. Note 2 states that the SR is not required to be met in MODE 4. ~~[~~In MODE 4, the required pump is already operating and the autostart function is not required~~.] [In MODE 4,~~ the heat removal requirements would be less providing more time for operator action to manually start the required AFW pump.~~]~~ ②

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Some plants may not routinely use the AFW for heat removal in MODE 4. The second justification is provided for plants that use a startup feedwater pump rather than AFW for startup and shutdown.~~
~~---~~ ③

SR 3.7.5.5

This SR ensures that the AFW System is properly aligned by verifying the flow path to each steam generator prior to entering MODE 2 operation, after 30 days in any combination of MODE 5 or 6, or defueled. OPERABILITY of AFW flow paths must be verified before sufficient core heat is generated that would require the operation of the AFW System during a subsequent shutdown. The Frequency is reasonable, based on engineering judgment, and other administrative controls to ensure that flow paths remain OPERABLE. To further ensure AFW System alignment, the OPERABILITY of the flow paths is verified following extended outages to determine that no misalignment of valves has occurred. This SR ensures that the flow path from the CST to the steam generators is properly aligned by requiring a verification of minimum flow capacity of 275 ~~750~~ gpm at 1000 psia ~~1270 psi~~. ~~(This SR is not required by those units that use AFW for normal startup and shutdown.)~~ ①

REFERENCES

1. U FSAR, Section ~~[~~10.4.9~~]~~. ① ②
2. ASME Code for Operation and Maintenance of Nuclear Power Plants.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.5 BASES, AUXILIARY FEEDWATER (AFW) SYSTEM

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

2. The ISTS contains bracketed information and/or values that are generic to Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is inserted 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 3.7.5, AUXILIARY FEEDWATER (AFW) SYSTEM

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

ATTACHMENT 6

ITS 3.7.6, Condensate Storage Tank (CST)

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

PLANT SYSTEMS

CONDENSATE STORAGE TANK

LIMITING CONDITION FOR OPERATION

LCO 3.7.6 3.7.1.3 The condensate storage tank shall be OPERABLE with a minimum
SR 3.7.6.1 contained volume of 153,400 gallons.

Applicability **APPLICABILITY**: MODES 1, 2 and 3~~.~~ ,

Add proposed second Applicability

M01

ACTION:

Add proposed Required Action A.1

L01

ACTION A With the condensate storage tank inoperable, restore the condensate
storage tank to OPERABLE status within ~~4 hours~~ or be in ~~at least HOT~~
ACTION B ~~STANDBY~~ within ~~the next~~ 6 hours and in ~~COLD SHUTDOWN~~ within ~~the following~~
~~30~~ hours.

7 days

MODE 3

12 hours

MODE 4 without reliance on steam generator for heat removal

M01

SURVEILLANCE REQUIREMENTS

Verify CST level ≥ 153,400 gallons

SR 3.7.6.1 4.7.1.3 ~~The condensate storage tank shall be demonstrated OPERABLE~~ in accordance with the Surveillance Frequency Control Program by verifying the water level.

PLANT SYSTEMS

CONDENSATE STORAGE TANK

LIMITING CONDITION FOR OPERATION

LCO 3.7.6
SR 3.7.6.1

3.7.1.3 The condensate storage tank (CST #2) shall be OPERABLE with a contained volume of at least 307,000 gallons.

Applicability

APPLICABILITY: MODES 1, 2, and 3~~.~~ , Add proposed second Applicability

M01

ACTION:

ACTION A
ACTION B

With the condensate storage tank inoperable, Add proposed Required Action A.1 within 4 hours and restore the CST to OPERABLE status in 7 days or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 without reliance on steam generator for heat removal within ~~the following 6~~ 12 hours.

L01
M01

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

4.7.1.3 ~~The condensate storage tank shall be demonstrated OPERABLE~~ Verify CST level ≥ 307,000 gallons in accordance with the Surveillance Frequency Control Program ~~by verifying the contained water volume is within its limits when the tank is the supply source for the auxiliary feedwater pumps~~.

A02

DISCUSSION OF CHANGES
ITS 3.7.6, CONDENSATE STORAGE TANK (CST)

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 2 Only**: CTS 4.7.1.3 states, in part, that the CST shall be demonstrated OPERABLE when the tank is the supply source for the auxiliary feedwater pumps. ITS SR 3.7.6.1 states that the CST level must be verified to be within the specified limit. This changes the CTS by not stating that the Surveillance must be performed when the CST is the supply source for the auxiliary feedwater pumps.

The purpose of CTS 4.7.1.3 is to ensure the CST is OPERABLE when it is the supply source for the auxiliary feedwater pumps. Surveillance requirements are not required to be performed on inoperable equipment. ITS SR 3.0.1 states "Surveillances do not have to be performed on inoperable equipment or variables outside specified limits." If the CST is not capable of supplying the auxiliary feedwater pumps, the CST is inoperable because it can no longer provide its required support function. Furthermore, since inoperable equipment does not have to be tested, the removal of the phrase "when the tank is the supply source for the auxiliary feedwater pumps" is acceptable. This change is designated as administrative because it does not result in technical changes to the CTS and includes revising the action end state consistent with the Applicability change.

MORE RESTRICTIVE CHANGES

M01 CTS 3.7.1.3 requirements for CST OPERABILITY are applicable in MODES 1, 2, and 3. ITS 3.7.6 is applicable in MODES 1. 2, and 3, and MODE 4 when a steam generator (SG) is relied upon for heat removal. In addition, consistent with this change in Applicability, the requirement to be in “COLD SHUTDOWN within the following 30 hours” is changed to “MODE 4 without reliance on steam generator for heat removal within 12 hours” in ITS 3.7.6 Required Action B.2. This changes the CTS requirements by requiring the CST to be OPERABLE in MODE 4 when a steam generator is relied upon for heat removal and includes revising the action end state consistent with the Applicability change.

These changes are necessary because the CST may be needed in MODE 4 if shutdown cooling (SDC) has not been placed in service. If offsite power is lost when SDC is not yet in service, the SGs are supplied by the auxiliary feedwater pumps for heat removal. Therefore, the CST must be available in MODE 4 to support the Auxiliary Feedwater System. This change is designated as more restrictive because the CST is now required to be OPERABLE in MODE 4 when a SG is relied upon for heat removal.

DISCUSSION OF CHANGES
ITS 3.7.6, CONDENSATE STORAGE TANK (CST)

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.7.1.3 ACTION allows four hours to restore the CST to OPERABLE status or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. ITS 3.7.6 Required Action A.1 requires the verification of an OPERABLE backup water supply within 4 hours and once per 12 hours thereafter and Required Action A.2 requires the CST to be restored to OPERABLE status within 7 days. This changes the CTS by extending the Completion Time in the CTS 3.7.1.3 ACTION to restore the CST to OPERABLE status from 4 hours to 7 days provided the backup water supply is verified OPERABLE within 4 hours and every 12 hours thereafter.

The purpose of CTS 3.7.1.3 ACTION is to provide compensatory actions for when the CST is found to be inoperable. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to degraded conditions to minimize risk associated with continued operation while providing time to repair inoperable features and the low probability of an event requiring the use of the water from the CST occurring during this period. The backup supply to the Unit 1 CST is the Unit 2 CST and the backup supply to the Unit 2 CST is the primary water and city water storage tanks. The Completion Time to restore the CST to OPERABLE status considers that the backup supply may be performing this function in addition to its normal functions. Verification of a backup water supply with periodic re-verification provides adequate assurance that the CTS volume analysis assumptions are satisfied and continued operation is justified for the 7 day allowed restoration period. In addition, the opportunity to restore the equipment to OPERABLE status is always available. ITS LCO 3.0.2 states that upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated. Therefore, based on ITS LCO 3.0.2 restoration is always an option. 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)

CTS

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

3.7.1.3 LCO 3.7.6 The CST shall be OPERABLE.

Applicability
DOC M01

APPLICABILITY: MODES 1, 2, and 3,
~~[~~MODE 4 when steam generator is relied upon for heat removal~~]~~. ②

ACTIONS

ACTION
DOC L01

ACTION
DOC M01

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CST inoperable.	A.1 Verify OPERABILITY of backup water supply.	4 hours AND Once per 12 hours thereafter
	AND	
	A.2 Restore CST to OPERABLE status.	7 days
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 Be in MODE 4 without reliance on steam generator for heat removal.	12 ~~[24]~~ hours ②

CTS

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.7.1.3 SR 3.7.6.1	Verify CST level is ≥ ~~[350,000]~~ 153,400 gal.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~ ②

CTS

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

3.7.1.3 LCO 3.7.6 The CST shall be OPERABLE.

Applicability DOC M01 APPLICABILITY: MODES 1, 2, and 3,
~~[~~MODE 4 when steam generator is relied upon for heat removal~~]~~. ②

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
ACTION DOC L01	A. CST inoperable.	A.1 Verify OPERABILITY of backup water supply.	4 hours AND Once per 12 hours thereafter
		AND	
		A.2 Restore CST to OPERABLE status.	7 days
ACTION DOC M01	B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
		AND	
		B.2 Be in MODE 4 without reliance on steam generator for heat removal.	~~[24]~~ 12 hours ②

CTS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.7.1.3 SR 3.7.6.1	Verify CST level is ≥ ~~[350,000]~~ 307,000 gal.	~~[12 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.6, CONDENSATE STORAGE TANK (CST)

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

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

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

B 3.7 PLANT SYSTEMS

B 3.7.6 Condensate Storage Tank (CST)

BASES

BACKGROUND

The CST provides a qualified ~~safety grade~~ source of water to the steam generators for removing decay and sensible heat from the Reactor Coolant System (RCS). The CST provides a passive flow of water, by gravity, to the Auxiliary Feedwater (AFW) System (LCO 3.7.4, "Auxiliary Feedwater (AFW) System"). The steam produced is released to the atmosphere by the main steam safety valves (MSSVs) or the atmospheric dump valves (ADVs). The AFW pumps operate with a continuous recirculation to the CST. ① ①

When the main steam isolation valves are open, the preferred means of heat removal is to discharge steam to the condenser by the nonsafety grade path of the steam bypass valves. The condensed steam ~~is~~ may be returned to the CST via ~~by~~ the condensate System ~~transfer pump~~. ~~This has the advantage of conserving condensate while minimizing releases to the environment.~~ ①

Because the CST is a principal component in removing residual heat from the RCS, it is designed to withstand earthquakes and other natural phenomena. The CST is designed to Seismic Category I requirements and enclosed by a vertical concrete missile barrier to ensure availability of the feedwater supply. Feedwater is also available from ~~an alternate source~~ the Unit 2 CST. ①

A description of the CST is found in the UFSAR, Section ~~[~~9.2.~~6]~~8 (Ref. 1). ②

APPLICABLE SAFETY ANALYSES

The CST provides cooling water to remove decay heat and to cool down the unit following all events in the accident analysis, discussed in the UFSAR, Chapters ~~[~~6~~]~~ and ~~[~~15~~]~~ (Refs. 2 and 3, respectively). For anticipated operational occurrences and accidents which do not affect the OPERABILITY of the steam generators, the analysis assumption is 1 hour ~~generally [30] minutes~~ at MODE 3, steaming through the (ADVs) ~~MSSVs~~ followed by a cooldown to shutdown cooling (SDC) entry conditions at the ~~design~~ cooldown rate of 75°F/hr. ② ②

The limiting event for the condensate volume is the large feedwater line break with a coincident loss of offsite power. Single failures that also affect this event include the following:

a. The failure of the diesel generator powering the motor driven AFW pump to the unaffected steam generator (requiring additional steam to drive the remaining AFW pump turbine) and

APPLICABLE SAFETY ANALYSES (continued)

b. The failure of the steam driven AFW pump (requiring a longer time for cooldown using only one motor driven AFW pump).

These are not usually the limiting failures in terms of consequences for these events.

~~A nonlimiting event considered in CST inventory determinations is a break either in the main feedwater, or AFW line near where the two join. This break has the potential for dumping condensate until terminated by operator action, as the Emergency Feedwater Actuation System would not detect a difference in pressure between the steam generators for this break location. This loss of condensate inventory is partially compensated by the retaining of steam generator inventory.~~ ①

The CST satisfies Criteria 2 and 3 of 10 CFR 50.36(c)(2)(ii).

design requirements and

8 hours

100.3

LCO

To satisfy accident analysis assumptions, the CST must contain sufficient cooling water to remove decay heat for ~~[30 minutes]~~ following a reactor trip from ~~102~~% RTP, and ~~then~~ cool down the RCS to SDC entry conditions, assuming a coincident loss of offsite power and the most adverse single failure. In doing this it must retain sufficient water to ensure adequate net positive suction head for the AFW pumps during the cooldown, as well as to account for any losses from the steam driven AFW pump turbine, or before isolating AFW to a broken line. ②

The CTS volume minimum of 153,400 gallons includes an unusable volume of 12,055 gallons and an additional margin of 10,845 gallons. In addition, the Unit 2 CTS is required to maintain a dedicated backup volume of ≥ 130,500 gallons available for Unit 1 use if the Unit 1 CST is made inoperable due to a vertical missile.

1

volume

equivalent to

≥ 130,500

The CST ~~level~~ required is a usable volume of ~~≤ [350,000]~~ gallons, which is based on holding the unit in MODE 3 for ~~[4]~~ hour~~s~~, followed by a cooldown to SDC entry conditions at 75°F per hour. This ~~basis is established by the NRC Standard Review Plan Branch Technical Position, Reactor Systems Branch 5-1 (Ref. 4) and~~ exceeds the volume required by the accident analysis. ② ①

OPERABILITY of the CST is determined by maintaining the tank ~~level~~ at or above the minimum required ~~level~~. ①

volume

APPLICABILITY

In MODES 1, 2, and 3, ~~[~~and in MODE 4, when steam generator is being relied upon for heat removal,~~]~~ the CST is required to be OPERABLE. ②

In MODES 5 and 6, the CST is not required because the AFW System is not required.

BASES

ACTIONS

A.1 and A.2

If the CST is not OPERABLE, the OPERABILITY of the backup water supply must be verified by administrative means within 4 hours and once every 12 hours thereafter.

(Unit 2 CST volume ≥ 130,500 gallons)

OPERABILITY of the backup ~~feedwater~~ supply must include verification of the ~~OPERABILITY of flow paths from the backup supply to the AFW pumps, and~~ availability of the required volume of water in the backup supply. The CST must be returned to OPERABLE status within 7 days, as the backup supply may be performing this function in addition to its normal functions. The 4 hour Completion Time is reasonable, based on operating experience, to verify the OPERABILITY of the backup water supply. Additionally, verifying the backup water supply every 12 hours is adequate to ensure the backup water supply continues to be available. The 7 day Completion Time is reasonable, based on a~~n OPERABLE~~ backup water supply being available, and the low probability of an event requiring the use of the water from the CST occurring during this period. ①

B.1 and B.2

If the CST cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance on steam generator for heat removal, within ~~[24]~~ 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ②

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

This SR verifies that the CST contains the required volume of cooling water. (This ~~level~~ volume ≥ ~~[350,000]~~ 153,400 gallons.) ~~[The 12 hour Frequency is based on operating experience, and the need for operator awareness of unit evolutions that may affect the CST inventory between checks. The 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to abnormal CST level deviations.~~ ① ②

SURVEILLANCE REQUIEMENTS (continued)

~~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.~~
~~--~~] ③ ②

REFERENCES

1. UFSAR, Section ~~[~~9.2.~~6~~8~~]~~.
2. UFSAR, Chapter ~~[~~6~~]~~. ② ①
3. UFSAR, Chapter ~~[~~15~~]~~.
4. ~~NRC Standard Review Plan Branch Technical Position RSB 5-1.~~ ①

B 3.7 PLANT SYSTEMS

B 3.7.6 Condensate Storage Tank (CST)

BASES

BACKGROUND

The CST provides a ~~safety grade~~ qualified source of water to the steam generators for removing decay and sensible heat from the Reactor Coolant System (RCS). The CST provides a passive flow of water, by gravity, to the Auxiliary Feedwater (AFW) System (LCO 3.7.4, "Auxiliary Feedwater (AFW) System"). The steam produced is released to the atmosphere by the main steam safety valves (MSSVs) or the atmospheric dump valves (ADVs). The AFW pumps operate with a continuous recirculation to the CST. ① ①

When the main steam isolation valves are open, the preferred means of heat removal is to discharge steam to the condenser by the nonsafety grade path of the steam bypass valves. The condensed steam ~~is~~ may be returned to the CST ~~by~~ via the condensate ~~transfer pump~~ System. ~~This has the advantage of conserving condensate while minimizing releases to the environment.~~ ①

Because the CST is a principal component in removing residual heat from the RCS, it is designed to withstand earthquakes and other natural phenomena. The CST is designed to Seismic Category I requirements and enclosed by a vertical concrete missile barrier to ensure availability of the feedwater supply. Feedwater is also available from ~~an~~ alternate sources; primary water and city water storage tanks provide an alternate source of makeup water to the CST. ①

A description of the CST is found in the UFSAR, Section ~~[~~9.2.6~~]~~ (Ref. 1). ②

APPLICABLE SAFETY ANALYSES

The CST provides cooling water to remove decay heat and to cool down the unit following all events in the accident analysis, discussed in the UFSAR, Chapters ~~[~~6~~]~~ and ~~[~~15~~]~~ (Refs. 2 and 3, respectively). For anticipated operational occurrences and accidents which do not affect the OPERABILITY of the steam generators, the analysis assumption is ~~generally [30] minutes~~ 4 hours at MODE 3, steaming through the ~~MSSVs~~ (ADVs) followed by a cooldown to shutdown cooling (SDC) entry conditions at the ~~design~~ cooldown rate of 75°F/hr and equates to 154,000 gallons. ② ②

The limiting event for the condensate volume is the ~~large feedwater line break~~ loss of one DC emergency train with a coincident loss of offsite power. Single failures that also affect this event include the following: ①

a. The failure of the diesel generator powering the motor driven AFW pump to the unaffected steam generator (requiring additional steam to drive the remaining AFW pump turbine) and

APPLICABLE SAFETY ANALYSES (continued)

b. The failure of the steam driven AFW pump (requiring a longer time for cooldown using only one motor driven AFW pump).

These are not usually the limiting failures in terms of consequences for these events.

~~A nonlimiting event considered in CST inventory determinations is a break either in the main feedwater, or AFW line near where the two join. This break has the potential for dumping condensate until terminated by operator action, as the Emergency Feedwater Actuation System would not detect a difference in pressure between the steam generators for this break location. This loss of condensate inventory is partially compensated by the retaining of steam generator inventory.~~ ①

design requirements and

The CST satisfies Criteria 2 and 3 of 10 CFR 50.36(c)(2)(ii).

LCO

11.4 hours

100.3

To satisfy accident analysis assumptions, the CST must contain sufficient cooling water to remove decay heat for ~~[30 minutes]~~ following a reactor trip from ~~102~~% RTP, and ~~then~~ cool down the RCS to SDC entry conditions, assuming a coincident loss of offsite power and the most adverse single failure. In doing this it must retain sufficient water to ensure adequate net positive suction head for the AFW pumps during the cooldown, as well as to account for any losses from the steam driven AFW pump turbine, or before isolating AFW to a broken line. ② ①

volume

equivalent to

≥ 154,000

The CTS minimum volume of 307,000 gallons includes an unusable volume of 13,433 gallons, 154,000 gallons dedicated to Unit 2, 130,500 reserved for Unit 1 CST backup and an additional margin of 9,067 gallons.

The CST ~~level~~ required is a usable volume of ~~≤ [350,000]~~ gallons, which is based on holding the unit in MODE 3 for ~~[~~4~~]~~ hours, followed by a cooldown to SDC entry conditions at 75°F per hour. ~~This basis is established by the NRC Standard Review Plan Branch Technical Position, Reactor Systems Branch 5-1 (Ref. 4) and exceeds the volume required by the accident analysis.~~ ② ①

OPERABILITY of the CST is determined by maintaining the tank ~~level~~ at or above the minimum required ~~level~~. ①

volume

APPLICABILITY

In MODES 1, 2, and 3, ~~[~~and in MODE 4, when steam generator is being relied upon for heat removal,~~]~~ the CST is required to be OPERABLE. ②

In MODES 5 and 6, the CST is not required because the AFW System is not required.

BASES

ACTIONS

A.1 and A.2

If the CST is not OPERABLE, the OPERABILITY of the backup water supply must be verified by administrative means within 4 hours and once every 12 hours thereafter.

OPERABILITY of the backup ~~feedwater~~ supply must include verification of the ~~OPERABILITY of flow paths from the backup supply to the AFW pumps, and~~ availability of the required volume of water in the backup supply. The CST must be returned to OPERABLE status within 7 days, as the backup supply may be performing this function in addition to its normal functions. The 4 hour Completion Time is reasonable, based on operating experience, to verify the OPERABILITY of the backup water supply. Additionally, verifying the backup water supply every 12 hours is adequate to ensure the backup water supply continues to be available. The 7 day Completion Time is reasonable, based on a~~n OPERABLE~~ backup water supply being available, and the low probability of an event requiring the use of the water from the CST occurring during this period. ①

B.1 and B.2

If the CST cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance on steam generator for heat removal, within ~~[24]~~ 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ②

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

This SR verifies that the CST contains the required volume of cooling water. (This ~~level~~ volume ≥ ~~[350,000]~~ 307,000 gallons.) ~~[The 12 hour Frequency is based on operating experience, and the need for operator awareness of unit evolutions that may affect the CST inventory between checks. The 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to abnormal CST level deviations.~~ ① ②

BASES

SURVEILLANCE REQUIEMENTS (continued)

~~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.~~ ③
~~---~~ ~~]~~ ②

REFERENCES

1. U FSAR, Section ~~[~~9.2.6~~]~~.
2. U FSAR, Chapter ~~[~~6~~]~~. ② ①
3. FSAR, Chapter ~~[~~15~~]~~.
4. ~~NRC Standard Review Plan Branch Technical Position RSB 5-1.~~ ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.6 BASES, CONDENSATE STORAGE TANK (CST)

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

2. The ISTS contains bracketed information and/or values that are generic to Combustion Engineering vintage plants. The brackets are removed and the proper plant specific information/value is inserted 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 3.7.6, CONDENSATE STORAGE TANK (CST)

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

ATTACHMENT 7

3.7.7, Component Cooling Water (CCW) System

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

PLANT SYSTEMS

3/4.7.3 COMPONENT COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.7.7

~~3.7.3.1~~ ~~At least~~ two ~~independent~~ ~~component cooling water~~ CCW loops shall be OPERABLE.

LA01

Applicability

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

ACTION A.1 Note

> **NOTE**
>
> Enter applicable ACTIONS of LCO ~~3.4.1.3, "Reactor Coolant System - Hot Shutdown,"~~ 3.4.6, "RCS Loops – MODE 4," for shutdown cooling loops made inoperable by CCW.

ACTION A
ACTION A.1
ACTION B.1, B.2
ACTION B.2 Note

~~With only~~ one ~~component cooling water~~ CCW loop in OPERABLE, restore ~~at least two~~ CCW loop~~s~~ to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours. LCO 3.0.4.a is not applicable when entering ~~HOT SHUTDOWN~~ MODE 4.

SURVEILLANCE REQUIREMENTS

~~4.7.3.1~~ ~~At least~~ two ~~component cooling water~~ CCW loops shall be demonstrated OPERABLE:

Add SR 3.7.7.1 Note — A02

SR 3.7.7.1

~~a.~~ In accordance with the Surveillance Frequency Control Program ~~by~~ verifying~~ing that~~ each CCW ~~valve (~~manual, power operated ~~or~~ and automatic~~)~~ valve in the flow path servicing safety related equipment that is not locked, sealed or otherwise secured in position, is in its correct position.

A03

SR 3.7.7.2

~~b.~~ In accordance with the Surveillance Frequency Control Program ~~during shutdown by~~ verifying~~ing that~~ each CCW automatic valve in the flow path servicing safety related equipment that is not locked, sealed or otherwise secured in position actuates to ~~its~~ the correct position on ~~a Safety Injection~~ an actual or simulated Actuation Signal.

LA02

L01

L02

Add SR 3.7.7.3 — M01

A01

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (Continued)~~

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A01

PLANT SYSTEMS

3/4.7.3 COMPONENT COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

~~NOTE~~

- ~~When CCW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves shall be verified to be consistent with the appropriate power supply at least once per 24 hours.~~ L03
  ~~Upon receipt of annunciation for improper alignment of the pump 2C motor power in relation to any of its motor-operated discharge valves positions, restore proper system alignment within 2 hours.~~ L04
- ACTION A.1 Note: Enter applicable ACTIONS of LCO ~~3.4.1.3, "Reactor Coolant System – Hot Shutdown,"~~ 3.4.6, "RCS Loops – MODE 4," for shutdown cooling loops made inoperable by CCW.

LCO 3.7.7 ~~3.7.3~~ ~~At least~~ two ~~independent~~ ~~component cooling water~~ CCW loops shall be OPERABLE. LA01

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

ACTION:

ACTION A
ACTION A.1
~~With only~~ one ~~component cooling water~~ CCW loop in OPERABLE, restore ~~at least two~~ CCW loop~~s~~ to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program,

ACTION B.1, B.2
or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours.

ACTION B.2 Note
LCO 3.0.4.a is not applicable when entering ~~HOT SHUTDOWN~~ MODE 4.

SURVEILLANCE REQUIREMENTS

~~4.7.3~~ ~~At least~~ two ~~component cooling water~~ CCW loops shall be demonstrated OPERABLE:

Add SR 3.7.7.1 Note A02

SR 3.7.7.1 ~~a.~~ In accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing~~ ~~that~~ each CCW ~~valve (~~manual, power~~-~~operated ~~or~~ and automatic~~)~~ valve in the flow path servicing safety~~-~~related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position. A03

SR 3.7.7.2 ~~b.~~ In accordance with the Surveillance Frequency Control Program ~~during shutdown by~~ verify~~ing that~~ each CCW automatic valve in the flow path servicing safety~~-~~related equipment that is not locked, sealed or otherwise secured in position actuates to ~~its~~ the correct position on ~~an SIAS test~~ an actual or simulated actuation signal. LA02 L01 L02

Add SR 3.7.7.3 M01

DISCUSSION OF CHANGES
ITS 3.7.7, COMPONENT COOLING WATER (CCW) SYSTEM

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 4.7.3.1.a and Unit 2 4.7.3.a do not contain an explicit reference to isolating CCW flow to individual components. ITS SR 3.7.7.1 contains a Note which states, "Isolation of CCW flow to individual components does not render the CCW System inoperable." This changes CTS by adding an allowance that is not explicitly stated in the CTS. The purpose of the CCW System Technical Specification is to provide assurance that CCW is available to the appropriate plant components. This change is acceptable because by current use and application of the CTS, isolation of a component supplied with CCW does not necessarily result in the CCW System being considered inoperable, but the respective component may be declared inoperable for its system. This change clarifies this application. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 Unit 1 CTS 4.7.3.1.a and Unit 2 CTS 4.7.3.a require verification that each CCW valve (manual, power operated, or automatic) servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position. ITS SR 3.7.7.1 requires verification that each CCW manual, power operated, and automatic valve “in the flow path” servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in the correct position.

Unit 1 CTS 4.7.3.1.b and Unit 2 CTS 4.7.3.b require verification that each CCW automatic valve servicing safety related equipment actuates to its correct position on a safety injection actuation signal. ITS SR 3.7.7.2 requires verification that each CCW automatic valve “in the flow path” servicing safety related equipment that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actuation signal. This changes the CTS by adding the words "in the flow path" to Unit 1 CTS 4.7.3.1.a and Unit 2 CTS 4.7.3.a, and to Unit 1 CTS 4.7.3.1.b and Unit 2 CTS 4.7.3.b.

The purpose of Unit 1 CTS 4.7.3.1.a and Unit 2 CTS 4.7.3.a is to ensure all valves in the CCW System flow path are in the correct position. The purpose of Unit 1 CTS 4.7.3.1.b and Unit 2 CTS 4.7.3.b is to ensure all automatic valves in the CCW System flow path actuate to the correct position on an actual or simulated actuation signal. The addition of the words "in the flow path" does not change the intent of the Surveillance Requirements. Each manual, power operated, and automatic valve servicing safety related equipment that is not locked, sealed, or otherwise secured in position will continue to be verified to be in the correct position. Each CCW automatic valve in the flow path that is not locked, sealed or otherwise secured in position, will still be checked to ensure it actuates to the correct position on an actual or simulated actuation signal. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 Unit 1 CTS 4.7.3.1 and Unit 2 CTS 4.7.3 do not contain a requirement to verify each CCW System pump starts automatically on an actuation signal. ITS SR 3.7.7.3 states; "Verify each CCW pump starts automatically on an actual or simulated actuation signal," with a Frequency specified in accordance with the Surveillance Frequency Control Program. This changes the CTS by adding a Surveillance Requirement to test the CCW System pumps.

This change is necessary because in order for the CCW System to perform the safety function assumed in the accident analysis, the CCW pumps must start automatically. The CCW System is a normally operating system that cannot be fully actuated as part of the normal testing during normal operation. Therefore, the SR periodically verifies proper automatic operation of the pumps on an actual or simulated actuation signal. This Surveillance is similar to the testing requirements for other safety related pumps. 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 3.7.7.3 will be performed at a Frequency in accordance with the Surveillance Frequency Control Program with an initial Frequency of 18 months consistent with the ISTS SR 3.7.7.3 and is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. This change is designated as more restrictive because it adds a new SR.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* Unit 1 CTS 3.7.3.1 and Unit 2 CTS 3.7.3 state that two "independent" CCW loops shall be OPERABLE. ITS 3.7.7 requires two CCW loops to be OPERABLE but does not contain the detail that the loops must be independent. This changes the CTS by moving the detail that the CCW loops are independent to the Bases. The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for two CCW loops to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification

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

LA02 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* Unit 1 CTS 4.7.3.1.b and Unit 2 CTS 4.7.3.b require verification of the automatic actuation of CCW components on a safety injection actuation signal (SIAS). ITS SR 3.7.7.2 does not state the specific type of signal, but only specifies an actual or simulated "actuation" signal. This changes CTS by moving the type of actuation signal (i.e., SIAS) to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify that appropriate equipment actuates upon receipt of an actuation signal. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5 of the ITS. 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 Specification.

LESS RESTRICTIVE CHANGES

L01 *(Category 6- Relaxation Of Surveillance Requirement Acceptance Criteria)* Unit 1 CTS 4.7.3.1.b and Unit 2 CTS 4.7.3.b require verification of the automatic actuation of component cooling water components on a safety injection actuation signal (SIAS) "test" signal. ITS SR 3.7.7.2 specifies that the signal may be from either an "actual" or simulated (i.e., test) signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of Unit 1 CTS 4.7.3.1.b and Unit 2 CTS 4.7.3.b is to ensure the CCW components operate correctly upon receipt of an actuation signal. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 5 - Deletion of Surveillance Requirement)* Unit 1 CTS 4.7.3.1.b and Unit 2 CTS 4.7.3.b require verification that each CCW automatic valve in the flow path actuates to its correct position. ITS SR 3.7.7.2 requires verification that each CCW automatic valve in the flow path "that is not locked, sealed, or otherwise secured in position" actuates to the correct position. This changes the CTS by excluding those valves that are locked, sealed, or otherwise secured in position from the verification.

The purpose of Unit 1 CTS 4.7.3.1.b and Unit 2 CTS 4.7.3.b is to provide assurance that if an event occurred requiring CCW valves to be in their correct position, then those requiring automatic actuation would actuate to their correct position. This change is acceptable because the deleted Surveillance is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested to in a manner and at a Frequency necessary to provide confidence that the equipment can perform its assumed safety function. Those automatic valves that are locked, sealed, or otherwise secured in position are not required to actuate on a safety injection actuation signal in order to perform their safety function because they are already in the required position. Testing such valves would not provide any additional assurance of OPERABILITY. Valves that are required to actuate will continue to be tested. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L03 **Unit 2 only:** *(Category 5 - Deletion of Surveillance Requirement)* CTS 3.7.3 note requires verification that when CCW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves shall be verified to be consistent with the appropriate power supply at least once per 24 hours. ITS 3.7.7 does not require this specific verification. This changes the CTS by deleting the specific verification of valve and power supply alignment when the swing CCW pump is being used.

The purpose of the CTS 3.7.3 Note is to ensure that when the swing CCW pump (Pump 2C) is used to satisfy the requirements, the proper valve and power supply alignment is verified periodically. The PSL CCW System design includes three pumps: each pump provides flow to a redundant CCW loop. These two pumps are powered from the associated essential bus. The third swing pump can be powered from either essential bus and the discharge valves can be aligned to either CCW loop. When used to support CCW loop OPERABILITY, the swing pump power and valves must be aligned to the correct CCW loop. The Surveillances retained in ITS will continue to ensure the valves and breakers are properly aligned when the swing pump is being used. ITS SR 3.7.7.1 requires verification that the valves that are not locked sealed or otherwise secured in position (i.e., accident position) are in the correct position. This includes verifying the discharge valves of the swing pump are in their correct position to support CCW loop OPERABILITY. In addition, there is an alarm that annunciates in the control room in the event the discharge valves to the swing pump are not aligned to the same loop as the pump breaker is aligned. ITS SR 3.7.7.3 requires verification that the required pump automatically starts on an actual or simulated actuation signal. This test ensures the swing pump is powered from the correct essential bus by verifying the pump can automatically start on the selected CCW loop. The Frequency in accordance with the Surveillance Frequency Control Program (i.e., 31 days for the valve position verification and 18 months for the automatic pump start) has been determined a sufficient periodicity for verification of required equipment. This change is acceptable because the deleted Surveillance Requirement is not necessary to ensure that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS

L04 **Unit 2 only:** *(Category 3 – Relaxation of Completion Time)* CTS 3.7.3 note requires verification that upon receipt of annunciation for improper alignment of the pump 2C motor power in relation to any of its motor-operated discharge valves positions, restore proper system alignment within 2 hours. ITS SR 3.7.7 does not require this specific action. This changes the CTS by deleting the action to restore proper alignment of the swing CCW pump.

The purpose of the CTS 3.7.3 Note is to ensure that when the swing CCW pump (Pump 2C) is used to satisfy the requirements and the valve and power supply to the swing pump are not aligned, action is required to restore the alignment. The PSL CCW System design includes three pumps: two pumps each provide flow to a redundant CCW loop. These two pumps are powered from the associated essential bus. The third swing pump can be powered from either essential bus and the discharge valves can be aligned to either CCW loop. When used to support CCW loop OPERABILITY the swing pump power and valves must be aligned to the correct CCW loop. The ACTIONS retained in ITS will continue to ensure the appropriate remedial actions are taken when the swing pump is used to support CCW loop OPERABILITY. When a CCW loop is inoperable, ITS 3.7.7 ACTION A requires the CCW loop to be restored to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program. This action would include restoring the swing pump valve and power alignment when the swing pump is used to support OPERABILITY of the CCW loop. When the swing pump is not used to support OPERABILITY of a CCW loop, the requirement to restore alignment is not a required remedial action to restore the LCO as defined in 10 CFR 50.36(c)(2)(i). Therefore, the note is unnecessary. The ITS 3.7.7 ACTION A (CTS 3.7.3 Action) Completion Time has been determined sufficient to restore the CCW loop to OPERABLE status. This change is acceptable because the Completion Time of ITS 3.7.7 ACTION A is consistent with safe operation under the specified Condition, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of a DBA occurring during the allowed Completion Time. 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)

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CCW) System

3.7.3.1 LCO 3.7.7 Two CCW ~~trains~~ loops shall be OPERABLE.

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.7.3.1 Action 3.7.3.1 Action Note	A. One CCW ~~train~~ loop inoperable.	A.1	---------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for shutdown cooling loops made inoperable by CCW. ---------------------------------------		① ①
3.7.3.1 Action			Restore CCW ~~train~~ loop to OPERABLE status.	72 hours ~~[~~OR In accordance with the Risk Informed Completion Time Program~~]~~	① ② ②
3.7.3.1 Action	B. Required Action and associated Completion Time ~~of Condition A~~ not met.	B.1	Be in MODE 3.	6 hours	③
		AND			
3.7.3.1 Action		B.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. --------------------------------------- Be in MODE 4.	12 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.3.1.a DOC A02	SR 3.7.7.1	------------------------------NOTE----------------------------- Isolation of CCW flow to individual components does not render the CCW System inoperable. --- Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ②
4.7.3.1.b	SR 3.7.7.2	Verify each CCW automatic valve in the flow path servicing safety related equipment that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ②
DOC M01	SR 3.7.7.3	Verify each required CCW pump starts automatically on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	④ ② ②

CTS

3.7 PLANT SYSTEMS

3.7.7 Component Cooling Water (CCW) System

3.7.3.1 LCO 3.7.7 Two CCW ~~trains~~ loops shall be OPERABLE.

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
3.7.3 Action 3.7.3 Action Note 3.7.3.1 Action	A. One CCW ~~train~~ loop inoperable.	A.1	---------------NOTE-------------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for shutdown cooling loops made inoperable by CCW. -- Restore CCW ~~train~~ loop to OPERABLE status.	72 hours ~~[~~OR In accordance with the Risk Informed Completion Time Program~~]~~	① ① ① ② ②
3.7.3 Action 3.7.3 Action	B. Required Action and associated Completion Time ~~of Condition A~~ not met.	B.1	Be in MODE 3.	6 hours	③
		AND			
		B.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. -- Be in MODE 4.	12 hours	

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
4.7.3.a DOC A02	SR 3.7.7.1	------------------------------NOTE------------------------------ Isolation of CCW flow to individual components does not render the CCW System inoperable. --- Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ②
4.7.3.b	SR 3.7.7.2	Verify each CCW automatic valve in the flow path servicing safety related equipment that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ②
DOC M01	SR 3.7.7.3	Verify each required CCW pump starts automatically on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	④ ② ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.7, COMPONENT COOLING WATER (CCW) SYSTEM

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. Since Condition B applies to all Conditions in the ACTIONS Table, the term "of Condition A" is not necessary. This is consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 4.1.6.i.5.ii.

4. The PSL design includes a spare CCW pump that can be substituted for one of the normal CCW pumps. Therefore SR 3.7.7.3 has been modified to only require the "required" CCW pumps to be tested. This is consistent with the use of the word required in the ITS, as discussed in the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 4.1.3.b.

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

B 3.7 PLANT SYSTEMS

B 3.7.7 Component Cooling Water (CCW) System

The surge tank is divided internally into two separate compartments. Each compartment serves one of the CCW loops. ①

BASES

BACKGROUND

The CCW System provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation, the CCW System also provides this function for various nonessential components, as well as the spent fuel pool. The CCW System serves as a barrier to the release of radioactive byproducts between potentially radioactive systems and the ~~Service~~ Water System, and thus to the environment.

Intake Cooling

loop

, and a common

loop

is equipped with a low level alarm that annunciates in the control room

Three CCW pumps are provided. A pump can be removed from service without reducing the capability or redundancy of the CCW System. Two of the CCW pumps are powered from the associated essential bus. The third CCW pump can be powered from either essential bus.

The CCW System is arranged as two independent full capacity cooling loops, and has isolatable nonsafety related components. Each safety related ~~train~~ includes a full capacity pump, surge tank~~,~~ heat exchanger, piping, valves, ~~and~~ instrumentation. Each safety related ~~train~~ is powered from a separate bus. An open surge tank in the system ~~provides pump trip protective functions~~ to ensure sufficient net positive suction head is available. The pump in each ~~train~~ is automatically started on receipt of a safety injection actuation signal, and all nonessential components are isolated.

loop

U

SDC

Additional information on the design and operation of the system, along with a list of the components served, is presented in the FSAR, Section ~~[~~9.2.2~~]~~, Reference 1. The principal safety related function of the CCW System is the removal of decay heat from the reactor via the Shutdown Cooling (SDC) System heat exchanger. This may utilize the ~~SCS~~ heat exchanger, during a normal or post accident cooldown and shutdown, or the Containment Spray System during the recirculation phase following a loss of coolant accident (LOCA). ② ①

APPLICABLE SAFETY ANALYSES

loop

The design basis of the CCW System is for one CCW ~~train~~ in conjunction with a 100% capacity Containment Cooling System (containment spray, containment coolers, or a combination) removing core decay heat 20 minutes after a design basis LOCA. This prevents the containment sump fluid from increasing in temperature during the recirculation phase following a LOCA, and provides a gradual reduction in the temperature of this fluid as it is supplied to the Reactor Coolant System (RCS) by the safety injection pumps. ①

The CCW System is designed to perform its function with a single failure of any active component, assuming a loss of offsite power.

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The CCW System also functions to cool the unit from SDC entry conditions (T_{cold} < ~~[350]~~°F) to MODE 5 (T_{cold} < ~~[~~200~~]~~°F) during normal and post accident operations. The time required to cool from ~~[350]~~°F to ②

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BASES

APPLICABLE SAFETY ANALYSES (continued)

~~[~~200~~]~~°F is a loop function of the number of CCW and SDC ~~trains~~ loops operating. One CCW ~~train~~ loop is sufficient to remove decay heat during subsequent operations with T_{cold} < ~~[~~200~~]~~°F. This assumes that a maximum seawater temperature of ~~76~~ 95°F occurs simultaneously with the maximum heat loads on the system. ① ②

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

LCO

The CCW ~~trains~~ loops are independent of each other to the degree that each has separate controls and power supplies and the operation of one does not depend on the other. In the event of a DBA, one CCW ~~train~~ loop is required to provide the minimum heat removal capability assumed in the safety analysis for the systems to which it supplies cooling water. To ensure this requirement is met, two CCW ~~trains~~ loops must be OPERABLE. At least one CCW ~~train~~ loop will operate assuming the loops worst single active failure occurs coincident with the loss of offsite power. ①

A CCW ~~train~~ loop is considered OPERABLE when the following:

a. The associated pump and surge tank are OPERABLE and

b. The associated piping, valves, heat exchanger and instrumentation and controls required to perform the safety related function are OPERABLE.

The spare CCW pump can be substituted for a normal CCW pump, provided the spare CCW valves are aligned to the applicable loop and the power supply for the spare pump is aligned to the same essential bus as the pump it is replacing.

The isolation of CCW the individual from other components or systems not required for safety may render ~~those~~ components or systems inoperable, but does not affect the OPERABILITY of the CCW System.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CCW System is a normally operating system that must be prepared to perform its post accident safety functions, primarily RCS heat removal by cooling the SDC heat exchanger.

Although the LCO for the CCW System is not applicable in MODES 5 and 6, the capability of the CCW System to perform its necessary related support functions may be required for OPERABILITY of supported systems.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating the requirement of entry into the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for SDC made inoperable by CCW. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

BASES

ACTIONS (continued)

With one CCW ~~train~~ loop inoperable, action must be taken to restore ①
OPERABLE status within 72 hours ~~[~~or in accordance with the Risk ②
Informed Completion Time Program~~]~~. In this Condition, the remaining
OPERABLE CCW ~~train~~ loop is adequate to perform the heat removal function. ①
The 72 hour Completion Time is based on the redundant capabilities
afforded by the OPERABLE ~~train~~ loop, and the low probability of a DBA ①
occurring during this period.

B.1 and B.2

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ③

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~
~~---~~

If the CCW ~~train~~ loop cannot be restored to OPERABLE status within the ①
associated Completion Time, the unit must be placed in a MODE in which overall plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 4 within 12 hours.

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. If CCW flow is lost to the reactor coolant pump (RCP) seals, entering MODE 5 and lowering the RCS temperature should be considered in order to avoid possible damage to the RCP seal materials.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable,

BASES

ACTIONS (continued)

because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

Verifying the correct alignment for manual, power operated, and automatic valves in the CCW flow path provides assurance that the proper flow paths exist for CCW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in their correct position.

This SR is modified by a Note indicating that the isolation of the CCW components or systems may render those components inoperable but does not affect the OPERABILITY of the CCW System.

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~ 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
~~--]~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.7.2

This SR verifies proper automatic operation of the CCW valves on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ 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 3.7.7.3

This SR verifies proper automatic operation of the CCW pumps on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ 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
~~--]~~ ①

REFERENCES

1. U FSAR, Section ~~[~~9.2.2~~]~~. ②

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

B 3.7 PLANT SYSTEMS

B 3.7.7 Component Cooling Water (CCW) System

The surge tank is divided internally into two separate compartments. Each compartment serves one of the CCW loops.

BASES

BACKGROUND

The CCW System provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation, the CCW System also provides this function for various nonessential components, as well as the spent fuel pool. The CCW System serves as a barrier to the release of radioactive byproducts between potentially radioactive systems and the ~~Service~~ Water System, and thus to the environment.

Intake Cooling

loop

The CCW System is arranged as two independent full capacity cooling loops, and has isolatable nonsafety related components. Each safety related ~~train~~ includes a full capacity pump, surge tank~~,~~ heat exchanger, piping, valves, ~~and~~ instrumentation. Each safety related ~~train~~ is powered from a separate bus. An open surge tank in the system ~~provides pump trip protective functions~~ to ensure sufficient net positive suction head is available. The pump in each ~~train~~ is automatically started on receipt of a safety injection actuation signal, and all nonessential components are isolated. ①

, and a common

loop

is equipped with a low level alarm that annunciates in the control room

Three CCW pumps are provided. A pump can be removed from service without reducing the capability or redundancy of the CCW System. Two of the CCW pumps are powered from the associated essential bus. The third CCW pump can be powered from either essential bus.

loop

U

Additional information on the design and operation of the system, along with a list of the components served, is presented in the FSAR, Section ~~[~~9.2.2~~]~~, Reference 1. The principal safety related function of the CCW System is the removal of decay heat from the reactor via the Shutdown Cooling (SDC) System heat exchanger. This may utilize the ~~SCS~~ heat exchanger, during a normal or post accident cooldown and shutdown, or the Containment Spray System during the recirculation phase following a loss of coolant accident (LOCA). ② ①

SDC

APPLICABLE SAFETY ANALYSES

loop

The design basis of the CCW System is for one CCW ~~train~~ in conjunction with a 100% capacity Containment Cooling System (containment spray, containment coolers, or a combination) removing core decay heat 20 minutes after a design basis LOCA. This prevents the containment sump fluid from increasing in temperature during the recirculation phase following a LOCA, and provides a gradual reduction in the temperature of this fluid as it is supplied to the Reactor Coolant System (RCS) by the safety injection pumps. ①

The CCW System is designed to perform its function with a single failure of any active component, assuming a loss of offsite power.

325

The CCW System also functions to cool the unit from SDC entry conditions (T_{cold} < ~~[350]~~°F) to MODE 5 (T_{cold} < ~~[~~200~~]~~°F) during normal and post accident operations. The time required to cool from ~~[350]~~°F to ②

325

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~[~~200~~]~~°F is a function of the number of CCW and SDC ~~trains~~ loops operating. One CCW ~~train~~ loop is sufficient to remove decay heat during subsequent operations with T_{cold} < ~~[~~200~~]~~°F. This assumes that a maximum seawater temperature of ~~76~~ 95°F occurs simultaneously with the maximum heat loads on the system. ① ②

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

LCO

The CCW ~~trains~~ loops are independent of each other to the degree that each has separate controls and power supplies and the operation of one does not depend on the other. In the event of a DBA, one CCW ~~train~~ loop is required to provide the minimum heat removal capability assumed in the safety analysis for the systems to which it supplies cooling water. To ensure this requirement is met, two CCW ~~trains~~ loops must be OPERABLE. At least one CCW ~~train~~ loop will operate assuming the worst single active failure occurs coincident with the loss of offsite power. ①

A CCW ~~train~~ loop is considered OPERABLE when the following:

a. The associated pump and surge tank are OPERABLE and

b. The associated piping, valves, heat exchanger and instrumentation and controls required to perform the safety related function are OPERABLE.

The spare CCW pump can be substituted for a normal CCW pump, provided the spare CCW valves are aligned to the applicable loop and the power supply for the spare pump is aligned to the same essential bus as the pump it is replacing.

The isolation of CCW the individual from other components or systems not required for safety may render ~~those~~ components or systems inoperable, but does not affect the OPERABILITY of the CCW System.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CCW System is a normally operating system that must be prepared to perform its post accident safety functions, primarily RCS heat removal by cooling the SDC heat exchanger.

Although the LCO for the CCW System is not applicable in MODES 5 and 6, the capability of the CCW System to perform its necessary related support functions may be required for OPERABILITY of supported systems.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating the requirement of entry into the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for SDC made inoperable by CCW. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

ACTIONS (continued)

loop

With one CCW ~~train~~ inoperable, action must be taken to restore OPERABLE status within 72 hours ~~[~~or in accordance with the Risk Informed Completion Time Program~~]~~. In this Condition, the remaining OPERABLE CCW ~~train~~ is adequate to perform the heat removal function. The 72 hour Completion Time is based on the redundant capabilities afforded by the OPERABLE ~~train~~, and the low probability of a DBA occurring during this period. ① ② ① ①

loop loop

B.1 and B.2

~~-----------------------------------REVIEWER'S NOTE -----------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ③

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~
~~---~~

loop

If the CCW ~~train~~ cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which overall plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. If CCW flow is lost to the reactor coolant pump (RCP) seals, entering MODE 5 and lowering the RCS temperature should be considered in order to avoid possible damage to the RCP seal materials.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable,

ACTIONS (continued)

because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

Verifying the correct alignment for manual, power operated, and automatic valves in the CCW flow path provides assurance that the proper flow paths exist for CCW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in their correct position.

This SR is modified by a Note indicating that the isolation of the CCW components or systems may render those components inoperable but does not affect the OPERABILITY of the CCW System.

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~ 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
~~---]~~

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.7.2

This SR verifies proper automatic operation of the CCW valves on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ 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 3.7.7.3

This SR verifies proper automatic operation of the CCW pumps on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ 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

①

②

REFERENCES

1. U FSAR, Section ~~[~~9.2.2~~]~~.
2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.7, BASES, COMPONENT COOLING WATER (CCW) SYSTEM

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 3.7.7, COMPONENT COOLING WATER (CCW) SYSTEM

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

ATTACHMENT 8

3.7.8, Intake Cooling Water (ICW) System

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

A01

PLANT SYSTEMS

(ICW)

3/4.7.4 INTAKE COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

(ICW)

LCO 3.7.8 ~~3.7.4.1~~ ~~At least~~ two ~~independent~~ ~~intake cooling water~~ loops shall be OPERABLE. LA01

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

ACTION:

ACTION A.1 Note

NOTE

3.4.6, "RCS Loops – MODE 4,"

Enter applicable ACTIONS of LCO ~~3.4.1.3, "Reactor Coolant System - Hot Shutdown,"~~ for shutdown cooling loops made inoperable by ICW.

ICW in ICW

ACTION A
ACTION A.1
ACTION B.1, B.2
ACTION B.2 Note

~~With only~~ one ~~intake cooling water~~ loop OPERABLE, restore ~~at least two~~ loop~~s~~ to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in ~~at least~~ ~~HOT STANDBY~~ within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ within ~~the following~~ ~~6~~ hours. LCO 3.0.4.a is not applicable when entering ~~HOT SHUTDOWN~~.

12 MODE 3 MODE 4 MODE 4

SURVEILLANCE REQUIREMENTS

ICW

~~4.7.4.1~~ ~~At least~~ two ~~intake cooling water~~ loops shall be demonstrated OPERABLE:

Add SR 3.7.8.1 Note A02

ICW

SR 3.7.8.1 ~~a.~~ In accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing~~ ~~that~~ each ~~valve (~~manual, power operated ~~or~~ automatic~~)~~ servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position.

and valve in the flow path A03

ICW in the flow path

SR 3.7.8.2 ~~b.~~ In accordance with the Surveillance Frequency Control Program ~~during shutdown by~~ verify~~ing that~~ each automatic valve servicing safety related equipment actuates to ~~its~~ correct position on ~~a Safety Injection~~ Actuation signal. LA02

the an actual or simulated L01

that is not locked, sealed or otherwise secured in position L02

Add SR 3.7.8.3 M01

A01

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (continued)~~

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A01

PLANT SYSTEMS

(ICW)

3/4.7.4 INTAKE COOLING WATER SYSTEM

LIMITING CONDITION FOR OPERATION

NOTE

- ~~When ICW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves must be verified to be consistent with the appropriate power supply at least once per 24 hours.~~ L03
- Enter applicable ACTIONS of ~~LCO 3.4.1.3, "Reactor Coolant System – Hot Shutdown,"~~ for shutdown cooling loops made inoperable by ICW.

3.4.6, "RCS Loops – MODE 4,"

(ICW)

LCO 3.7.8 ~~3.7.4~~ ~~At least~~ two ~~independent~~ ~~intake cooling water~~ loops shall be OPERABLE. LA01

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

ACTION:

ICW in ICW

ACTION A
ACTION A.1
ACTION B.1, B.2
ACTION B.2 Note

~~With only~~ one ~~intake cooling water~~ loop OPERABLE, restore ~~at least two~~ loop~~s~~ to OPERABLE status within 72 hours or in accordance with the Risk Informed Completion Time Program, or be in ~~at least HOT STANDBY~~ within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ within ~~the following~~ 6 hours. LCO 3.0.4.a is not applicable when entering ~~HOT SHUTDOWN~~.

12

MODE 3 MODE 4 MODE 4

SURVEILLANCE REQUIREMENTS

ICW

~~4.7.4~~ ~~At least~~ two ~~intake cooling water~~ loops shall be demonstrated OPERABLE:

Add SR 3.7.8.1 Note A02

ICW

SR 3.7.8.1 ~~a.~~ In accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing~~ ~~that~~ each ~~valve (~~manual, power~~-~~operated~~, or~~ automatic~~)~~ servicing safety~~-~~related equipment that is not locked, sealed or otherwise secured in position, is in its correct position.

and valve in the flow path A03

ICW in the flow path

SR 3.7.8.2 ~~b.~~ In accordance with the Surveillance Frequency Control Program ~~during shutdown, by~~ verify~~ing that~~ each automatic valve servicing safety~~-~~related equipment actuates to its correct position on ~~a SIAS test~~ signal. LA02

the an actual or simulated actuation L01

that is not locked, sealed or otherwise secured in position L02

Add SR 3.7.8.3 M01

DISCUSSION OF CHANGES
ITS 3.7.8, INTAKE COOLING WATER (ICW) SYSTEM

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 4.7.4.1.a and Unit 2 4.7.4.a do not contain an explicit reference to isolating ICW flow to individual components. ITS SR 3.7.8.1 contains a Note which states, "Isolation of ICW flow to individual components does not render the ICW System inoperable." This changes CTS by adding an allowance that is not explicitly stated in the CTS. The purpose of the ICW System Technical Specification is to provide assurance that ICW is available to the appropriate plant components. This change is acceptable because by current use and application of the CTS, isolation of a component supplied with ICW does not necessarily result in the ICW System being considered inoperable, but the respective component may be declared inoperable for its system. This change clarifies this application. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 Unit 1 CTS 4.7.4.1.a and Unit 2 CTS 4.7.4.a require verification that each ICW valve (manual, power operated, or automatic) servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in its correct position. ITS SR 3.7.8.1 requires verification that each ICW manual, power operated, and automatic valve “in the flow path” servicing safety related equipment that is not locked, sealed, or otherwise secured in position, is in the correct position.

Unit 1 CTS 4.7.4.1.b and Unit 2 CTS 4.7.4.b require verification that each ICW automatic valve servicing safety related equipment actuates to it correct position on a safety injection actuation signal. ITS SR 3.7.8.2 requires verification that each ICW automatic valve “in the flow path” servicing safety related equipment that is not locked, sealed, or otherwise secured in position, actuates to its correct position on an actuation signal. This changes the CTS by adding the words "in the flow path" to Unit 1 CTS 4.7.4.1.a and Unit 2 CTS 4.7.4.a, and to Unit 1 CTS 4.7.4.1.b and Unit 2 CTS 4.7.4.b.

The purpose of Unit 1 CTS 4.7.4.1.a and Unit 2 CTS 4.7.4.a is to ensure all valves in the ICW System flow path are in the correct position. The purpose of Unit 1 CTS 4.7.4.1.b and Unit 2 CTS 4.7.4.b is to ensure all automatic valves in the ICW System flow path actuate to the correct position on an actual or simulated actuation signal. The addition of the words "in the flow path" does not change the intent of the Surveillance Requirements. Each ICW manual, power operated, and automatic valve servicing safety related equipment that is not locked, sealed, or otherwise secured in position will continue to be verified to be in the correct position. Each ICW automatic valve in the flow path that is not locked, sealed or otherwise secured in position, will still be checked to ensure it actuates to the correct position on an actual or simulated actuation signal. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 Unit 1 CTS 4.7.4.1 and Unit 2 CTS 4.7.4 do not contain a requirement to verify each ICW System pump starts automatically on an actuation signal. ITS SR 3.7.8.3 states; "Verify each ICW pump starts automatically on an actual or simulated actuation signal," with a Frequency specified in accordance with the Surveillance Frequency Control Program. This changes the CTS by adding a Surveillance Requirement to test the ICW System pumps.

This change is necessary because in order for the ICW System to perform the safety function assumed in the accident analysis, the ICW pumps must start automatically. The ICW System is a normally operating system that cannot be fully actuated as part of the normal testing during normal operation. Therefore, the SR periodically verifies proper automatic operation of the pumps on an actual or simulated actuation signal. This Surveillance is similar to the testing requirements for other safety related pumps. 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 3.7.8.3 will be performed at a Frequency in accordance with the Surveillance Frequency Control Program with an initial Frequency of 18 months consistent with the ISTS SR 3.7.8.3 and is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. This change is designated as more restrictive because it adds a new SR.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* Unit 1 CTS 3.7.4.1 and Unit 2 CTS 3.7.4 states that two "independent" ICW loops shall be OPERABLE. ITS 3.7.8 requires two ICW loops to be OPERABLE but does not contain the detail that the loops must be independent. This changes the CTS by moving the detail that the ICW loops are independent to the Bases. The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement for two ICW loops to be OPERABLE. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 1 - Removing Details of System Design and System Description, Including Design Limits)* Unit 1 CTS 4.7.4.1.b and Unit 2 CTS 4.7.4.b require verification of the automatic actuation of ICW components on a safety injection actuation signal (SIAS). ITS SR 3.7.8.2 does not state the specific type of signal, but only specifies an actual or simulated "actuation" signal. This changes CTS by moving the type of actuation signal (i.e., SIAS) to the Bases.

The removal of these details, which are related to system design, from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to verify that appropriate equipment actuates upon receipt of an actuation signal. Also, this change is acceptable because the removed information will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5 of the ITS. 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 Specification.

LESS RESTRICTIVE CHANGES

L01 *(Category 6- Relaxation Of Surveillance Requirement Acceptance Criteria)* Unit 1 CTS 4.7.4.1.b and Unit 2 CTS 4.7.4.b require verification of the automatic actuation of intake cooling water components on a safety injection actuation signal (SIAS) "test" signal. ITS SR 3.7.8.2 specifies that the signal may be from either an "actual" or simulated (i.e., test) signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of Unit 1 CTS 4.7.4.1.b and Unit 2 CTS 4.7.4.b is to ensure the ICW components operate correctly upon receipt of an actuation signal. This change is acceptable because the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L02 *(Category 5 - Deletion of Surveillance Requirement)* Unit 1 CTS 4.7.4.1.b and Unit 2 CTS 4.7.4.b require verification that each ICW automatic valve in the flow path actuates to its correct position. ITS SR 3.7.8.2 requires verification that each ICW automatic valve in the flow path "that is not locked, sealed, or otherwise secured in position" actuates to the correct position. This changes the CTS by excluding those valves that are locked, sealed, or otherwise secured in position from the verification.

The purpose of Unit 1 CTS 4.7.4.1.b and Unit 2 CTS 4.7.4.b is to provide assurance that if an event occurred requiring ICW valves to be in their correct position, then those requiring automatic actuation would actuate to their correct position. This change is acceptable because the deleted Surveillance is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested to in a manner and at a Frequency necessary to provide confidence that the equipment can perform its assumed safety function. Those automatic valves that are locked, sealed, or otherwise secured in position are not required to actuate on a safety injection actuation signal in order to perform their safety function because they are already in the required position. Testing such valves would not provide any additional assurance of OPERABILITY. Valves that are required to actuate will continue to be tested. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L03 **Unit 2 only:** *(Category 5 - Deletion of Surveillance Requirement)* CTS 3.7.4 note requires verification that when ICW pump 2C is being used to satisfy the requirements of this specification, the alignment of the discharge valves must be verified to be consistent with the appropriate power supply at least once per 24 hours. ITS 3.7.8 does not require this specific verification. This changes the CTS by deleting the specific verification of valve and power supply alignment when the swing ICW pump is being used.

The purpose of the CTS 3.7.4 Note is to ensure that when the swing ICW pump (Pump 2C) is used to satisfy the requirements, the proper valve and power supply alignment is verified periodically. The PSL ICW System design includes three pumps: each pump provides flow to a redundant ICW loop. These two pumps are powered from the associated essential bus. The third swing pump can be powered from either essential bus and the discharge valves can be aligned to either ICW loop. When used to support ICW loop OPERABILITY, the swing pump power and valves must be aligned to the correct ICW loop. The Surveillances retained in ITS will continue to ensure the valves and breakers are properly aligned when the swing pump is being used. ITS SR 3.7.8.1 requires verification that the valves that are not locked sealed or otherwise secured in position (i.e., accident position) are in the correct position. This includes verifying the discharge valves of the swing pump are in their correct position to support ICW loop OPERABILITY. ITS SR 3.7.8.3 requires verification that the required pump automatically starts on an actual or simulated actuation signal. This test ensures the swing pump is powered from the correct essential bus by verifying the pump can automatically start on the selected ICW loop. The Frequency in accordance with the Surveillance Frequency Control Program (i.e., 31 days for the valve position verification and 18 months for the automatic pump start) has been determined a sufficient periodicity for verification of required equipment. This change is acceptable because the deleted Surveillance Requirement is not necessary to ensure that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed safety function. This change is designated as less restrictive because a Surveillance which is required in the CTS will not be required in the ITS.

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

3.7 PLANT SYSTEMS

3.7.8 ~~Service Water System (SWS)~~ Intake Cooling Water (ICW) System ①

3.7.4.1 LCO 3.7.8 Two ~~SWS trains~~ ICW loops shall be OPERABLE. ①

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

ACTIONS

3.7.4.1 Action ①

3.7.4.1 Action Note ③ ① ①

3.7.4.1 Action ① ② ②

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ~~SWS train~~ ICW loop inoperable.	A.1 --------------NOTE~~S~~------------- ~~1.~~ ~~Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," for emergency diesel generator made inoperable by SWS.~~ ~~2.~~ Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for shutdown cooling made inoperable by ~~SWS~~ ICW. ------------------------------------- Restore ~~SWS train~~ ICW loop to OPERABLE status.	72 hours ~~[~~OR In accordance with the Risk Informed Completion Time Program~~]~~

ACTIONS (continued)

3.7.4.1 Action

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	B.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

4.7.4.1.a
DOC A02

4.7.4.1.a

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	--------------------------------NOTE----------------------------- Isolation of ICW ~~SWS~~ flow to individual components does not render the ICW ~~SWS~~ inoperable. ① ① -- Verify each ICW ~~SWS~~ manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~[31 days~~ ② ~~<u>OR</u>~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.7.4.1.b	SR 3.7.8.2	Verify each ~~SWS~~ ICW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ②
DOC M01	SR 3.7.8.3	Verify each ~~SWS~~ ICW pump starts automatically on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ②

3.7 PLANT SYSTEMS

3.7.8 ~~Service Water System (SWS)~~ Intake Cooling Water (ICW) System ①

3.7.4 LCO 3.7.8 Two ~~SWS trains~~ ICW loops shall be OPERABLE. ①

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

ACTIONS

3.7.4 Action, 3.7.4 Action Note, 3.7.4 Action

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ~~SWS train~~ ICW loop inoperable.	A.1 --------------NOTE~~S~~------------- ~~1.~~ ~~Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources - Operating," for emergency diesel generator made inoperable by SWS.~~ ~~2.~~ Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for shutdown cooling made inoperable by ~~SWS~~ ICW. ------------------------------------- Restore ~~SWS train~~ ICW loop to OPERABLE status.	72 hours ~~[~~OR In accordance with the Risk Informed Completion Time Program~~]~~

① ③ ① ① ① ② ②

ACTIONS (continued)

3.7.4 Action

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	B.2	--------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

4.7.4.a
DOC A02

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	---------------------------------NOTE----------------------------- Isolation of ~~SWS~~ ICW flow to individual components does not render the ~~SWS~~ ICW inoperable. ① ① ---	
4.7.4.a	Verify each ~~SWS~~ ICW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~[31 days~~ ② ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.7.4.b	SR 3.7.8.2	Verify each ICW ~~SWS~~ automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ②
DOC M01	SR 3.7.8.3	Verify each ICW ~~SWS~~ pump starts automatically on an actual or simulated actuation signal.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.8, INTAKE COOLING WATER (ICW) SYSTEM

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. PSL Unit 1 and Unit 2 diesel generators are designed with a self-contained cooling system and do not depend on any support plant cooling water system. Therefore, Note 1 to ISTS 3.7.8 is unnecessary and deleted. Concomitant changes made to reflect the Note deletion.

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

B 3.7 PLANT SYSTEMS

B 3.7.8 ~~Service Water System (SWS)~~ Intake Cooling Water (ICW) System

BASES

BACKGROUND

The ~~SWS~~ ICW System provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation or a normal shutdown, the ~~SWS~~ ICW System also provides this function for various safety related and nonsafety related components. The safety related function is covered by this LCO.

The ~~SWS~~ ICW System consists of two ~~separate~~ independent, 100% capacity safety related cooling water ~~trains~~ loops. Each ~~train~~ loop consists of ~~two~~ one 100% capacity pump~~s~~, one component cooling water (CCW) heat exchanger, piping, valves, instrumentation, and strainer ~~two cyclone separators~~. The pumps and valves are remote manually aligned, except in the unlikely event of a loss of coolant accident (LOCA). Three ICW pumps are provided. A pump can be removed from service without reducing the capability or redundancy of the ICW System. Two of the ICW pumps are powered from the associated essential bus. The third ICW pump can be powered from either essential bus. The pumps aligned to the critical loops are automatically started upon receipt of a safety injection actuation signal and all essential valves are aligned to their post accident positions. All nonessential components are isolated. ICW flows through a Debris Filter System (DFS) at the inlet of each CCW heat exchanger. The DFS backwash automatically through a debris discharge valve and reenter the ICW System downstream of the ICW discharge valves. Automatic backwashing is not a safety-related function. During a DBA, the debris discharge valve is signaled to close by the safety injection actuation signal to prevent flow diversion past the heat exchanger. ~~The SWS also provides emergency makeup to the spent fuel pool and CCW System [and is the backup water supply to the Auxiliary Feedwater System]~~. ① ②

Additional information about the design and operation of the ~~SWS~~ ICW System, along with a list of the components served, is presented in the FSAR, Section ~~[~~9.2.1~~]~~ (Ref. 1). The principal safety related function of the ~~SWS~~ ICW System is the removal of decay heat from the reactor via the ~~[~~CCW System~~]~~. ① ②

APPLICABLE SAFETY ANALYSES

The design basis of the ~~SWS~~ ICW System is for one ~~SWS train~~ ICW loop, in conjunction with the CCW System and a 100% capacity containment cooling system (containment spray, containment coolers, or a combination), removing core decay heat 20 minutes following a design basis LOCA, as discussed in the UFSAR, Section ~~[~~6.2~~]~~ (Ref. 2). This prevents the containment sump fluid from increasing in temperature during the recirculation phase following a LOCA and provides for a gradual reduction in the temperature of this fluid as it is supplied to the Reactor Coolant System by the safety injection pumps. The ~~SWS~~ ICW System is designed to perform its function with a single failure of any active component, assuming the loss of offsite power. ① ②

The ~~SWS~~ ICW System, in conjunction with the CCW System, also cools the unit from shutdown cooling (SDC), as discussed in the UFSAR, Section ~~[5.4.7]~~ 9.2.2 (Ref. 3) entry conditions to MODE 5 during normal and post accident operations. The time required for this evolution is a function of the ① ②

BASES

APPLICABLE SAFETY ANALYSES (continued)

number of CCW and SDC System trains that are operating. One ~~SWS train~~ ICW loop is sufficient to remove decay heat during subsequent operations in MODES 5 and 6. This assumes that a maximum ~~SWS~~ ICW temperature of 95°F occurring simultaneously with maximum heat loads on the system. ① ①

The ~~SWS~~ ICW System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two ~~SWS trains~~ ICW loops are required to be OPERABLE to provide the required redundancy to ensure that the system functions to remove post accident heat loads, assuming the worst single active failure occurs coincident with the loss of offsite power. ①

An ~~SWS train~~ ICW loop is considered OPERABLE when: ①

a. The associated pump is OPERABLE and

b. The associated piping, valves, heat exchanger, and instrumentation and controls required to perform the safety related function are OPERABLE.

The spare ICW pump can be substituted for a normal ICW pump, provided the spare ICW valves are aligned to the applicable loop and the power supply for the spare pump is aligned to the same essential bus as the pump it is replacing.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ~~SWS~~ ICW System is a normally operating system, which is required to support the OPERABILITY of the equipment serviced by the ~~SWS~~ ICW System and required to be OPERABLE in these MODES. ①

Although the LCO for the ~~SWS~~ ICW System is not applicable in MODES 5 and 6, the capability of the ~~SWS~~ ICW System to perform its necessary related support functions may be required for OPERABILITY of supported systems. ①

ACTIONS

A.1

With one ~~SSW train~~ ICW loop inoperable, action must be taken to restore OPERABLE status within 72 hours ~~[~~or in accordance with the Risk Informed Completion Time Program~~]~~. In this Condition, the remaining OPERABLE ICW loop ~~SWS train~~ is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the ~~SWS train~~ ICW loop could result in loss of ICW ~~SWS~~ function. Required Action A.1 is modified by a ~~two~~ Note~~s~~. ~~The first Note indicates that the applicable Conditions of LCO 3.8.1, "AC Sources - Operating," should be entered if the inoperable SWS train results in an inoperable emergency diesel generator.~~ The ~~second~~ Note indicates that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," should be entered if an inoperable ICW loop ~~SWS train~~ results in an inoperable SDC. The 72 hour Completion Time is based on the redundant capabilities afforded by the OPERABLE ~~train~~ loop, and the low probability of a DBA occurring during this time period. ① ② ① ① ③ ① ①

BASES

ACTIONS (continued)

B.1 and B.2

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ②

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~
~~--~~

ICW loop

If the ~~SWS train~~ cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which overall plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

Verifying the correct alignment for manual, power operated, and automatic valves in the ICW ~~SWS~~ flow path ensures that the proper flow paths exist for ICW ~~SWS~~ operation. ① This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR is modified by a Note indicating that the isolation of the ICW ~~SWS~~ ① components or systems may render those components inoperable but does not affect the OPERABILITY of the ICW System ~~SWS~~.

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~ 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 3.7.8.2

This SR verifies proper automatic operation of the ICW System ~~SWS~~ valves in the flow path servicing safety related equipment on an actual or simulated actuation signal. ① ① The ICW ~~SWS~~ is a normally operating system that cannot be fully actuated as part of the normal testing. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ ②

~~OR~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

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

SR 3.7.8.3

ICW System ICW

The SR verifies proper automatic operation of the ~~SWS~~ pumps on an actual or simulated actuation signal. The ~~SWS~~ is a normally operating system that cannot be fully actuated as part of the normal testing during normal operation. ① ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ 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. FSAR, Section ~~[~~9.2.1~~]~~. ① ②
U
2. FSAR, Section ~~[~~6.2~~]~~. ① ②
U
3. FSAR, Section ~~[5.4.7]~~. 9.2.2 ① ②
U
4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

B 3.7 PLANT SYSTEMS

B 3.7.8 ~~Service Water System (SWS)~~ Intake Cooling Water (ICW)

BASES

BACKGROUND

The ~~SWS~~ ICW System provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation or a normal shutdown, the ~~SWS~~ ICW System also provides this function for various safety related and nonsafety related components. The safety related function is covered by this LCO.

The ~~SWS~~ ICW System consists of two ~~separate~~ independent, 100% capacity safety related cooling water ~~trains~~ loops. Each ~~train~~ loop consists of ~~two~~ one 100% capacity pump~~s~~, one component cooling water (CCW) heat exchanger, piping, valves, instrumentation, and ~~two cyclone separators~~ strainer. The pumps and valves are remote manually aligned, except in the unlikely event of a loss of coolant accident (LOCA). Three ICW pumps are provided. A pump can be removed from service without reducing the capability or redundancy of the ICW System. Two of the ICW pumps are powered from the associated essential bus. The third ICW pump can be powered from either essential bus. The pumps aligned to the critical loops are automatically started upon receipt of a safety injection actuation signal and all essential valves are aligned to their post accident positions. All nonessential components are isolated. ICW flows through a Debris Filter System (DFS) at the inlet of each CCW heat exchanger. The DFS backwash automatically through a debris discharge valve and reenter the ICW System downstream of the ICW discharge valves. Automatic backwashing is not a safety-related function. During a DBA, the debris discharge valve is signaled to close by the safety injection actuation signal to prevent flow diversion past the heat exchanger. ~~The SWS also provides emergency makeup to the spent fuel pool and CCW System [and is the backup water supply to the Auxiliary Feedwater System]~~. ① ②

Additional information about the design and operation of the ~~SWS~~ ICW System, along with a list of the components served, is presented in the FSAR, Section ~~[~~9.2.1~~]~~ (Ref. 1). The principal safety related function of the ~~SWS~~ ICW System is the removal of decay heat from the reactor via the ~~[~~CCW System~~]~~. ① ②

APPLICABLE SAFETY ANALYSES

The design basis of the ~~SWS~~ ICW System is for one ~~SWS train~~ ICW loop, in conjunction with the CCW System and a 100% capacity containment cooling system (containment spray, containment coolers, or a combination), removing core decay heat 20 minutes following a design basis LOCA, as discussed in the U FSAR, Section ~~[~~6.2~~]~~ (Ref. 2). This prevents the containment sump fluid from increasing in temperature during the recirculation phase following a LOCA and provides for a gradual reduction in the temperature of this fluid as it is supplied to the Reactor Coolant System by the safety injection pumps. The ~~SWS~~ ICW System is designed to perform its function with a single failure of any active component, assuming the loss of offsite power. ① ②

The ~~SWS~~ ICW System, in conjunction with the CCW System, also cools the unit from shutdown cooling (SDC), as discussed in the U FSAR, Section ~~[5.4.7]~~ 9.2.2 (Ref. 3) entry conditions to MODE 5 during normal and post accident operations. The time required for this evolution is a function of the ① ②

BASES

APPLICABLE SAFETY ANALYSES (continued)

number of CCW and SDC System trains that are operating. One ~~SWS train~~ ICW loop 1
is sufficient to remove decay heat during subsequent operations in
MODES 5 and 6. This assumes that a maximum ~~SWS~~ ICW temperature of 1
95°F occurring simultaneously with maximum heat loads on the system.

The ~~SWS~~ ICW System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two ~~SWS trains~~ ICW loops are required to be OPERABLE to provide the required 1
redundancy to ensure that the system functions to remove post accident
heat loads, assuming the worst single active failure occurs coincident with
the loss of offsite power.

An ~~SWS train~~ ICW loop is considered OPERABLE when: 1

a. The associated pump is OPERABLE and

b. The associated piping, valves, heat exchanger, and instrumentation and controls required to perform the safety related function are OPERABLE.

The spare ICW pump can be substituted for a normal ICW pump, provided the spare ICW valves are aligned to the applicable loop and the power supply for the spare pump is aligned to the same essential bus as the pump it is replacing.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ~~SWS~~ ICW System is a normally operating 1
system, which is required to support the OPERABILITY of the equipment
serviced by the ~~SWS~~ ICW System and required to be OPERABLE in these MODES.

Although the LCO for the ~~SWS~~ ICW System is not applicable in MODES 5 and 6, the 1
capability of the ~~SWS~~ ICW System to perform its necessary related support functions
may be required for OPERABILITY of supported systems.

ACTIONS

A.1

With one ~~SSW train~~ ICW loop inoperable, action must be taken to restore 1
OPERABLE status within 72 hours ~~[~~or in accordance with the Risk 2
Informed Completion Time Program~~]~~. In this Condition, the remaining
OPERABLE ICW loop ~~SWS train~~ is adequate to perform the heat removal function. 1
However, the overall reliability is reduced because a single failure in the
ICW loop ~~SWS train~~ could result in loss of ICW ~~SWS~~ function. Required Action A.1 is 1
modified by a ~~two~~ Note~~s~~. ~~The first Note indicates that the applicable~~
~~Conditions of LCO 3.8.1, "AC Sources - Operating," should be entered if~~ 3
~~the inoperable SWS train results in an inoperable emergency diesel~~
~~generator.~~ The ~~second~~ Note indicates that the applicable Conditions and
Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," should be
entered if an inoperable ICW loop ~~SWS train~~ results in an inoperable SDC. The 1
72 hour Completion Time is based on the redundant capabilities afforded
by the OPERABLE ~~train~~ loop, and the low probability of a DBA occurring 1
during this time period.

BASES

ACTIONS (continued)

B.1 and B.2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

1. ~~[LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ②

2. ~~[LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~

~~--~~

If the ~~SWS train~~ ICW loop cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which overall plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

Verifying the correct alignment for manual, power operated, and automatic valves in the ~~SWS~~ ICW flow path ensures that the proper flow paths exist for ~~SWS~~ ICW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position. This SR is modified by a Note indicating that the isolation of the ~~SWS~~ ICW components or systems may render those components inoperable but does not affect the OPERABILITY of the ~~SWS~~ ICW System. ① ①

~~[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.~~ 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 3.7.8.2 ①

This SR verifies proper automatic operation of the ~~SWS~~ ICW valves in the flow path servicing safety related equipment on an actual or simulated actuation signal. The ~~SWS~~ ICW System is a normally operating system that cannot be fully actuated as part of the normal testing. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ ① ②

~~OR~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

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

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

SR 3.7.8.3

The SR verifies proper automatic operation ICW System of the ~~SWS~~ ICW pumps on an actual or simulated actuation signal. The ~~SWS~~ is a normally operating system that cannot be fully actuated as part of the normal testing during normal operation. ~~[The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~ ① 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. U FSAR, Section ~~[~~9.2.1~~]~~. ① ②
2. U FSAR, Section ~~[~~6.2~~]~~. ① ②
3. U FSAR, Section ~~[5.4.7]~~ 9.2.2. ① ②
4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.8, BASES, INTAKE COOLING WATER (ICW) SYSTEM

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. PSL Unit 1 and Unit 2 diesel generators are designed with a self-contained cooling system and do not depend on any support plant cooling water system. Therefore, Note 1 to ISTS 3.7.8 is unnecessary and deleted. Concomitant changes made to reflect the Note deletion.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.8, INTAKE COOLING WATER (ICW) SYSTEM

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

ATTACHMENT 9

3.7.9, Ultimate Heat Sink (UHS)

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

PLANT SYSTEMS

3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

LCO 3.7.9 ~~3.7.5.1~~ The ~~ultimate heat sink~~ UHS shall be OPERABLE ~~with:~~

~~a.~~ ~~Cooling water from the Atlantic Ocean~~ ~~providing a~~ water level ~~above~~ LA01

SR 3.7.9.1 of UHS is > –10.5 feet elevation, Mean Low Water~~,~~ ~~at the plant intake structure,~~ ~~and~~

~~b.~~ ~~Two OPERABLE valves in the barrier dam between Big Mud Creek and the intake structure.~~ LA02

Applicability **APPLICABILITY**: ~~At all times~~. MODES 1, 2, 3, and 4 L01

ACTION:

ACTION A ~~a.~~ With the water level requirement of the above Specification not satisfied, be in ~~at least HOT STANDBY~~ MODE 3 within six hours and provide cooling water from ~~Big Mud Creek~~ backup supply within ~~the next 12~~ 18 hours.

~~b.~~ ~~With one isolation valve in the barrier dam between Big Mud Creek and the intake structure inoperable, restore the inoperable valve to OPERABLE status within 72 hours or, within the next 24 hours, install a temporary flow barrier and open the barrier dam isolation valve. The availability of the onsite equipment capable of removing the barrier shall be verified at least once per seven days thereafter.~~

~~c.~~ ~~With both of the isolation valves in the barrier dam between the intake structure and Big Mud Creek inoperable, within 24 hours either:~~ LA02

~~1)~~ ~~Install both temporary flow barriers and manually open both barrier dam isolation valves. The availability of the onsite equipment capable of removing the barriers shall be verified at least once per seven days thereafter, or~~

~~2)~~ ~~Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

ACTION B Add ACTION B M01

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1 ~~4.7.5.1.1~~ ~~The ultimate heat sink shall be determined OPERABLE~~ in accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing the average~~ water level ~~to be within the limits~~.

~~4.7.5.1.2~~ ~~The isolation valves in the barrier dam between the intake structure and Big Mud Creek shall be demonstrated OPERABLE in accordance with the Surveillance Frequency Control Program by cycling each valve through at least one complete cycle of full travel.~~ LA02

Ⓐ01

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A01

PLANT SYSTEMS

3/4.7.5 ULTIMATE HEAT SINK

LIMITING CONDITION FOR OPERATION

LCO 3.7.9 ~~3.7.5.1~~ The ~~ultimate heat sink~~ UHS shall be OPERABLE~~ with:~~

~~a.~~ ~~Cooling water from the Atlantic Ocean providing a~~ water level ~~above~~ LA01

SR 3.7.9.1 of UHS is > –10.5 feet elevation, Mean Low Water~~, at the plant intake structure,~~ and

~~b.~~ ~~Two OPERABLE valves in the barrier dam between Big Mud Creek and the intake structure.~~ LA02

Applicability **APPLICABILITY**: ~~At all times.~~ MODES 1, 2, 3, and 4 L01

ACTION:

ACTION A ~~a.~~ With the water level requirement of the above specification not satisfied, be in ~~at least HOT STANDBY~~ MODE 3 within 6 hours and provide cooling water from ~~Big Mud Creek~~ backup supply within ~~the next 12~~ 18 hours.

~~b.~~ ~~With one isolation valve in the barrier dam between Big Mud Creek and the intake structure inoperable, restore the inoperable valve to OPERABLE status within 72 hours, or within the next 24 hours, install a temporary flow barrier and open the barrier dam isolation valve. The availability of the onsite equipment capable of removing the barrier shall be verified at least once per 7 days thereafter.~~

~~c.~~ ~~With both of the isolation valves in the barrier dam between the intake structure and Big Mud Creek inoperable, within 24 hours, either:~~ LA02

~~1.~~ ~~Install both temporary flow barriers and manually open both barrier dam isolation valves. The availability of the onsite equipment capable of removing the barriers shall be verified at least once per 7 days thereafter, or~~

~~2.~~ ~~Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.~~

ACTION B Add ACTION B M01

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1 ~~4.7.5.1.1~~ ~~The ultimate heat sink shall be determined OPERABLE~~ in accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing the average~~ water level ~~to be within the limits~~.

~~4.7.5.1.2~~ ~~The isolation valves in the barrier dam between the intake structure and Big Mud Creek shall be demonstrated OPERABLE in accordance with the Surveillance Frequency Control Program by cycling each valve through at least one complete cycle of full travel.~~ LA02

DISCUSSION OF CHANGES
ITS 3.7.9, ULTIMATE HEAT SINK (UHS)

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.

MORE RESTRICTIVE CHANGES

M01 CTS 3.7.5.1 does not provide any actions when the UHS water level is not OPERABLE, and either action is not completed within its completion time. Therefore, CTS 3.0.3 would be entered requiring entry into HOT STANDBY (MODE 3) within 7 hours and COLD SHUTDOWN (MODE 5) within 37 hours. ITS 3.7.9 ACTION B, which applies when the UHS in inoperable (i.e., water level is not within limit) and a Required Action and associated Completion Time is not met, requires entry into COLD SHUTDOWN (MODE 5) within 36 hours. ITS 3.7.9, Required Action A.1 required entry into MODE 3 within 6 hours, therefore, this requirement is not repeated in ACTION B. This changes the CTS by providing one less hour to shut down the unit to MODE 5 when the UHS water level is inoperable, and a Required Action and associated Completion Time is not met.

The purpose of requiring a shutdown when Required Action A.1 or Required Action A.2 is not completed within its associated Completion Time, is to place the unit in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 5 within 36 hours. This change is acceptable because it provides an adequate period of time to be in a MODE in which the requirement does not apply, commensurate with the severity of the inoperability. The Completion Time of 36 hours is reasonable, based on operating experience, for reaching MODE 5, from full power in an orderly manner and without challenging unit systems. The action to be in MODE 3 within 6 hours is provided in ACTION A. This change has been designated as more restrictive because it reduces the Completion Times to be in MODE 5.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.7.5.1.a states that the ultimate heat sink (UHS) shall be OPERABLE with cooling water from the Atlantic Ocean providing a water level above –10.5 feet elevation, Mean Low Water, at the plant intake structure. ITS

3.7.9 states that the UHS shall be OPERABLE. This changes the CTS by removing design details of the UHS water source (i.e., Atlantic Ocean, and plant intake structure from which UHS water level is determined).

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

LA02 *(Type 4 - Removal of LCO, SR, or other TS requirement to the TRM, UFSAR, ODCM, QAPM, IST Program, or ISI Program)* CTS 3.7.5.1.b requires two OPERABLE isolation valves in the barrier dam between Big Mud Creek and the intake structure. CTS 3.7.5.1 Action b provides actions with one isolation valve in the barrier dam inoperable. CTS 3.7.5.1 Action c provides actions with both isolation valves in the barrier dam inoperable. Additionally, CTS 4.7.5.1.2 demonstrates the isolation valves are OPERABLE by cycling each valve through at least one complete cycle of full travel. These LCO, Action and Surveillance requirements are not included in the ITS. This changes the CTS by moving the explicit ultimate heat sink barrier dam valve requirements from the Technical Specifications to the Technical Requirements Manual (TRM).

The removal of these details from the Technical Specification is acceptable because this type of information is not necessary to provide adequate protection of public health and safety. The purpose of the valves in the barrier dam between Big Mud Creek and the intake structure is to provide an alternate intake structure fill system to support safe shutdown in the event the primary method of filling the intake structure (i.e., Atlantic Ocean) becomes unavailable following a design basis seismic event. These valves are not credited in the mitigation of any design basis accident or transient specified in Chapter 15 of the UFSAR.

This change is acceptable because the LCO requirements continue to ensure that the primary source of water to the ultimate heat sink (UHS) is OPERABLE consistent with the safety analyses and licensing basis. The UHS requirements associated with the valves in the barrier dam between Big Mud Creek and the intake structure are not part of a primary success path in the mitigation of a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier. Additionally, these requirements are not discussed in the PSL probabilistic risk assessment and do not constitute a structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety. Therefore, these CTS requirements do not meet the applicable 10 CFR 50.36(c)(2)(ii) criteria for retention in the Technical Specifications.

Also, this change is acceptable because the removed information will be adequately controlled in the TRM. The TRM is incorporated by reference into the UFSAR, and any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because a requirement is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.7.5.1 Applicability is "at all times." ITS LCO 3.7.9 Applicability is MODES 1, 2, 3, and 4. This changes the CTS by only requiring the UHS to be OPERABLE in MODES 1, 2, 3, and 4.

The purpose of the CTS 3.7.5.1 Applicability is to specify the MODES and other specified conditions in which the LCO must be met. This change is acceptable because the requirements continue to ensure the UHS is maintained OPERABLE in the MODES assumed in the safety analyses and licensing basis. In MODES 1, 2, 3, and 4, the UHS is a normally operating system that is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES. Although the LCO for the UHS is not applicable in MODES 5 and 6, the capability of the UHS to perform its necessary related support functions may be required for OPERABILITY of supported systems. UHS support requirements for systems required in MODES 5 and 6 are not the same as for the systems required in MODES 1, 2, 3, and 4 and the heat load requirements in the shutdown MODES is less. Therefore, the definition of OPERABILITY will ensure the UHS requirements necessary to support systems required in MODES 5 and 6 will not be impacted. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

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

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

3.7.5.1 LCO 3.7.9 The UHS shall be OPERABLE.

DOC L01 APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
	~~A.~~ ~~[One or more cooling towers with one cooling tower fan inoperable.~~	~~A.1~~ ~~Restore cooling tower fan(s) to OPERABLE status.~~	~~7 days~~ ~~[OR~~ ~~In accordance with the Risk Informed Completion Time Program]]~~	④
3.7.5.1 Action a.	~~B~~ A. ~~Required Action and associated Completion Time of Condition A or B not met~~ UHS not within limit.	~~B~~ A.1 Be in MODE 3. AND ~~B~~ A.2 ~~-------------NOTE-------------~~ ~~LCO 3.0.4.a is not applicable when entering MODE 4.~~ ~~-----------------------------------~~ ~~Be in MODE 4~~ Provide cooling water from backup supply.	6 hours ~~12~~ 18 hours	③ ① ③ ④

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
	~~-----REVIEWER'S NOTE-----~~ ~~The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.~~ ~~-----------------------------------~~ ~~C.~~ ~~[Water temperature of the UHS > [90]°F and ≤ [ ]°F.~~	~~C.1~~	~~Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.~~	~~Once per hour]~~	⑥ ②
DOC M01	~~D.~~ B ~~[~~ Required Action and associated Completion Time ~~of Condition C~~ not met. ~~OR]~~ ~~UHS inoperable [for reasons other than Condition A or C].~~	~~D.1~~ ~~AND~~ ~~D.2~~ B.1	~~Be in MODE 3.~~ Be in MODE 5.	~~6 hours~~ 36 hours	② ③ ⑤ ③ ②

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.5.1.1	SR 3.7.9.1	~~[~~ Verify water level of UHS is ~~≥ [562]~~ > -10.5 ft ~~[mean sea level]~~ mean low water level.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	② ②

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
~~SR 3.7.9.2~~	~~[Verify average water temperature of UHS is ≤ [90]°F.~~	~~[24 hours~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~ ⑥
~~SR 3.7.9.3~~	~~[Operate each cooling tower fan for ≥ [15] minutes.~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~ ④

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

3.7.5.1 LCO 3.7.9 The UHS shall be OPERABLE.

DOC L01 APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

3.7.5.1
Action a.

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A.~~ ~~[One or more cooling towers with one cooling tower fan inoperable.~~	~~A.1~~ ~~Restore cooling tower fan(s) to OPERABLE status.~~	~~7 days~~ ~~[OR~~ ~~In accordance with the Risk Informed Completion Time Program]]~~
~~B~~ A. ~~Required Action and associated Completion Time of Condition A or B not met~~ UHS not within limit.	~~B~~ A.1 Be in MODE 3. AND ~~B~~ A.2 ~~-------------NOTE-------------~~ ~~LCO 3.0.4.a is not applicable when entering MODE 4.~~ ~~-----------------------------------~~ ~~Be in MODE 4~~ Provide cooling water from backup supply.	6 hours ~~12~~ 18 hours

④ ③ ① ③ ④

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
	~~-----REVIEWER'S NOTE----- The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit. ------------------------------------~~ ~~C. [Water temperature of the UHS > [90]°F and ≤ [ ]°F.~~	~~C.1 Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.~~	~~Once per hour]~~	⑥ ②
DOC M01	~~D.~~ B ~~[~~ Required Action and associated Completion Time ~~of Condition C~~ not met. ~~OR]~~ ~~UHS inoperable [for reasons other than Condition A or C].~~	~~D.1 Be in MODE 3.~~ ~~AND~~ ~~D.2~~ B.1 Be in MODE 5.	~~6 hours~~ 36 hours	② ③ ⑤ ③ ②

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.5.1.1	SR 3.7.9.1	~~[~~ Verify water level of UHS is ~~≥ [562]~~ > -10.5 ft ~~[mean sea level]~~ mean low water level.	~~[24 hours~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]]~~	② ②

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
~~SR 3.7.9.2~~	~~[Verify average water temperature of UHS is ≤ [90]°F.~~	~~[24 hours~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	⑥
~~SR 3.7.9.3~~	~~[Operate each cooling tower fan for ≥ [15] minutes.~~	~~[31 days~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	④

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.9, ULTIMATE HEAT SINK (UHS)

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. Changes are made to reflect the ITS ACTIONS numbering.

4. The PSL UHS design does not include cooling towers, therefore, ISTS 3.7.9 ACTION A and ISTS SR 3.7.9.3 are deleted.

5. ISTS 3.7.9 ACTION D (ITS ACTION B) is added to be in MODE 5 within 36 hours with the Required Action and associated Completion Time (i.e., of ITS Condition A) not met. The ISTS Required Action D.1 to be in MODE 3 within 6 hours is not included in the ITS because ITS 3.7.9, Required Action A.1 requires the unit to be in MODE 3 within 6 hours if the UHS is inoperable. See CTS Discussion of Change M01 for the discussion regarding the addition of ITS 3.7.9 ACTION B.

6. The PSL Current Technical Specifications do not include UHS water temperature. The ICW System was designed to remove the post-accident heat load from the CCW system, based on seawater temperature determined from historical data and Atlantic Ocean temperature surveys. To assure the operability of the CCW system, the maximum design seawater (ICW) inlet temperature is 95°F. Historical data and Atlantic Ocean temperature studies show maximum Atlantic Ocean seawater temperature at 87°F and represents ambient conditions at the St Lucie Plant in the Environmental Report. Therefore, ISTS 3.7.9 ACTION C and ISTS SR 3.7.9.2 are not included in the ITS.

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

B 3.7 PLANT SYSTEMS

B 3.7.9 Ultimate Heat Sink (UHS)

BASES

BACKGROUND

The UHS provides a heat sink for process and operating heat from safety related components during a Design Basis Accident (DBA) or transient, as well as during normal operation. This is done utilizing the ~~Service Water~~ Intake Cooling Water (ICW) System. ①

Insert 1

~~The UHS has been defined as that complex of water sources, including necessary retaining structures (e.g., a pond with its dam, or a river with its dam), and the canals or conduits connecting the sources with, but not including, the cooling water system intake structures as, discussed in the FSAR, Section [9.2.5] (Ref. 1). If cooling towers or portions thereof are required to accomplish the UHS safety functions, they should meet the same requirements as the sink.~~ The two principal functions of the UHS are the dissipation of residual heat after reactor shutdown, and dissipation of residual heat after an accident. ①

~~A variety of complexes is used to meet the requirements for a UHS. A lake or an ocean may qualify as a single source. If the complex includes a water source contained by a structure, it is likely that a second source will be required.~~ ①

The basic performance requirements are that a 30 day supply of water be available, and that the design basis temperatures of safety related equipment not be exceeded. ~~Basins of cooling towers generally include less than a 30 day supply of water, typically 7 days or less. A 30 day supply would be dependent on another source(s) and a makeup system(s) for replenishing the source in the cooling tower basin. For smaller basin sources, which may be as small as a 1 day supply, the systems for replenishing the basin and the backup source(s) become of sufficient importance that the makeup system itself may be required to meet the same design criteria as an Engineered Safety Feature (e.g., single failure considerations, and multiple makeup water sources may be required).~~ ①

~~It follows that the many variations in the UHS configurations will result in many unit to unit variations in OPERABILITY determinations and SRs. The ACTIONS and SRs are illustrative of a cooling tower UHS without a makeup requirement.~~ ①

Additional information on the design and operation of the system along with a list of components served can be found in Reference 1.

①

INSERT 1

The UHS supplies water to the ICW System to perform its intended function, as discussed in the UFSAR, Section 9.2.7 (Ref. 1). There are two independent water sources and a discharge canal for the UHS. The primary water source is the Atlantic Ocean through the intake canal. This water source is used for all plant normal and accident conditions. The second source (backup supply) is Big Mud Creek which is fed by the Indian River (ultimately the Atlantic Ocean). The backup supply is utilized in the event the intake canal is rendered unable to supply sufficient water, as indicated by UHS intake level) due to a safe shutdown earthquake. Regardless of source, the cooling water is discharged into the discharge canal and flows through the discharge canal to the Atlantic Ocean. To ensure a supply of water for safe shutdown or accident conditions following a design basis seismic event, the backup supply water flow from Big Mud Creek is initiated from either unit's control room whenever the intake canal level falls below -10.5 feet. The minimum required intake canal level provides adequate margin above the minimum level for continued operation of the ICW pumps.

BASES

APPLICABLE SAFETY ANALYSES

The UHS is the sink for heat removed from the reactor core following all accidents and anticipated operational occurrences in which the unit is cooled down and placed on shutdown cooling. ~~For those units using it as the normal heat sink for condenser cooling via the Circulating Water System, unit operation at full power is its maximum heat load. Its maximum post accident heat load occurs 20 minutes after a design basis loss of coolant accident (LOCA). Near this time, the unit switches from injection to recirculation, and the containment cooling systems are required to remove the core decay heat.~~ ①

The operating limits are based on conservative heat transfer analyses for the worst case LOCA. Reference 1 provides the details of the assumptions used in the analysis. ~~The assumptions include: worst expected meteorological conditions, conservative uncertainties when calculating decay heat, and the worst case failure (e.g., single failure of a manmade structure).~~ ① The UHS is designed in accordance with Regulatory Guide 1.27 (Ref. 2), which requires a 30 day supply of cooling water in the UHS.

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

LCO

The UHS is required to be OPERABLE. The UHS is considered OPERABLE if it contains a sufficient volume of water ~~at or below the maximum temperature~~ ① that would allow the Intake Cooling Water ~~SWS~~ to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the Intake Cooling Water System ~~SWS~~. ① To meet this condition, the UHS ~~temperature should not exceed [90]°F and the~~ level should not fall below ~~[562 ft~~ -10.5 feet mean low water ~~mean sea~~ level~~]~~ during normal unit operation. ②

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is a normally operating system that is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

Although the LCO for the UHS is not applicable in MODES 5 and 6, the capability of the UHS to perform its necessary related support functions may be required for OPERABILITY of supported systems.

ACTIONS

~~[A.1~~

~~If one or more cooling towers have one fan inoperable (i.e., at least one fan per cooling tower is OPERABLE), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days [or in accordance with the Risk Informed Completion Time Program].~~ ④

ACTIONS (continued)

~~The 7 day Completion Time is reasonable, based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable, the number of available systems, and the time required to complete the action.]~~ ④

~~B~~A.1 and ~~B~~A.2 ①

Insert 2

~~-------------------------------REVIEWER'S NOTE -------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

1. ~~[LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~

2. ~~[LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~

~~---~~

~~If the cooling tower fan cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 4 within 12 hours.~~

~~Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.~~

~~Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and~~

①

INSERT 2

With the UHS inoperable, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to MODE 3 and the backup cooling water supply must be aligned to the intake canal. Risk in MODE 3 is minimized by providing makeup from a backup water source to the intake canal. This action ensures the backup supply is aligned to restore cooling water for the ICW pumps if the primary supply cannot be restored to within limit. Also, there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODES 3 and 4 than in MODE 5. Voluntary entry into MODE 4 or 5 may be made as these MODES are also acceptable low-risk states. Required Action A.2 is provided to supply cooling water from the backup water supply within 18 hours. The Completion Time for Required Action A.2 allows the operator time to evaluate and repair any discovered inoperabilities while providing adequate time to align the backup supply to the intake canal. If the backup water supply cannot be established within the required Completion Time, Condition B must be entered.

ACTIONS (continued)

~~establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.~~

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power in an orderly manner and without challenging plant systems.

~~[C.1~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.~~
~~---~~

⑤ ~~With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action C.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ]°F, Condition D must be entered immediately.]~~

~~[D~~B.1~~ and D.2~~ ③

If the Required Actions or Completion Times of Condition ~~C is~~ A are not met, ~~or the UHS is inoperable [for reasons other than Condition A or C],~~ the unit must be placed in a MODE in which the LCO does not apply. ② To achieve this status, the unit must be placed ~~in at least MODE 3 within 6 hours and~~ in MODE 5 within 36 hours. ① The allowed Completion Time~~s are~~ is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ~~]~~

SURVEILLANCE REQUIREMENTS

~~[~~ SR 3.7.9.1

This SR verifies adequate long term (30 days) cooling can be maintained. The level specified also ensures sufficient NPSH is available for operating the ~~SWS~~ ICW pumps. ~~[The 24 hour Frequency is based on operating experience related to the trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water level is ≥ [562] ft [mean sea level].~~ ① 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 3.7.9.2~~

~~This SR verifies that the SWS is available to cool the CCW System to at least its maximum design temperature within the maximum accident or normal design heat loads for 30 days following a DBA. [The 24 hour Frequency is based on operating experience related to the trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water temperature is ≤ [92]°F.~~ ⑤

~~OR~~

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

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

SURVEILLANCE REQUIREMENTS (continued)

~~[SR 3.7.9.3~~

~~Operating each cooling tower fan for ≥ [15] minutes verifies that all fans are OPERABLE and that all associated controls are functioning properly. It also ensures that fan or motor failure, or excessive vibration can be detected for corrective action. [The 31 day Frequency is based on operating experience, the known reliability of the fan units, the redundancy available, and the low probability of significant degradation of the UHS cooling tower fans occurring between surveillances.~~ ④

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~ ①

REFERENCES

1. U FSAR, Section ~~[~~9.2.~~5]~~7. ②

2. Regulatory Guide 1.27.

3. ~~CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.~~ ①

B 3.7 PLANT SYSTEMS

B 3.7.9 Ultimate Heat Sink (UHS)

BASES

BACKGROUND

The UHS provides a heat sink for process and operating heat from safety related components during a Design Basis Accident (DBA) or transient, as well as during normal operation. This is done utilizing the ~~Service Water~~ Intake Cooling Water (ICW) System. ①

Insert 1

~~The UHS has been defined as that complex of water sources, including necessary retaining structures (e.g., a pond with its dam, or a river with its dam), and the canals or conduits connecting the sources with, but not including, the cooling water system intake structures as, discussed in the FSAR, Section [9.2.5] (Ref. 1). If cooling towers or portions thereof are required to accomplish the UHS safety functions, they should meet the same requirements as the sink.~~ The two principal functions of the UHS are the dissipation of residual heat after reactor shutdown, and dissipation of residual heat after an accident. ①

~~A variety of complexes is used to meet the requirements for a UHS. A lake or an ocean may qualify as a single source. If the complex includes a water source contained by a structure, it is likely that a second source will be required.~~ ①

The basic performance requirements are that a 30 day supply of water be available, and that the design basis temperatures of safety related equipment not be exceeded. ~~Basins of cooling towers generally include less than a 30 day supply of water, typically 7 days or less. A 30 day supply would be dependent on another source(s) and a makeup system(s) for replenishing the source in the cooling tower basin. For smaller basin sources, which may be as small as a 1 day supply, the systems for replenishing the basin and the backup source(s) become of sufficient importance that the makeup system itself may be required to meet the same design criteria as an Engineered Safety Feature (e.g., single failure considerations, and multiple makeup water sources may be required).~~ ①

~~It follows that the many variations in the UHS configurations will result in many unit to unit variations in OPERABILITY determinations and SRs. The ACTIONS and SRs are illustrative of a cooling tower UHS without a makeup requirement.~~ ①

Additional information on the design and operation of the system along with a list of components served can be found in Reference 1.

①

INSERT 1

The UHS supplies water to the ICW System to perform its intended function, as discussed in the UFSAR, Section 9.2.5 (Ref. 1). There are two independent water sources and a discharge canal for the UHS. The primary water source is the Atlantic Ocean through the intake canal. This water source is used for all plant normal and accident conditions. The second source (backup supply) is Big Mud Creek which is fed by the Indian River (ultimately the Atlantic Ocean). The backup supply is utilized in the event the intake canal is rendered unable to supply sufficient water, as indicated by UHS intake level) due to a safe shutdown earthquake. Regardless of source, the cooling water is discharged into the discharge canal and flows through the discharge canal to the Atlantic Ocean. To ensure a supply of water for safe shutdown or accident conditions following a design basis seismic event, the backup supply water flow from Big Mud Creek is initiated from either unit's control room whenever the intake canal level falls below -10.5 feet. The minimum required intake canal level provides adequate margin above the minimum level for continued operation of the ICW pumps.

BASES

APPLICABLE SAFETY ANALYSES

The UHS is the sink for heat removed from the reactor core following all accidents and anticipated operational occurrences in which the unit is cooled down and placed on shutdown cooling. ~~For those units using it as the normal heat sink for condenser cooling via the Circulating Water System, unit operation at full power is its maximum heat load. Its maximum post accident heat load occurs 20 minutes after a design basis loss of coolant accident (LOCA). Near this time, the unit switches from injection to recirculation, and the containment cooling systems are required to remove the core decay heat.~~ ①

The operating limits are based on conservative heat transfer analyses for the worst case LOCA. Reference 1 provides the details of the assumptions used in the analysis. ~~The assumptions include: worst expected meteorological conditions, conservative uncertainties when calculating decay heat, and the worst case failure (e.g., single failure of a manmade structure).~~ ① The UHS is designed in accordance with Regulatory Guide 1.27 (Ref. 2), which requires a 30 day supply of cooling water in the UHS.

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

LCO

The UHS is required to be OPERABLE. The UHS is considered OPERABLE if it contains a sufficient volume of water ~~at or below the maximum temperature~~ that would allow the Intake Cooling Water ~~SWS~~ to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the Intake Cooling Water System ~~SWS~~. To meet this condition, the UHS ~~temperature should not exceed [90]°F and the~~ level should not fall below ~~[562 ft~~ -10.5 feet mean low water ~~mean sea~~ level~~]~~ during normal unit operation. ① ① ②

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is a normally operating system that is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

Although the LCO for the UHS is not applicable in MODES 5 and 6, the capability of the UHS to perform its necessary related support functions may be required for OPERABILITY of supported systems.

ACTIONS

~~[A.1~~

~~If one or more cooling towers have one fan inoperable (i.e., at least one fan per cooling tower is OPERABLE), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days [or in accordance with the Risk Informed Completion Time Program].~~ ④

BASES

ACTIONS (continued)

~~The 7 day Completion Time is reasonable, based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable, the number of available systems, and the time required to complete the action.]~~ ④

~~B~~A.1 and ~~B~~A.2 ①

Insert 2

~~-------------------------------REVIEWER'S NOTE -------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~

~~---~~

~~If the cooling tower fan cannot be restored to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to MODE 3 within 6 hours and to MODE 4 within 12 hours.~~

~~Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.~~

~~Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and~~

①

INSERT 2

With the UHS inoperable, the plant must be brought to a MODE in which overall plant risk is minimized. To achieve this status, the plant must be brought to MODE 3 and the backup cooling water supply must be aligned to the intake canal. Risk in MODE 3 is minimized by providing makeup from a backup water source to the intake canal. This action ensures the backup supply is aligned to restore cooling water for the ICW pumps if the primary supply cannot be restored to within limit. Also, there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms in MODES 3 and 4 than in MODE 5. Voluntary entry into MODE 4 or 5 may be made as these MODES are also acceptable low-risk states. Required Action A.2 is provided to supply cooling water from the backup water supply within 18 hours. The Completion Time for Required Action A.2 allows the operator time to evaluate and repair any discovered inoperabilities while providing adequate time to align the backup supply to the intake canal. If the backup water supply cannot be established within the required Completion Time, Condition B must be entered.

ACTIONS (continued)

~~establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.~~

The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power in an orderly manner and without challenging plant systems.

~~[C.1~~

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~The [ ]°F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.~~
~~---~~

~~With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action C.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ]°F, Condition D must be entered immediately.]~~ ⑤

~~[D~~B.1~~ and D.2~~ ③

If the Required Actions or Completion Times of Condition ~~C is~~ A are not met, ~~or the UHS is inoperable [for reasons other than Condition A or C],~~ ② the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed ~~in at least MODE 3 within 6 hours and~~ in MODE 5 within 36 hours. ① The allowed Completion Time~~s are~~ is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. ~~]~~

BASES

SURVEILLANCE REQUIREMENTS

~~[~~ SR 3.7.9.1

This SR verifies adequate long term (30 days) cooling can be maintained. The level specified also ensures sufficient NPSH is available for operating the ~~SWS~~ ICW pumps. ~~[The 24 hour Frequency is based on operating experience related to the trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water level is ≥ [562] ft [mean sea level].~~ ① 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 3.7.9.2~~

~~This SR verifies that the SWS is available to cool the CCW System to at least its maximum design temperature within the maximum accident or normal design heat loads for 30 days following a DBA. [The 24 hour Frequency is based on operating experience related to the trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water temperature is ≤ [92]°F.~~ ⑤

~~OR~~

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

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[SR 3.7.9.3~~

~~Operating each cooling tower fan for ≥ [15] minutes verifies that all fans are OPERABLE and that all associated controls are functioning properly. It also ensures that fan or motor failure, or excessive vibration can be detected for corrective action. [The 31 day Frequency is based on operating experience, the known reliability of the fan units, the redundancy available, and the low probability of significant degradation of the UHS cooling tower fans occurring between surveillances.~~ ④

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~
~~---]]~~ ①

REFERENCES

1. UFSAR, Section ~~[~~9.2.5~~]~~. ②
2. Regulatory Guide 1.27.
3. ~~CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.~~ ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.9, BASES, ULTIMATE HEAT SINK (UHS)

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 are made to reflect the ITS ACTIONS numbering.

4. The PSL UHS design does not include cooling towers, therefore, ISTS 3.7.9 Bases ACTION A.1 discussion and ISTS SR 3.7.9.3 discussion are not included in the ITS Bases.

5. ITS 3.7.9 does not include UHS water temperature, therefore, ISTS 3.7.9 Bases ACTION C and ISTS SR 3.7.9.2 are not included in the ITS Bases.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.9, ULTIMATE HEAT SINK (UHS)

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

ATTACHMENT 10

ITS 3.7.10, Control Room Emergency Ventilation System (CREVS)

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

A01

PLANT SYSTEMS

(CREVS)

3/4.7.7 CONTROL ROOM EMERGENCY VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

Two CREVS trains

A02

LCO 3.7.10 3.7.7.1 ~~The control room emergency ventilation system~~ shall be OPERABLE ~~with:~~

~~a. Two booster fans,~~

~~b. Two isolation valves in each outside air intake duct,~~

~~c. Two isolation valves in the toilet area air exhaust duct,~~

~~d. One filter train,~~

LA01

e. At least two air conditioning units, and

See ITS 3.7.11

~~f. Two isolation valves in the kitchen area exhaust duct~~.

LCO 3.7.10 NOTE

NOTE

The control room envelope boundary may be opened intermittently under administrative control.

Applicability **APPLICABILITY**: MODES 1, 2, 3, 4, 5 and 6 or during movement of irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4:

for reasons other than Condition B

One CREVS train

CREVS train

ACTION A

ACTION F

Required Action F.2 NOTE

a. ~~With one booster fan~~ inoperable, restore ~~the inoperable fan~~ to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within ~~the following 6~~ hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

12

b. ~~With one isolation valve per air duct inoperable, operation may continue provided the other isolation valve in the same duct is maintained closed; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN~~.

L01

Two CREVS trains

Add proposed NOTE to ACTION C

M01

A02

ACTION C

c. ~~With the filter train~~ inoperable for reasons other than an inoperable Control Room Envelope boundary:

1. Immediately initiate action to implement mitigating actions, and
2. Within 1 hour, verify LCO 3.4.~~8~~, "Specific Activity," is met, and
3. Within 24 hours restore the filter train to OPERABLE status.

16

ACTION F

MODE 4

With the above requirements not met, be in at least HOT STANDBY within the next 6 hours and ~~COLD SHUTDOWN within the following 30~~ hours.

12

L02

d. With only one air conditioning unit OPERABLE, restore at least two air conditioning units to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

See ITS 3.7.11

ITS

A01

ITS 3.7.10

PLANT SYSTEMS

ACTION: (continued)

MODES 1, 2, 3 and 4: (continued)

ACTION C NOTE

NOTE

Action not applicable when second ~~booster fan~~ CREVS train intentionally made inoperable.

ACTION C

e. ~~With~~ two ~~booster fans~~ CREVS trains inoperable for reasons other than ~~an inoperable Control Room Envelope boundary~~ Condition B:

1. Immediately initiate action to implement mitigating actions, and
2. Within 1 hour, verify LCO 3.4.~~8~~ 16, "Specific Activity," is met, and
3. Within 24 hours restore at least one ~~booster fan~~ CREVS train to OPERABLE status.

ACTION F

Required Action F.2 NOTE

With the above requirements not met, be in at least HOT STANDBY within the next 6 hours and in ~~COLD SHUTDOWN~~ MODE 4 within ~~the following 30~~ 12 hours.

L02

Add proposed Required Action F.2 NOTE

NOTE

Action not applicable when third air conditioning unit intentionally made inoperable.

f. With three air conditioning units inoperable for reasons other than an inoperable Control Room Envelope boundary, restore at least one air conditioning unit to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours and COLD SHUTDOWN within the following 30 hours.

See ITS 3.7.11

ACTION B

g. ~~With the filter train~~ One or more CREVS trains inoperable due to an inoperable Control Room Envelope boundary:

1. Immediately initiate actions to implement mitigating actions, and
2. Within 24 hours, verify mitigating actions to ensure Control Room Envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits, and
3. Restore Control Room Envelope boundary to OPERABLE status within 90 days.

ACTION F

Required Action F.2 NOTE

With the above requirements not met, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within ~~the following 6~~ 12 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

A01

PLANT SYSTEMS

ACTION: (continued)

MODES 5 and 6 or during movement of irradiated fuel assemblies:

ACTION A

ACTION D

a. ~~With one booster fan~~ One CREVS train inoperable~~,~~ for reasons other than Condition B, restore the inoperable fan to OPERABLE status within 7 days or place ~~initiate and maintain operation of the remaining~~ OPERABLE ~~control room emergency ventilation system~~ CREVS train in the recirculation mode or suspend movement of irradiated fuel assemblies.

b. ~~With one isolation valve in an air duct inoperable, maintain the other isolation valve in the same air duct closed or suspend movement of irradiated fuel assemblies.~~ L01

ACTION E

c. ~~With the filter train inoperable,~~ Two CREVS trains inoperable or with one or more CREVS trains inoperable due to an inoperable CRE boundary, immediately suspend movement of irradiated fuel assemblies.

d. With only one air conditioning unit OPERABLE, restore at least two air conditioning units to OPERABLE status within 7 days or suspend movement of irradiated fuel assemblies.

See ITS 3.7.11

SURVEILLANCE REQUIREMENTS

4.7.7.1 The control room emergency ventilation system shall be demonstrated OPERABLE:

a. In accordance with the Surveillance Frequency Control Program by verifying that the control room air temperature is ≤ 120°F.

See ITS 3.7.11

b. In accordance with the Surveillance Frequency Control Program by:

SR 3.7.10.1

1. ~~Initiating flow through the HEPA filter and charcoal adsorber train and verifying that each booster fan~~ each CREV train operates ~~for at least 15~~ for ≥ 15 continuous minutes. LA02

2. Starting (unless already operating) each air conditioning unit and verifying that it operates for at least 8 hours.

See ITS 3.7.11

SR 3.7.10.2

c. ~~By~~ perform~~ing~~ required ~~control room emergency ventilation system~~ CREVS filter testing in accordance with the Ventilation Filter Testing Program.

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (Continued)~~

~~DELETED~~

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

SR 3.7.10.3 d. In accordance with the Surveillance Frequency Control Program by verify~~ing that on a containment isolation signal the system automatically isolates the control room within 35 seconds and switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks~~.

L03 L04 LA03

each CREVS train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position and isolates the control room in ≤ 35 seconds.

SR 3.7.10.4 e. ~~By~~ perform~~ing~~ required Control Room Envelope unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.

PLANT SYSTEMS

3/4.7.7 CONTROL ROOM EMERGENCY ~~AIR CLEANUP~~ VENTILATION SYSTEM (~~CREACS~~ CREVS)

LIMITING CONDITION FOR OPERATION

LCO 3.7.10 3.7.7 Two ~~independent control room emergency air cleanup systems~~ CREVS trains shall be OPERABLE ~~with:~~ A02 LA01

~~a. A filter train and its associated fan per system, and~~

b. At least one air conditioning unit per system, and — See ITS 3.7.11

~~c. Two isolation valves in the kitchen area exhaust duct, and~~

~~d. Two isolation valves in the toilet area exhaust duct, and~~

~~e. Two isolation valves in each (North and South) air intake duct~~.

LCO 3.7.10 NOTE

NOTE
The control room envelope boundary may be opened intermittently under administrative control.

Applicability **APPLICABILITY**: MODES 1, 2, 3, 4, 5 and 6 or during movement of irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3, and 4:

ACTION A

a. ~~With one control room emergency air cleanup system~~ One CREVS train inoperable for reasons other than ~~an inoperable Control Room Envelope boundary~~ Condition B, restore ~~the inoperable system~~ CREVS train to OPERABLE status within 7 days or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within ~~the following 6~~ 12 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

ACTION F

Required Action F.2 NOTE

ACTION B

b. ~~With~~ ~~o~~One or more ~~control room emergency air cleanup systems~~ CREVS trains inoperable due to an inoperable Control Room Envelope boundary:

1. Immediately initiate actions to implement mitigating actions, and
2. Within 24 hours, verify mitigating actions to ensure Control Room Envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits, and
3. Restore Control Room Envelope boundary to OPERABLE status within 90 days.

ACTION F

Required Action F.2 NOTE

With the above requirements not met, be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within ~~the following 6~~ 12 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

c. ~~With an isolation valve in an air intake duct or air exhaust duct inoperable, operation may continue provided the other isolation valve in the same air intake or air exhaust duct is maintained closed; otherwise be in at least HOT STANDBY in the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.~~ L01

ACTION C NOTE

NOTE
Action not applicable when second ~~CREACS~~ CREVS train intentionally made inoperable.

ACTION C

d. ~~With two control room emergency air cleanup systems~~ Two CREVS trains inoperable for reasons other than ~~an inoperable Control Room Envelope boundary~~ Condition B.

1. Immediately initiate actions to implement mitigating actions, and
2. Within 1 hour, verify LCO 3.4.~~8~~ 16, "Specific Activity," is met, and
3. Within 24 hours restore at least one ~~CREACS~~ CREVS train to OPERABLE status.

ACTION F

With the above requirements not met, be in at least HOT STANDBY within the next 6 hours and ~~COLD SHUTDOWN~~ MODE 4 within ~~the following 30~~ 12 hours. L02

Add proposed Required Action F.2 NOTE

A01

PLANT SYSTEMS

ACTION: (continued)

MODES 5 and 6 or during movement of irradiated fuel assemblies:

ACTION A

a. ~~With one~~ One CREVS train ~~control room emergency air cleanup system~~ inoperable for reasons other than ~~an inoperable Control Room Envelope boundary~~ Condition B, immediately ~~initiate and maintain operation of the remaining~~ place OPERABLE ~~control room~~ CREVS train ~~emergency air cleanup system~~ in the recirculation mode or immediately suspend movement of irradiated fuel assemblies.

ACTION D

ACTION E

b. ~~With both control room emergency air cleanup systems~~ Two CREVS trains inoperable, or with one or more ~~CREACS systems~~ CREVS trains inoperable due to an inoperable Control Room Envelope boundary, immediately suspend movement of irradiated fuel assemblies.

c. ~~With an isolation valve in an air intake duct or air exhaust duct inoperable, maintain the other isolation valve in the same air intake or air exhaust duct closed or suspend movement of irradiated fuel assemblies.~~

L01

A01

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

See ITS 3.7.11

4.7.7 Each control room emergency air cleanup system shall be demonstrated OPERABLE~~:~~

a. In accordance with the Surveillance Frequency Control Program by verifying that the control room air temperature is ≤ 120°F.

each CREV train for ≥ 15 continuous

SR 3.7.10.1

LA02

b. In accordance with the Surveillance Frequency Control Program by (1) ~~initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system~~ operate~~s for at least 15~~ minutes ~~and~~ (2) starting, unless already operating each air conditioning unit and verifying that it operates for at least 8 hours.

CREVS

See ITS 3.7.11

SR 3.7.10.2

c. ~~By~~ perform~~ing~~ required ~~control room emergency air cleanup system~~ filter testing in accordance with the Ventilation Filter Testing Program.

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

d. In accordance with the Surveillance Frequency Control Program by:

SR 3.7.10.3 1. Verify~~ing that on a containment isolation test signal~~ each CREVS train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position. ~~from Unit 2, the system automatically switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks.~~

L03 L04 LA03

~~2. Verifying that on a containment isolation test signal from Unit 1 the system automatically switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks.~~

SR 3.7.10.4 e. ~~By~~ Perform~~ing~~ required Control Room Envelope unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.

DISCUSSION OF CHANGES
ITS 3.7.10, CONTROL ROOM EMERGENCY VENTILATION SYSTEM (CREVS)

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 3.7.7.1 and Unit 2 CTS 3.7.7 provide requirements for the Control Room Emergency Ventilation System (CREVS) and include requirements for control room air conditioning. ITS 3.7.10, “Control Room Emergency Ventilation System (CREVS),” provides requirements for the control room filtration function and ITS 3.7.11, “Control Room Air Conditioning System (CRACS),” provides requirements for the control room cooling function. This changes the CTS by separating the CREVS and CRACS requirements into separate Specifications based on function.

Although CREVS and CRACS are subsystems within the Control Room Ventilation System and utilize some of the same components and ductwork, these systems provide two separate and distinct safety functions. Therefore, the ITS presentation allows the filtration and cooling functions to be addressed separately. This presentation change is consistent with the ISTS and is designated as administrative because it does not result in technical changes to the CTS. Any technical changes associated with the current CREVS and CRACS requirements are provided in the Discussion of Changes (DOCs) associated with that Specification.

MORE RESTRICTIVE CHANGES

M01 **Unit 1 Only**: CTS 3.7.7.1 Action c (MODES 1, 2, 3, and 4) provide remedial actions when the filter train is inoperable for reasons other than an inoperable control room envelop boundary, including a time to restore the filter train within 24 hours. ITS 3.7.10 ACTION C requires similar actions when two CREVS trains are inoperable (e.g., the common filter train inoperable) in MODE 1, 2, 3, or 4 for reasons other than Condition B (i.e., inoperable control room envelop boundary) and includes a Note that does not allow these actions when a second CREVS train is intentionally made inoperable. This changes the CTS related to an inoperable filter train to only allow the actions when the filter train is discovered inoperable and not allow these actions if the single filter train is removed from service intentionally.

The purpose of the CTS actions is to allow a short period of time to restore the CREVS to OPERABLE status during the condition with no OPERABLE control room filter trains. However, this allowance is intended to only be used if the loss of filter function was unintentional. Voluntary removal of the filter safety function is not allowed, as indicated in the Note to CTS 3.7.7.1 Action e. The PSL Unit 1

CREVS design includes two redundant trains of active equipment and a single filter unit that is common to both CREVS trains. Therefore, when the filter unit is inoperable, both CREVS trains are inoperable and the control room filter safety function cannot be performed. Therefore, the CTS 3.7.7.1 Action c and Action e are combined in ITS 3.7.10 ACTION C and include the Note that does not allow these actions when a second CREVS train is intentionally made inoperable. This change will preclude the common filter unit from intentionally being removed from service that would result in a voluntarily removal of a required safety function. This change is designated as more restrictive because it adds a restriction that CTS does not have.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* Unit 1 CTS 3.7.7.1 states that the control room ventilation system shall be OPERABLE with; two booster fans, two isolation valves in each outside air intake duct, two isolation valves in the toilet area exhaust duct, one filter train, at least two air conditioning units and two isolation valves in the kitchen area exhaust duct. Unit 2 CTS 3.7.7 states that two independent control room emergency air cleanup systems shall be OPERABLE with; a filter train and its associated fan per system, at least one air conditioning unit per system, two isolation valves in the kitchen area exhaust duct, two isolation valves in the toilet area exhaust duct, and two isolation valves in each (North and South) air intake duct. ITS LCO 3.7.10 states that two CREV trains shall be OPERABLE, but the details of what constitutes an OPERABLE CREV train are moved to the Bases. This changes the CTS by removing details of what constitutes an OPERABLE train to the Bases.

The removal of these details, which are related to system design, from CTS 3.7.7 is acceptable because the information is not necessary within the technical specification to provide adequate protection of public health and safety. This change is acceptable because ITS retains the requirement for two CREVS trains to be OPERABLE and retains the detail of what constitutes a CREVS train within the Bases. This change is designated as a less restrictive removal of detail change because information relating to system design is being removed from the Technical Specifications.

LA02 *(Type 2 – Removing Descriptions of System Operation)* Unit 1 CTS 4.7.7.1.b.1 states, in part, “initiating flow through the HEPA filter and charcoal adsorber train and verifying that each booster fan.” Unit 2 CTS 4.7.7.b states, in part, “initiating, from the control room, flow through the HEPA filters and charcoal adsorbers.” ITS SR 3.7.10.1 states, “Operate each CREVS train for ≥ 15 continuous minutes.” This changes the CTS by moving the system operational detail to the UFSAR.

The removal of these details, which are related to system operation, from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. Also, this change is acceptable because the removed information will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change, because information relating to system operation is being removed from the Technical Specifications.

LA03 *(Type 2 – Removing Descriptions of System Operation)* Unit 1 CTS 4.7.7.1.d states, in part, "that on a containment isolation signal the system automatically isolates the control room and switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks." Unit 2 CTS 4.7.7.d.1 and CTS 4.7.7.d.2 state, in part, "that on a containment isolation test signal the system automatically isolates the control room and switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks." ITS SR 3.7.10.3 states, "Verify each CREVS train actuates on an actual or simulated actuation signal." This changes the CTS by moving the system operational detail to the UFSAR. (See DOCs L01 and L02 for additional discussion.)

The removal of these details, which are related to system operation, from the Technical Specifications is acceptable, because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. Also, this change is acceptable because the removed information will be adequately controlled in the UFSAR. The UFSAR is controlled under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change, because information relating to system operation is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* Unit 1 CTS 3.7.7.1 Actions b (MODES 1, 2, 3, and 4) and b (MODES 5 and 6 or during movement of irradiated fuel assemblies) and Unit 2 CTS 3.7.7 Actions c (MODES 1, 2, 3, and 4) and c (MODES 5 and 6 or during movement of irradiated fuel assemblies) provide actions when an isolation valve in an air intake duct or an air exhaust duct is inoperable. ITS 3.7.10 ACTIONS do not include specific actions for an inoperable valve in an air intake duct or an air exhaust duct. This changes the CTS by removing specific action requirements associated with an inoperable isolation valve in a CREVS intake or exhaust duct.

The purpose of the CTS actions is to ensure the control room envelop boundary is maintained when redundant isolation capability is lost on a CREVS intake or exhaust duct. The CREVS design includes dual valves on the common intake and exhaust ducts to ensure these penetrations are isolated in the event of accident requiring control room isolation. The series valves on each air intake and air exhaust duct are powered and actuated from redundant trains. Therefore, when one isolation valve in an air duct is inoperable, appropriate action for that level of degradation is to declare the CREV train associated with the inoperable isolation valve inoperable. Additionally, closing and deactivating either valve in the isolated position ensures the safety function is performed and restores the LCO. Unit 1 CTS 4.7.7.1.d and Unit 2 CTS 4.7.7.d.1 and 2 requires CREV components to actuate on a containment isolation signal, which includes automatic isolation valves. ITS SR 3.7.10.3 also requires similar testing with an exception for dampers and valves that are locked, sealed, or otherwise secured in the actuated position (See DOC L04 for the addition of this exception). Therefore, the exception in the SR effectively allows continued operation when one or more isolation valve in an air intake or exhaust duct are inoperable, provided the isolation valves are locked, sealed, or otherwise secured in the actuated (i.e., isolated) position. This change is acceptable because actions retained in the ITS continue to ensure redundant isolation capability is restored or the isolation function is performed. These remedial actions, including the exception provided in ITS SR 3.7.10.3, are consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant isolation valve and the low probability of a DBA occurring during this condition. This change is designated as less restrictive because removal of the CTS actions allows restoration of the isolation capability to be controlled by other ITS 3.7.10 actions, which are less restrictive and allows more than one isolation valve per air duct to be inoperable provided the isolation function is performed.

L02 *(Category 4 – Relaxation of Required Action)* Unit 1 CTS 3.7.7.1 Actions c and e (MODES 1, 2, 3 and 4) require when the action requirements for a filter train inoperability for reasons other than an inoperable control room envelope boundary or for the inoperability of two booster fans, respectively, cannot be met the unit must be in at least HOT STANDBY (MODE 3) with 6 hours and COLD SHUTDOWN (MODE 5) within the following 30 hours. Unit 1 CREVS trains share a common filter train, therefore, CTS Actions c and e are effectively addressing the same condition and are combined in ITS as ACTION E. Unit 2 CTS 3.7.7 Action d (MODES 1, 2, 3 and 4) requires when two control room emergency air cleanup systems are inoperable for reasons other than an inoperable control room envelope boundary and the specified required actions and completion times cannot be met that the unit be in at least HOT STANDBY (MODE 3) with 6 hours and COLD SHUTDOWN (MODE 5) within the following 30 hours. ITS ACTION E requires for a similar condition, to be in MODE 3 within 6 hours and in MODE 4 within 12 hours with a Note stating that LCO 3.0.4.a is not applicable when entering MODE 4. This changes the CTS by changing the end state from "COLD SHUTDOWN within the following 30 hours" to "MODE 4 within 12 hours with LCO 3.0.4.a allowance not applicable."

The purpose in the CTS action to shutdown the unit when the LCO cannot be restored within the required Completion Time is to place the unit in a MODE that minimizes overall plant risk. Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 as indicated in CE-NPSD-1186-A, Revision 00, "Technical Justification for the Risk-Informed Modification to Selected Required Action End States for CEOG Member PWRs," dated October 2001 (ADAMS Accession No. 110410539). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. Voluntary entry into MODE 5 may continue to be made as it is also an acceptable low-risk state. The change is consistent with similar changes made to CTS 3.7.7 in Amendments 234 and 184, “St. Lucie Plant, Unit Nos. 1 and 2 – Issuance of Amendments Regarding Changes in Selected Technical Specifications End States (CAC Nos. MF8106 and MF8107; Formerly CAC NOS. MF6683 AND MF6684),” dated August 30, 2016, (ADAMS Accession No. ML16210A374). This change is acceptable because the modification of the end state from MODE 5 to MODE 4 is consistent with CE-NPSD-1186-A and corrects an inconsistency in the CTS end states for Actions intended to place the unit in a condition outside of the LCO Applicability. Therefore, this change corrects that oversight. This change is designated as less restrictive because instead of requiring the plant to achieve MODE 5 (COLD SHUTDOWN), the ITS end state is MODE 4 (HOT SHUTDOWN) with LCO 3.0.4.a allowance not applicable.

L03 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* Unit 1 CTS 4.7.7.1.d requires verification that on a containment isolation signal the system automatically isolates the control room and switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks.” Unit 2 CTS 4.7.7.d.1 and d.2 state, in part, “that on a containment isolation test signal the system automatically isolates the control room and switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks.” ITS SR 3.7.10.3 specifies that the signal may be either an "actual" or a simulated actuation signal. This changes the Unit 1 and Unit 2 CTS by allowing the use of either an actual or a simulated signal for the test.

The purpose of CTS Surveillances is to ensure that each CREVS train actuates (switches to the recirculation mode) upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L04 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* Unit 1 CTS 4.7.7.1.d requires verification that on a containment isolation signal the system automatically isolates the control room and switches into a recirculation mode of operation with flow through the HEPA filters and charcoal adsorber banks.” Unit 2 CTS 4.7.7 d.1 and d.2 require verification that Unit 1 and Unit 2 containment isolation test signals will automatically switch into a recirculation mode of operation. ITS SR 3.7.10.3 requires verification that each CREVS train actuates and additional states, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position. This changes the CTS by not requiring dampers and valves locked, sealed or otherwise secured in position to be tested to verify that they automatically actuate to their actuated position.

The purpose of the CTS Surveillances is to provide assurance that the dampers and valves required to actuate in case of a design basis accident (DBA) isolate the control room and shift CREVS into the recirculation mode. 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. Dampers and valves already in the isolated position and secured are not required to be tested to automatically actuate because, in case of a DBA, they are already in their required position and secured to prevent changing from the required position. 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)

ITS

3.7 PLANT SYSTEMS

3.7.~~11~~10 Control Room Emergency ~~Air Cleanup~~ VENTILATION System (~~CREACS~~ CREVS) ① ②

3.7.7.1
DOC LA01

LCO 3.7.~~11~~10 Two CRE~~AC~~VS trains shall be OPERABLE.

LCO 3.7.7.1
NOTE

---NOTE---
The control room envelope (CRE) boundary may be opened intermittently under administrative control.

Applicability

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6,]
During movement of ~~[recently]~~ irradiated fuel assemblies. ③

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
Action a A. One CRE~~AC~~VS train inoperable for reasons other than Condition B.	A.1	Restore CRE~~AC~~VS train to OPERABLE status.	7 days ①
Action g B. One or more CRE~~AC~~VS trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.	B.1	Initiate action to implement mitigating actions.	Immediately ①
	<u>AND</u>		
	B.2	Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours
	<u>AND</u>		
	B.3	Restore CRE boundary to OPERABLE status.	90 days

ITS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action e NOTE Action e	C. ------------ NOTE ----------- Not applicable when second CRE~~AC~~S V train intentionally made inoperable. -------------------------------- Two CRE~~AC~~S V trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	C.1 Initiate action to implement mitigating actions. AND C.2 Verify LCO 3.4.16, "RCS Specific Activity," is met. AND C.3 Restore at least one CRE~~AC~~S V train to OPERABLE status.	Immediately 1 hour 24 hours
Action a	D. Required Action and associated Completion Time of Condition A not met ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	D.1 ~~-------------NOTE-------------~~ ~~Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.~~ ~~---------------------------------~~ Place OPERABLE CRE~~AC~~S V train in ~~emergency radiation protection~~ recirculation mode. OR D.2 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately Immediately

①

ACTIONS (continued)

Action c

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two CRE~~AC~~VS trains inoperable ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies. OR One or more CRE~~ASC~~VS trains inoperable due to an inoperable CRE boundary ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	E.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately ③ ① ③
F. Required Action and associated Completion Time of Condition A, B, or C not met in MODE 1, 2, 3, or 4.	F.1 Be in MODE 3. AND F.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 12 hours

Action a, b, c, e and g

Action a, b c, e and g DOC L01

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.7.1.b	SR 3.7.~~11~~10.1	Operate each CRE~~AC~~VS train for ≥ 15 continuous minutes ~~[with heaters operating]~~.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③
4.7.7.1.c	SR 3.7.~~11~~10.2	Perform required CRE~~AC~~VS filter testing in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~.	In accordance with the ~~[~~VFTP~~]~~	① ② ③
4.7.7.d.1 and d.2 DOC L02 DOC L03	SR 3.7.~~11~~10.3	Verify each CRE~~AC~~VS train actuates in ≤ 35 seconds on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③
4.7.7.e	SR 3.7.~~11~~10.4	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program	②

ITS

3.7 PLANT SYSTEMS

3.7.~~11~~ 10 Control Room Emergency ~~Air Cleanup~~ VENTILATION System (~~CREACS~~ CREVS) ① ②

3.7.7
DOC LA01

LCO 3.7.~~11~~ 10 Two CRE~~AC~~S V trains shall be OPERABLE.

LCO 3.7.7
NOTE

--NOTE--
The control room envelope (CRE) boundary may be opened intermittently under administrative control.

Applicability

APPLICABILITY: MODES 1, 2, 3, 4, [5, and 6,]
During movement of ~~[recently]~~ irradiated fuel assemblies. ③

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a	A. One CRE~~AC~~S V train inoperable for reasons other than Condition B.	A.1 Restore CRE~~AC~~S V train to OPERABLE status.	7 days	①
Action b	B. One or more CRE~~AC~~S V trains inoperable due to inoperable CRE boundary in MODE 1, 2, 3, or 4.	B.1 Initiate action to implement mitigating actions.	Immediately	①
		AND		
		B.2 Verify mitigating actions ensure CRE occupant exposures to radiological, chemical, and smoke hazards will not exceed limits.	24 hours	
		AND		
		B.3 Restore CRE boundary to OPERABLE status.	90 days	

ITS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Action d NOTE Action d	C. ------------ NOTE ----------- Not applicable when second CRE~~AC~~S V train intentionally made inoperable. -------------------------------- Two CRE~~AC~~S V trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.	C.1	Initiate action to implement mitigating actions.	Immediately
		<u>AND</u>		
		C.2	Verify LCO 3.4.16, "RCS Specific Activity," is met.	1 hour
		<u>AND</u>		
		C.3	Restore at least one CRE~~AC~~S V train to OPERABLE status.	24 hours
Action a	D. Required Action and associated Completion Time of Condition A not met ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	D.1	~~--------------NOTE--------------~~ ~~Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.~~ ~~---------------------------------~~ Place OPERABLE CRE~~AC~~S V train in ~~emergency radiation protection~~ recirculation mode.	Immediately
		<u>OR</u>		
		D.2	Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately

①

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action b Action c	E. Two CRE~~AC~~S V trains inoperable ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies. OR One or more CRE~~ASC~~ VS trains inoperable due to an inoperable CRE boundary ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	E.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately	① ③ ① ③
Action a, b, c and d	F. Required Action and associated Completion Time of Condition A, B, or C not met in MODE 1, 2, 3, or 4.	F.1 Be in MODE 3.	6 hours	
		AND		
Action a, b and c DOC L01		F.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.7.b	SR 3.7.~~11~~.1 10	V Operate each CRE~~AC~~S train for ≥ 15 continuous minutes ~~[with heaters operating]~~.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③
4.7.7.c	SR 3.7.~~11~~.2 10	V Perform required CRE~~AC~~S filter testing in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~.	In accordance with the ~~[~~VFTP~~]~~	① ② ③
4.7.7.d.1 and d.2 DOC L02 DOC L03	SR 3.7.~~11~~.3 10	V Verify each CRE~~AC~~S train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	① ② ③
4.7.7.e	SR 3.7.~~11~~.4 10	Perform required CRE unfiltered air inleakage testing in accordance with the Control Room Envelope Habitability Program.	In accordance with the Control Room Envelope Habitability Program	②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.10, CONTROL ROOM EMERGENCY VENTILATION SYSTEM (CREVS)

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

2. The ISTS 3.7.11 title "Control Room Emergency Air Cleanup System (CREACS)" has been changed to "Control Room Emergency Ventilation System (CREVS)" consistent with the St. Lucie Plant (PSL) site specific terminology. In addition, PSL design does not include the Essential Chilled Water System (ISTS 3.7.10). Therefore, ISTS 3.7.10 is not included in the PSL ITS. The Control Room Emergency Air Cleanup System (ISTS 3.7.11) is renumbered as ITS 3.7.10.

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

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

B 3.7 PLANT SYSTEMS

B 3.7.~~11~~ 10 Control Room Emergency ~~Air Cleanup~~ Ventilation System (~~CREACS~~ CREVS) ② ①

BASES

BACKGROUND

The ~~CREACS~~ CREVS provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity~~, hazardous chemicals, or smoke~~.

The ~~CREACS~~ CREVS consists of two ~~independent,~~ redundant trains that recirculate and filter the air in the control room envelope (CRE) and a CRE boundary that limits the inleakage o~~r~~ f unfiltered air. Each ~~CREACS~~ CREVS train shares a common filter train that consists of a prefilter ~~and demister~~, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Also included within a filter train are one booster fan, at least one air conditioning unit, two kitchen area exhaust duct isolation valves, two toilet area exhaust duct isolation valves and two air intake duct isolation valves in each (North and South) intake duct. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system~~, as well as demisters that remove water droplets from the air stream~~. ~~A second bank of HEPA filters follows the adsorber section to collect carbon fines, and provides back-up in case of failure of the main HEPA filter bank.~~

The CRE is the area within the confines of the CRE boundary that contains the spaces that control room occupants inhabit to control the unit during normal and accident conditions. This area encompasses the control room, ~~and may encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident~~ kitchen and food storage room, restrooms, administrative offices, computer room, and Technical Support Center. The CRE is protected during normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air into the CRE will not exceed the inleakage assumed in the licensing basis analysis of Design Basis Accident (DBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program (ITS 5.5.15).

The ~~CREACS~~ CREVS is an emergency system, part of which ~~may~~ also operates during normal unit operations in the standby mode of operation. Upon receipt of the actuating signal(s), normal air supply to the CRE is isolated, and the stream of ventilation air is recirculated through the filter trains of the system. The prefilters ~~and demisters~~ remove any large particles in the air~~, and any entrained water droplets present~~ to prevent excessive loading of the HEPA filters and charcoal adsorbers. ~~Both the demister and heater are important to the effectiveness of the charcoal adsorbers.~~ ①

BASES

BACKGROUND (continued)

Actuation of the ~~CREACS~~ CREVS places the system into ~~either of two separate states of the emergency mode of operation, depending on the initiation signal. Actuation of the system to the emergency radiation state of the emergency~~ the recirculation mode of operation, which closes the unfiltered outside air intake and unfiltered exhaust dampers, starts control room emergency cleanup fans, standby control room air conditioning unit, and aligns the system for recirculation of the air within the CRE through the ~~redundant trains of~~ HEPA filter and charcoal ~~filters~~ adsorber. The ~~emergency radiation state also initiates~~ recirculation mode also facilitates pressurization and filtered ventilation of the air supply to the CRE. ①

Outside air is filtered~~, [diluted with building air from the electrical equipment and cable spreading rooms,]~~ and then added to the air being recirculated from the CRE. Pressurization of the CRE minimizes infiltration of unfiltered air through the CRE boundary from all the surrounding areas adjacent to the CRE boundary. ~~The actions taken in the toxic gas isolation state are the same, except that the signal switches the CREACS to an isolation mode, minimizing outside air entering the CRE through the CRE boundary.~~ ③

The air entering the CRE is continuously monitored by radiation ~~and toxic gas detectors~~ monitors. One detector output above the setpoint will cause actuation of the recirculation mode ~~emergency radiation state or toxic gas isolation state~~ as required. ~~The actions of the toxic gas isolation state are more restrictive, and will override the actions of the emergency radiation state.~~

~~A single CREACS~~ CREVS ~~train operating at a~~ In recirculation mode, a makeup flow rate of ≤ ~~[3000]~~ 450 cfm ~~will~~ is acceptable to pressurize the CRE to ~~about [~~0.125~~]~~ inches water gauge relative to ~~external~~ surrounding areas adjacent to the CRE boundary~~, and provides an air exchange rate in excess of 25% per hour~~. The ~~CREACS~~ CREVS operation in maintaining the CRE habitable is discussed in the U FSAR, Sections ~~[~~9.4~~]~~ (Ref. 1) and 6.4 (Ref. 3). ③ ① ③

~~Redundant supply and recirculation trains provide the required filtration should an excessive pressure drop develop across the other filter train.~~ Normally open isolation ~~dampers~~ valves are arranged in series pairs so that the failure of one ~~damper~~ valve to shut will not result in a breach of isolation. The ~~CREACS~~ CREVS is designed in accordance with Seismic Category I requirements.

The ~~CREACS~~ CREVS is designed to maintain a habitable environment in the CRE for 30 days of continuous occupancy after a DBA without exceeding a ~~[5 rem whole body dose or its equivalent to any part of the body]~~ ~~[~~5 rem total effective dose equivalent (TEDE)~~]~~. ③

BASES

APPLICABLE SAFETY ANALYSES

The CREVS ~~CREACS~~ components are arranged in redundant safety related ventilation trains which share a common filter train. The location of components and ducting within the CRE ensures an adequate supply of filtered air to all areas requiring access. ①

The CREVS ~~CREACS~~ provides airborne radiological protection for the CRE occupants, as demonstrated by the CRE occupant dose analyses for the most limiting design basis accident fission product release presented in the UFSAR, Chapter ~~[~~15~~]~~ (Ref. 2). ③

The CREVS ~~CREACS~~ provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 3). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the CRE occupants to control the reactor either from the control room or from the remote shutdown panels ~~(Ref. 4)~~.

The worst case single active failure of a component of the CREVS ~~CREACS~~, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. ①

The CREVS ~~CREACS~~ satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two ~~independent and~~ redundant trains of the CREVS ~~CREACS~~ are required to be OPERABLE to ensure that at least one is available, if a single active failure disables the other train. Total system failure, such as from a loss of both ventilation trains or from an inoperable CRE boundary, could result in exceeding a dose of ~~[5 rem whole body or its equivalent to any part of the body]~~ ~~[~~5 rem TEDE~~]~~ ~~or~~ to the CRE occupants in the event of a large radioactive release. ① ③

Each CREVS ~~CREACS~~ train is considered OPERABLE when the individual components necessary to limit CRE occupant exposure are OPERABLE. A CREVS ~~CREACS~~ train is considered OPERABLE when the associated: ①

a. Fan is OPERABLE,

b. HEPA filters and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration functions, and

c. ~~Heater, demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained.

BASES

LCO (continued)

In order for the ~~CREACS~~ CREVS trains to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequence analyses for DBAs, and that CRE occupants are protected from hazardous chemicals and smoke. ①

The LCO is modified by a Note allowing the CRE boundary to be opened intermittently under administrative controls. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators in the CRE. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, 4, ~~[~~5, and 6~~]~~, and during movement of ~~[recently]~~ irradiated fuel assemblies, the ~~CREACS~~ CREVS must be OPERABLE to ensure that the CRE will remain habitable during and following a DBA. ③

~~In MODES [5 and 6], the CREACS is required to cope with the release from a rupture of an outside waste gas tank.~~ ①

During movement of ~~[recently]~~ irradiated fuel assemblies, the ~~CREACS~~ CREVS must be OPERABLE to cope with the release from a fuel handling accident ~~[involving handling recently irradiated fuel]~~. ~~[Due to radioactive decay, the CREACS is only required to cope with fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days).]~~ ③ ③

ACTIONS

A.1

With one ~~CREACS~~ CREVS train inoperable, for reasons other than an inoperable CRE boundary, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE ~~CREACS~~ CREVS train is adequate to perform the CRE occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE ~~CREACS~~ CREVS train could result in loss of ~~CREACS~~ CREVS function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and the ability of the remaining train to provide the required capability. ①

ACTIONS (continued)

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

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to ~~[5 rem whole body or its equivalent to any part of the body] [~~5 rem TEDE~~]~~), or inadequate protection of CRE occupants from hazardous chemicals or smoke, the CRE boundary is inoperable. Actions must be taken to restore an OPERABLE CRE boundary within 90 days. ③

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

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

If both CREVS ~~CREACS~~ trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable control room boundary (i.e., Condition B), at least one CREVS ~~CREACS~~ train must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second CREVS ~~CREACS~~ train is intentionally declared inoperable. ① The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be

BASES

ACTIONS (continued)

inoperable, or if both trains are discovered to be inoperable at the same time. During the period that the ~~CREACS~~ CREVS trains are inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from potential hazards while both trains of ~~CREACS~~ CREVS are inoperable. In the event of a DBA, the mitigating actions will reduce the consequences of radiological exposures to the CRE occupants.

Specification 3.4.16, "RCS Specific Activity," allows limited operation with the reactor coolant system (RCS) activity significantly greater than the LCO limit. This presents a risk to the plant operator during an accident when all ~~CREACS~~ CREVS trains are inoperable. Therefore, it must be verified within 1 hour that LCO 3.4.16 is met. This Required Action does not require additional RCS sampling beyond that normally required by LCO 3.4.16. ①

At least one ~~CREACS~~ CREVS train must be returned to OPERABLE status within 24 hours. The Completion Time is based on Reference 3 which demonstrated that the 24 hour Completion Time is acceptable based on the infrequent use of the Required Actions and the small incremental effect on plant risk.

D.1 and D.2

~~[~~In MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies, if Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE ~~CREACS~~ CREVS train must be immediately placed in the ~~emergency~~ recirculation mode of operation. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure will be readily detected. ③ ①

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position.

~~Required Action D.1 is modified by a Note indicating to place the system in the toxic gas protection mode if the automatic transfer to the toxic gas protection mode is inoperable.~~ ①

BASES

ACTIONS (continued)

E.1

When ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies, with two ~~CREACS~~ CREVS trains inoperable or with one or more ~~CREACS~~ CREVS trains inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position. ③ ①

F.1 and F.2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~
~~--~~ ④

If the inoperable ~~CREACS~~ CREVS or control room boundary cannot be restored to OPERABLE status within the associated Completion Time in MODE 1, 2, 3, or 4, the unit must be placed in a MODE that minimizes the accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. ~~5~~ 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action F.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable,

BASES

ACTIONS (continued)

because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~11~~ 10 .1 ⑤

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Operation ~~[with the heaters on]~~ for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that ~~[heater failure,]~~ blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~[The 31 day Frequency is based on the known reliability of the equipment, and the two train redundancy available.~~ ③

~~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.~~ ④
~~---]~~ ③

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.~~11~~ 10 .2 ②

This SR verifies that the required CREVS ~~CREACS~~ testing is performed in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test Frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~ (ITS 5.5.8). ① ③

SR 3.7.~~11~~ 10 .3 ②

This SR verifies that each CREVS ~~CREACS~~ train starts and operates on an actual or simulated actuation signal. The SR excludes automatic dampers and valves that are locked, sealed, or otherwise secured in the actuated position. The SR does not apply to dampers or valves that are locked, sealed, or otherwise secured in the actuated position since the affected dampers or valves were verified to be in the actuated position prior to being locked, sealed, or otherwise secured. Placing an automatic valve or damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the valve or damper to be repositioned to the non-actuated position to support the accident analysis. Restoration of an automatic valve or damper to the non-actuated position requires verification that the SR has been met within its required Frequency. ~~[The Frequency of [18] months is based on industry operating experience and is consistent with the typical refueling cycle.~~ ①

~~OR~~ ③

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

~~-------------------------------REVIEWER'S NOTE------------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ④
~~---]~~ ③

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.~~11~~10.4 ②

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than ~~[5 rem whole body or its equivalent to any part of the body]~~ [5 rem TEDE] ③ and the CRE occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. ~~6~~5) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. ~~7~~6). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. ~~8~~7). ④ Options for restoring the CRE boundary to OPERABLE status include changing the licensing basis DBA consequence analysis, repairing the CRE boundary, or a combination of these actions. Depending upon the nature of the problem and the corrective action, a full scope inleakage test may not be necessary to establish that the CRE boundary has been restored to OPERABLE status.

REFERENCES

1. UFSAR, Section [9.4].
2. UFSAR, Chapter [15]. ① ③
3. UFSAR, Section [6.4].

~~4. FSAR, Section [9.5].~~

~~5~~4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. ①

~~6~~5. Regulatory Guide 1.196.

BASES

REFERENCES (continued)

6 ~~7~~. NEI 99-03, "Control Room Habitability Assessment," June 2001.

7 ~~8~~. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694).

8 ~~9~~. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010.

①

B 3.7 PLANT SYSTEMS

10 B 3.7.~~11~~ Control Room Emergency Ventilation ~~Air Cleanup~~ System (CREVS ~~CREACS~~) ② ①

BASES

BACKGROUND

The CREVS ~~CREACS~~ provides a protected environment from which occupants can control the unit following an uncontrolled release of radioactivity~~, hazardous chemicals, or smoke~~.

The CREVS ~~CREACS~~ consists of two ~~independent,~~ redundant trains that recirculate and filter the air in the control room envelope (CRE) and a CRE boundary that limits the inleakage o~~r~~ f unfiltered air. Each CREVS ~~CREACS~~ train consists of a prefilter ~~and demister~~, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Also included within a filter train are one air conditioning unit, two kitchen area exhaust duct isolation valves, two toilet area exhaust duct isolation valves and two air intake duct isolation valves in each (North and South) intake duct. Ductwork, valves or dampers, doors, barriers, and instrumentation also form part of the system~~, as well as demisters that remove water droplets from the air stream~~. A second bank of HEPA filters follows the adsorber section to collect carbon fines, and provides back-up in case of failure of the main HEPA filter bank.

The CRE is the area within the confines of the CRE boundary that contains the spaces that control room occupants inhabit to control the unit during normal and accident conditions. This area encompasses the control room, air conditioning equipment room, emergency equipment cleanup system equipment room, emergency food and water storage areas, toilet, kitchen/dining/conference room and supervisor's office ~~and may encompass other non-critical areas to which frequent personnel access or continuous occupancy is not necessary in the event of an accident~~. The CRE is protected during normal operation, natural events, and accident conditions. The CRE boundary is the combination of walls, floor, roof, ducting, doors, penetrations and equipment that physically form the CRE. The OPERABILITY of the CRE boundary must be maintained to ensure that the inleakage of unfiltered air into the CRE will not exceed the inleakage assumed in the licensing basis analysis of Design Basis Accident (DBA) consequences to CRE occupants. The CRE and its boundary are defined in the Control Room Envelope Habitability Program (ITS 5.5.15).

The CREVS ~~CREACS~~ is an emergency system, part of which ~~may~~ also operates during normal unit operations in the standby mode of operation. Upon receipt of the actuating signal(s), normal air supply to the CRE is isolated, and the stream of ventilation air is recirculated through the filter trains of the system. The prefilters ~~and demisters~~ remove any large particles in the air~~, and any entrained water droplets present~~ to prevent excessive loading of the HEPA filters and charcoal adsorbers. ~~Both the demister and heater are important to the effectiveness of the charcoal adsorbers.~~ ①

BASES

BACKGROUND (continued)

Actuation of the CREVS ~~CREACS~~ places the system into ~~either of two separate states of the emergency mode of operation, depending on the initiation signal. Actuation of the system to the emergency radiation state of the emergency~~ the recirculation mode of operation, which closes the unfiltered outside air intake and unfiltered exhaust dampers, starts control room emergency cleanup fans, standby control room air conditioning unit, and aligns the system for recirculation of the air within the CRE through the redundant trains of HEPA and charcoal ~~filters~~ adsorbers. The ~~emergency radiation state also initiates~~ recirculation mode also facilitates pressurization and filtered ventilation of the air supply to the CRE. ①

Outside air is filtered~~, [diluted with building air from the electrical equipment and cable spreading rooms,]~~ and then added to the air being recirculated from the CRE. Pressurization of the CRE minimizes infiltration of unfiltered air through the CRE boundary from all the surrounding areas adjacent to the CRE boundary. ~~The actions taken in the toxic gas isolation state are the same, except that the signal switches the CREACS to an isolation mode, minimizing outside air entering the CRE through the CRE boundary.~~ ③

The air entering the CRE is continuously monitored by radiation ~~and toxic gas detectors~~ monitors. One detector output above the setpoint will cause actuation of the recirculation mode ~~emergency radiation state or toxic gas isolation state~~ as required. ~~The actions of the toxic gas isolation state are more restrictive, and will override the actions of the emergency radiation state.~~

~~A single~~ CREVS ~~CREACS train operating at a~~ In recirculation mode, a makeup flow rate of ≤ ~~[3000]~~ 450 cfm ~~will~~ is acceptable to pressurize the CRE to ~~about [~~0.125~~]~~ inches water gauge relative to ~~external~~ surrounding areas adjacent to the CRE boundary, and provides an air exchange rate in excess of 25% per hour. The ~~CREACS~~ CREVS operation in maintaining the CRE habitable is discussed in the U FSAR, Sections ~~[~~9.4~~]~~ (Ref. 1) and 6.4 (Ref. 3). ③ ① ③

Redundant supply and recirculation trains provide the required filtration should an excessive pressure drop develop across the other filter train. Normally open isolation ~~dampers~~ valves are arranged in series pairs so that the failure of one ~~damper~~ valve to shut will not result in a breach of isolation. The ~~CREACS~~ CREVS is designed in accordance with Seismic Category I requirements.

The ~~CREACS~~ CREVS is designed to maintain a habitable environment in the CRE for 30 days of continuous occupancy after a DBA without exceeding a ~~[5 rem whole body dose or its equivalent to any part of the body]~~ ~~[~~5 rem total effective dose equivalent (TEDE)~~]~~. ③

BASES

APPLICABLE SAFETY ANALYSES

The CREVS ~~CREACS~~ components are arranged in redundant safety related ventilation trains. The location of components and ducting within the CRE ensures an adequate supply of filtered air to all areas requiring access. ①

The CREVS ~~CREACS~~ provides airborne radiological protection for the CRE occupants, as demonstrated by the CRE occupant dose analyses for the most limiting design basis accident fission product release presented in the U FSAR, Chapter ~~[~~15~~]~~ (Ref. 2). ① ③

The CREVS ~~CREACS~~ provides protection from smoke and hazardous chemicals to the CRE occupants. The analysis of hazardous chemical releases demonstrates that the toxicity limits are not exceeded in the CRE following a hazardous chemical release (Ref. 3). The evaluation of a smoke challenge demonstrates that it will not result in the inability of the CRE occupants to control the reactor ~~either~~ from the control room ~~or from the remote shutdown panels (Ref. 4)~~.

The worst case single active failure of a component of the CREVS ~~CREACS~~, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. ①

The CREVS ~~CREACS~~ satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two ~~independent and~~ redundant trains of the CREVS ~~CREACS~~ are required to be OPERABLE to ensure that at least one is available, if a single active failure disables the other train. Total system failure, such as from a loss of both ventilation trains or from an inoperable CRE boundary, could result in exceeding a dose of ~~[5 rem whole body or its equivalent to any part of the body]~~ ~~[~~5 rem TEDE~~]~~ ~~or~~ to the CRE occupants in the event of a large radioactive release. ① ③

Each CREVS ~~CREACS~~ train is considered OPERABLE when the individual components necessary to limit CRE occupant exposure are OPERABLE. A CREVS ~~CREACS~~ train is considered OPERABLE when the associated:

a. Fan is OPERABLE,

b. HEPA filters and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration functions, and

c. ~~Heater, demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. ①

BASES

LCO (continued)

In order for the ~~CREACS~~ CREVS trains to be considered OPERABLE, the CRE boundary must be maintained such that the CRE occupant dose from a large radioactive release does not exceed the calculated dose in the licensing basis consequence analyses for DBAs, and that CRE occupants are protected from hazardous chemicals and smoke. ①

The LCO is modified by a Note allowing the CRE boundary to be opened intermittently under administrative controls. This Note only applies to openings in the CRE boundary that can be rapidly restored to the design condition, such as doors, hatches, floor plugs, and access panels. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls should be proceduralized and consist of stationing a dedicated individual at the opening who is in continuous communication with the operators in the CRE. This individual will have a method to rapidly close the opening and to restore the CRE boundary to a condition equivalent to the design condition when a need for CRE isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, 4, ~~[~~5, and 6~~]~~, and during movement of ~~[recently]~~ irradiated fuel assemblies, the ~~CREACS~~ CREVS must be OPERABLE to ensure that the CRE will remain habitable during and following a DBA. ③

~~In MODES [5 and 6], the CREACS is required to cope with the release from a rupture of an outside waste gas tank.~~ ①

During movement of ~~[recently]~~ irradiated fuel assemblies, the ~~CREACS~~ CREVS must be OPERABLE to cope with the release from a fuel handling accident ~~[involving handling recently irradiated fuel]~~. ~~[Due to radioactive decay, the CREACS is only required to cope with fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [X] days).]~~ ③ ③

ACTIONS

A.1

With one ~~CREACS~~ CREVS train inoperable, for reasons other than an inoperable CRE boundary, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE ~~CREACS~~ CREVS train is adequate to perform the CRE occupant protection function. However, the overall reliability is reduced because a failure in the OPERABLE ~~CREACS~~ CREVS train could result in loss of ~~CREACS~~ CREVS function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and the ability of the remaining train to provide the required capability. ①

BASES

ACTIONS (continued)

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

If the unfiltered inleakage of potentially contaminated air past the CRE boundary and into the CRE can result in CRE occupant radiological dose greater than the calculated dose of the licensing basis analyses of DBA consequences (allowed to be up to ~~[5 rem whole body or its equivalent to any part of the body] [~~5 rem TEDE~~]~~), or inadequate protection of CRE occupants from hazardous chemicals or smoke, the CRE boundary is inoperable. Actions must be taken to restore an OPERABLE CRE boundary within 90 days. ③

During the period that the CRE boundary is considered inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from the potential hazards of a radiological or chemical event or a challenge from smoke. Actions must be taken within 24 hours to verify that in the event of a DBA, the mitigating actions will ensure that CRE occupant radiological exposures will not exceed the calculated dose of the licensing basis analyses of DBA consequences, and that CRE occupants are protected from hazardous chemicals and smoke. These mitigating actions (i.e., actions that are taken to offset the consequences of the inoperable CRE boundary) should be preplanned for implementation upon entry into the condition, regardless of whether entry is intentional or unintentional. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of mitigating actions. The 90 day Completion Time is reasonable based on the determination that the mitigating actions will ensure protection of CRE occupants within analyzed limits while limiting the probability that CRE occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a DBA. In addition, the 90 day Completion Time is a reasonable time to diagnose, plan and possibly repair, and test most problems with the CRE boundary.

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

If both ~~CREACS~~ CREVS trains are inoperable in MODE 1, 2, 3, or 4 for reasons other than an inoperable control room boundary (i.e., Condition B), at least one ~~CREACS~~ CREVS train must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second ~~CREACS~~ CREVS train is intentionally declared inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be ①

BASES

ACTIONS (continued)

inoperable, or if both trains are discovered to be inoperable at the same time. During the period that the ~~CREACS~~ CREVS trains are inoperable, action must be initiated to implement mitigating actions to lessen the effect on CRE occupants from potential hazards while both trains of ~~CREACS~~ CREVS are inoperable. In the event of a DBA, the mitigating actions will reduce the consequences of radiological exposures to the CRE occupants.

Specification 3.4.16, "RCS Specific Activity," allows limited operation with the reactor coolant system (RCS) activity significantly greater than the LCO limit. This presents a risk to the plant operator during an accident when all ~~CREACS~~ CREVS trains are inoperable. Therefore, it must be verified within 1 hour that LCO 3.4.16 is met. This Required Action does not require additional RCS sampling beyond that normally required by LCO 3.4.16. ①

At least one ~~CREACS~~ CREVS train must be returned to OPERABLE status within 24 hours. The Completion Time is based on Reference 3 which demonstrated that the 24 hour Completion Time is acceptable based on the infrequent use of the Required Actions and the small incremental effect on plant risk.

D.1 and D.2

~~[~~In MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies, if Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE ~~CREACS~~ CREVS train must be immediately placed in the ~~emergency~~ recirculation mode of operation. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure will be readily detected. ③ ①

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position.

~~Required Action D.1 is modified by a Note indicating to place the system in the toxic gas protection mode if the automatic transfer to the toxic gas protection mode is inoperable.~~ ①

BASES

ACTIONS (continued)

E.1

When ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies, with two CREVS ~~CREACS~~ trains inoperable or with one or more CREVS ~~CREACS~~ trains inoperable due to an inoperable CRE boundary, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the CRE. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position. ③ ①

F.1 and F.2

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

1. ~~[LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~

2. ~~[LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~

~~---~~ ④

If the inoperable CREVS ~~CREACS~~ or control room boundary cannot be restored to OPERABLE status within the associated Completion Time in MODE 1, 2, 3, or 4, the unit must be placed in a MODE that minimizes the accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours.

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. ~~5~~ 4). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. ①

Required Action F.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable,

BASES

ACTIONS (continued)

because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~11~~ 10 .1 ②

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Operation ~~[with the heaters on]~~ for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that ~~[heater failure,]~~ blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~[The 31 day Frequency is based on the known reliability of the equipment, and the two train redundancy available.~~ ③

~~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.~~ ④
~~--]~~ ③

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.~~11~~ 10 .2 ②

This SR verifies that the required CREVS ~~CREACS~~ testing is performed in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test Frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~ (ITS 5.5.8) ① ③

SR 3.7.~~11~~ 10 .3 ②

This SR verifies that each CREVS ~~CREACS~~ train starts and operates on an actual or simulated actuation signal. The SR excludes automatic dampers and valves that are locked, sealed, or otherwise secured in the actuated position. The SR does not apply to dampers or valves that are locked, sealed, or otherwise secured in the actuated position since the affected dampers or valves were verified to be in the actuated position prior to being locked, sealed, or otherwise secured. Placing an automatic valve or damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the valve or damper to be repositioned to the non-actuated position to support the accident analysis. Restoration of an automatic valve or damper to the non-actuated position requires verification that the SR has been met within its required Frequency. ~~[The Frequency of [18] months is based on industry operating experience and is consistent with the typical refueling cycle.~~ ① ③

~~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.~~ ④
~~---]~~ ③

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.~~11~~ 10.4 ②

This SR verifies the OPERABILITY of the CRE boundary by testing for unfiltered air inleakage past the CRE boundary and into the CRE. The details of the testing are specified in the Control Room Envelope Habitability Program.

The CRE is considered habitable when the radiological dose to CRE occupants calculated in the licensing basis analyses of DBA consequences is no more than ~~[5 rem whole body or its equivalent to any part of the body]~~ ~~[~~5 rem TEDE~~]~~ and the CRE occupants are protected from hazardous chemicals and smoke. This SR verifies that the unfiltered air inleakage into the CRE is no greater than the flow rate assumed in the licensing basis analyses of DBA consequences. When unfiltered air inleakage is greater than the assumed flow rate, Condition B must be entered. Required Action B.3 allows time to restore the CRE boundary to OPERABLE status provided mitigating actions can ensure that the CRE remains within the licensing basis habitability limits for the occupants following an accident. Compensatory measures are discussed in Regulatory Guide 1.196, Section C.2.7.3, (Ref. ~~6~~ 5) which endorses, with exceptions, NEI 99-03, Section 8.4 and Appendix F (Ref. ~~7~~ 6). These compensatory measures may also be used as mitigating actions as required by Required Action B.2. Temporary analytical methods may also be used as compensatory measures to restore OPERABILITY (Ref. ~~8~~ 7). Options for restoring the CRE boundary to OPERABLE status include changing the licensing basis DBA consequence analysis, repairing the CRE boundary, or a combination of these actions. Depending upon the nature of the problem and the corrective action, a full scope inleakage test may not be necessary to establish that the CRE boundary has been restored to OPERABLE status. ③ ④

REFERENCES

1. U FSAR, Section ~~[~~9.4~~]~~.
2. U FSAR, Chapter ~~[~~15~~]~~.
3. U FSAR, Section ~~[~~6.4~~]~~.
~~4. FSAR, Section [9.5].~~ ① ③
~~5~~ 4. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.
~~6~~ 5. Regulatory Guide 1.196. ①

BASES

REFERENCES (continued)

6 ~~7~~. NEI 99-03, "Control Room Habitability Assessment," June 2001.

7 ~~8~~. Letter from Eric J. Leeds (NRC) to James W. Davis (NEI) dated January 30, 2004, "NEI Draft White Paper, Use of Generic Letter 91-18 Process and Alternative Source Terms in the Context of Control Room Habitability." (ADAMS Accession No. ML040300694).

8 ~~9~~. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010.

①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.10 BASES, CONTROL ROOM EMERGENCY VENTILATION SYSTEM (CREVS)

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

2. The ISTS 3.7.11 title "Control Room Emergency Air Cleanup System (CREACS)" has been changed to "Control Room Emergency Ventilation System (CREVS)" consistent with the St. Lucie Plant (PSL) site specific terminology. In addition, PSL design does not include the Essential Chilled Water System (ISTS 3.7.10). Therefore, ISTS 3.7.10 is not included in the PSL ITS. The Control Room Emergency Air Cleanup System (ISTS 3.7.11) is renumbered as ITS 3.7.10.

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.10, CONTROL ROOM EMERGENCY VENTILATION SYSTEM (CREVS)

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

AIR CONDITIONING

(CRACS)

PLANT SYSTEMS

3/4.7.7 CONTROL ROOM ~~EMERGENCY AIR CLEANUP~~ SYSTEM ~~(CREACS)~~

LIMITING CONDITION FOR OPERATION

LCO 3.7.11

3.7.7 Two ~~independent control room emergency air cleanup systems~~ shall be OPERABLE ~~with~~:

CRACS trains

a. A filter train and its associated fan per system, and

b. ~~At least one air conditioning unit per system, and~~

c. Two isolation valves in the kitchen area exhaust duct, and

d. Two isolation valves in the toilet area exhaust duct, and

e. Two isolation valves in each (North and South) air intake duct.

See ITS 3.7.10

NOTE

The control room envelope boundary may be opened intermittently under administrative control.

Applicability

APPLICABILITY: MODES 1, 2, 3, 4, 5 and 6 or during movement of irradiated fuel assemblies.

ACTION:

Add proposed ACTIONS

M03

MODES 1, 2, 3, and 4:

a. With one control room emergency air cleanup system inoperable for reasons other than an inoperable Control Room Envelope boundary, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

b. With one or more control room emergency air cleanup systems inoperable due to an inoperable Control Room Envelope boundary:

1. Immediately initiate actions to implement mitigating actions, and
2. Within 24 hours, verify mitigating actions to ensure Control Room Envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits, and
3. Restore Control Room Envelope boundary to OPERABLE status within 90 days.

With the above requirements not met, be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

See ITS 3.7.10

c. With an isolation valve in an air intake duct or air exhaust duct inoperable, operation may continue provided the other isolation valve in the same air intake or air exhaust duct is maintained closed; otherwise be in at least HOT STANDBY in the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

NOTE

Action not applicable when second CREACS train intentionally made inoperable.

d. With two control room emergency air cleanup systems inoperable for reasons other than an inoperable Control Room Envelope boundary:

1. Immediately initiate actions to implement mitigating actions, and
2. Within 1 hour, verify LCO 3.4.8, "Specific Activity," is met, and
3. Within 24 hours restore at least one CREACS train to OPERABLE status.

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

A01

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

CRACS

4.7.7 ~~Each control room emergency air cleanup system~~ shall be demonstrated OPERABLE:

the CRACS has the capability to remove the assumed heat load

SR 3.7.11.1

a. In accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing~~ ~~that the control room air temperature is ≤ 120°F~~.

M02

b. In accordance with the Surveillance Frequency Control Program by (1) initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes and ~~(2) starting, unless already operating each air conditioning unit and verifying that it operates for at least 8 hours~~.

M02

c. By performing required control room emergency air cleanup system filter testing in accordance with the Ventilation Filter Testing Program.

See ITS 3.7.10

DISCUSSION OF CHANGES
ITS 3.7.11, CONTROL ROOM AIR CONDITIONING SYSTEM (CRACS)

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 3.7.7.1 Action f (MODES 1, 2, 3 and 4) states that with air conditioning units inoperable "for reasons other than an inoperable Control Room Envelope boundary." This excludes any AC unit inoperability due to an inoperable control room envelope boundary. ITS 3.7.11 ACTIONS do not include an exclusion associated with the control room envelope boundary when two required (i.e., three) CRACS trains are inoperable. This changes the CTS by removing the exception associated with the control room envelope boundary when two required CRACS trains are inoperable.

The purpose of the CTS ACTIONS is to clarify that when the control room envelop boundary is breached, the condition related to inoperable AC units does not apply. However, the control room envelop boundary is applicable to the control room filtration function and not the control room cooling function. This change is acceptable because ITS retains the requirements associated with the control room envelope boundary within the Control Room Emergency Ventilation System (CREVS) Technical Specification (ITS 3.7.10) and the Control Room Envelope (CRE) Habitability Program in ITS Section 5.5. This change is designated as administrative and is acceptable because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 **Unit 1 only:** CTS 3.7.7.1 does not provide a specific ACTION for the Condition of two required AC units inoperable when in MODES 5 and 6 or during movement of irradiated fuel assemblies. ITS 3.7.11 ACTION E requires the suspension of irradiated fuel assemblies immediately. This changes CTS by adding actions for two inoperable required CRACS trains in MODES 5 and 6 and during movement of irradiated fuel assemblies.

The purpose of ITS 3.7.7.1 ACTION E is to place the unit in a condition that minimizes accident risk. Suspending movement of irradiated fuel assemblies accomplishes this purpose by precluding an event (i.e., fuel handling accident) that could result in a release of radioactivity requiring isolation of the control room. This change is designated as more restrictive because it adds an additional ACTION that CTS did not have.

M02 Unit 1 CTS 4.7.7.1 and Unit 2 CTS 4.7.7.a require verification that the control room air temperature is ≤ 120°F in accordance with the Surveillance Frequency

Control Program. This check is performed as a parameter check during operator rounds. Unit 2 CTS 4.7.7.b requires, in part, starting each air conditioning unit, unless already operating, and verifying that it operates for at least 8 hours. CTS does not provide a specific surveillance that verifies the design capability of the control room AC units. ITS SR 3.7.11.1 requires a verification that the CRACS has the capability to remove the assumed heat load with a Frequency in accordance with the Surveillance Frequency Control Program. This changes the CTS by removing the parameter check of control room air temperature performed as part of operational and procedural processes and adding a specific surveillance to require verifying the capability of the CRACS to remove the design heat load. This also changes Unit 2 CTS by removing an operational consideration to balance AC unit runtime.

The purpose of the CRACS Surveillance is to ensure the equipment in the control room does not exceed the required equipment qualification requirements. Verifying a temperature of < 120°F does not consider heat load profile during the duration of a design basis accident. Operating each Unit 2 AC unit for 8 hours also does not necessarily confirm the capability of the AC unit under accident conditions. The proposed Surveillance verifies the heat removal capability of the CRACS is sufficient to meet design requirements and consists of a combination of testing and calculations. 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 3.7.11.1 will be performed at a periodic Frequency in accordance with the SFCP with an initial Frequency of 18 months consistent with ISTS SR 3.7.12.1. This Frequency is appropriate since significant degradation of the CRACS is slow and is not expected over this time period. This change is designated as more restrictive because it adds a Surveillance Requirement that is more comprehensive than the simplistic temperature verification provide in CTS.

M03 **Unit 2 only:** CTS 3.7.7 does not contain specific requirements for the Control Room Air Conditioning System (CRACS). Currently CRACS requirements are encompassed within the Control Room Emergency Air Cleanup System (CREACS)) Operability, Applicability and Actions requirements. ITS 3.7.11 provides a specific Technical Specification that addresses the Control Room Air Conditioning System (CRACS) separately with specific ACTIONS that address the inoperability of the air conditioning units. This changes CTS by incorporating new Technical Specification requirements for the CRACS based on ISTS 3.7.12 (ITS 3.7.11).

The purpose of the CRACS is to maintain the temperature of the control room during normal operations and accident conditions to support control room equipment and maintain temperatures within the respective equipment qualification temperature limits. This change is acceptable because the safety analyses assume the OPERABILITY of the control room equipment. This change is designated as more restrictive because it adds new requirements to CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 **Unit 1 only:** *(Category 3 – Relaxation of Completion Time)* CTS 3.7.7.1 Action d (MODES 1, 2, 3 and 4) and Action d (MODES 5 and 6 or during movement of irradiated fuel assemblies) states "with only one air conditioning unit OPERABLE, restore at least two air conditioning units to OPERABLE status within 7 days." ITS 3.7.11 ACTION A allows 30 days to restore a required inoperable CRACS train to OPERABLE status. This changes the CTS by increasing the time allowed to restore the inoperable components from 7 days to 30 days.

The purpose of CTS 3.7.7.1 is to provide a degree of assurance that the CRACS can provide cooling when required. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. The CRACS train is still required to be restored to OPERABLE status and can perform its function without one air conditioning train. This change is designated as less restrictive because additional time is allowed in the ITS to restore inoperable equipment to within the LCO limits than was allowed in the CTS.

L02 **Unit 1 only:** *(Category 4 – Relaxation of Required Action)* CTS 3.7.7.1 Action f (MODES 1, 2, 3 and 4) requires, when three air conditioning units are inoperable for reasons other than an inoperable control room envelope boundary, to restore at least one air conditioning unit within 24 hours or be in at least HOT STANDBY (MODE 3) with 6 hours and COLD SHUTDOWN (MODE 5) within the following 30 hours. ITS ACTION C requires, for a similar condition, to be in MODE 3 within 6 hours and in MODE 4 within 12 hours with a Note stating that LCO 3.0.4.a is not applicable when entering MODE 4. This changes the CTS by changing the end state of CTS 3.7.7.1 Action f from "COLD SHUTDOWN within the following 30 hours" to "MODE 4 within 12 hours."

The purpose in the CTS action to shutdown the unit when the LCO cannot be restored within the required Completion Time is to place the unit in a MODE that minimizes overall plant risk. Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 as indicated in CE-NPSD-1186-A, Revision 00, "Technical Justification for the Risk-Informed Modification to Selected Required Action End States for CEOG Member PWRs," dated October 2001 (ADAMS Accession No. 110410539). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. Voluntary entry into MODE 5 may continue to be made as it is also an acceptable low-risk state. The change is consistent with similar changes made to CTS 3.7.7.1 in Amendment 234, "St. Lucie Plant, Unit Nos. 1 and 2 – Issuance of

Amendments Regarding Changes in Selected Technical Specifications End States (CAC Nos. MF8106 and MF8107; Formerly CAC NOS. MF6683 AND MF6684)," dated August 30, 2016, (ADAMS Accession No. ML16210A374). This change is acceptable because the modification of the end state from MODE 5 to MODE 4 is consistent with CE-NPSD-1186-A and corrects an inconsistency in the CTS end states for Actions intended to place the unit in a condition outside of the LCO Applicability. Therefore, this change corrects that oversight. This change is designated as less restrictive because instead of requiring the plant to achieve MODE 5 (COLD SHUTDOWN), the ITS end state is MODE 4 (HOT SHUTDOWN) with LCO 3.0.4.a allowance not applicable.

L03 **Unit 1 only:** *(Category 4 – Relaxation of Required Action)* CTS 3.7.7.1 Action d (MODES 5 and 6 or during movement of irradiated fuel assemblies) requires immediate suspension of irradiated fuel assembly movement when a required inoperable air conditioning (AC) unit cannot be restored within the required Completion Time. ITS 3.7.11 includes an optional action, Required Action D.1, to place an OPERABLE AC unit in operation. This changes the CTS by adding an optional action in MODES 5 and 6 and during movement of irradiated fuel assemblies to immediately suspend irradiated fuel assemblies.

The purpose of CTS 3.7.7.1 action in MODES 5, 6, or during movement of irradiated fuel assemblies is to place the plant in a condition where the consequences of a fuel handling accident are precluded or mitigated when the LCO cannot be restored within the allowed Completion Time. The proposed action to place the remaining OPERABLE CRACS train in service ensures the train is OPERABLE and any active failure will be readily detected. This change is acceptable because the optional action is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant train and single active failure to start is precluded by placing the OPERABLE train in service. In addition, the option to immediately suspend irradiated fuel assemblies is retained in the ITS. Therefore, the remedial actions continue to ensure the consequences of a fuel handling accident are precluded or mitigated when the LCO cannot be restored within the required Completion Time. This change is designated as less restrictive because it adds an optional Required Action and Completion Time that CTS does not include.

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

CTS

3.7 PLANT SYSTEMS

3.7.~~12~~ 11 Control Room ~~Emergency Air Temperature Control~~ Air Conditioning System (~~CREATCS~~ CRACS) ① ②

3.7.7.1 LCO 3.7.~~12~~ 11 Two ~~CREATCS~~ CRACS trains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, 4, ~~[~~5, and 6,~~]~~
During movement of ~~[recently]~~ irradiated fuel assemblies. ③

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action d DOC L01	A. One ~~CREATCS~~ required CRACS train inoperable.	A.1 Restore ~~CREATCS~~ CRACS train to OPERABLE status.	30 days	①
Action f NOTE Action f DOC A02 DOC L02	B. ------------ NOTE ----------- Not applicable when second ~~CREATCS~~ CRACS train intentionally made inoperable. -------------------------------- Two ~~CREATCS~~ required CRACS trains inoperable in MODE 1, 2, 3, or 4.	B.1 Restore at least one ~~CREATCS~~ CRACS train to OPERABLE status.	24 hours	② ①
Action d Action f DOC L02	C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. <u>AND</u> C.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 12 hours	

CTS

ACTIONS (continued)

DOC L03

Action d

DOC M01

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time of Condition A not met ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	D.1 Place OPERABLE ~~CREATCS~~ CRACS train in operation. OR D.2 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately Immediately
E. Two ~~CREATCS~~ required CRACS trains inoperable ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	E.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately

② ③ ② ③

SURVEILLANCE REQUIREMENTS

4.7.7.1.a
DOC M02

SURVEILLANCE		FREQUENCY
SR 3.7.~~12~~ 11.1	Verify ~~each CREATCS train~~ the CRACS has the capability to remove the assumed heat load.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program~~]~~

② ③

CTS

3.7 PLANT SYSTEMS

3.7.~~12~~ 11 Control Room ~~Emergency Air Temperature Control~~ Air Conditioning System (~~CREATCS~~ CRACS) ① ②

3.7.7 LCO 3.7.~~12~~ 11 Two ~~CREATCS~~ CRACS trains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, 4, ~~[~~5, and 6,~~]~~
During movement of ~~[recently]~~ irradiated fuel assemblies. ③

DOC M03 ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ~~CREATCS~~ required CRACS train inoperable.	A.1 Restore ~~CREATCS~~ CRACS train to OPERABLE status.	30 days ① ②
B. ------------ NOTE ----------- CRACS Not applicable when second ~~CREATCS~~ train intentionally made inoperable. (DOC M03) -------------------------------- Two ~~CREATCS~~ required CRACS trains inoperable in MODE 1, 2, 3, or 4. (DOC M03)	B.1 Restore at least one ~~CREATCS~~ CRACS train to OPERABLE status.	24 hours ①
DOC M03 C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. AND C.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 12 hours

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M03	D. Required Action and associated Completion Time of Condition A not met ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	D.1 Place OPERABLE CRACS ~~CREATCS~~ train in operation. OR D.2 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately Immediately	② ③
DOC M03	E. Two required CRACS ~~CREATCS~~ trains inoperable ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	E.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately	② ③

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.7.a DOC M02	SR 3.7.~~12~~ 11.1	Verify the CRACS ~~each CREATCS train~~ has the capability to remove the assumed heat load.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ③

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.11, CONTROL ROOM AIR CONDITIONING SYSTEM (CRACS)

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

2. The ISTS 3.7.12 title "Control Room Emergency Air Temperature Control System (CREATCS)" has been changed to "Control Room Air Conditioning System (CRACS)" consistent with the St. Lucie Plant (PSL) site specific terminology. In addition, PSL design does not include the Essential Chilled Water System (ISTS 3.7.10). Therefore, ISTS 3.7.10 is not included in the PSL ITS. The Control Room Emergency Air Temperature Control System (ISTS 3.6.12) is renumbered as ITS 3.7.11.

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

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

B 3.7 PLANT SYSTEMS

B 3.7.~~12~~ 11 Control Room ~~Emergency Air Temperature Control~~ Air Conditioning System (~~CREATCS~~ CRACS) ① ②

BASES

BACKGROUND

The ~~CREATCS~~ CRACS Insert 1 provides temperature control for the control room ~~following isolation of the control room~~. Insert 2

The ~~CREATCS~~ CRACS consists of ~~two independent,~~ three redundant trains that provide cooling ~~and heating~~ of recirculated control room air. Each train consists of ~~heating coils,~~ cooling coils, instrumentation, and controls to provide for control room temperature control. ①

The ~~CREATCS~~ CRACS is a~~n emergency~~ system~~, parts of~~ which ~~may~~ also operate s during normal unit operations. A single train will provide the required temperature control to maintain the control room ~~between [70]°F and [85]~~ ≤ 75°F. The ~~CREATCS~~ CRACS operation to maintain the control room temperature is discussed in the U FSAR, Section s ~~[~~6.4~~]~~ (Ref. 1) and 9.4 (Ref. 2). ③ ③

APPLICABLE SAFETY ANALYSES

The design basis of the ~~CREATCS~~ CRACS is to maintain ambient temperature of the control room ~~environment throughout 30 days of continuous occupancy.~~ Insert 3

The ~~CREATCS~~ CRACS components are arranged in redundant ~~safety related~~ trains. During emergency operation, the ~~CREATCS~~ CRACS maintains the temperature ~~between [70]°F and [85]~~ ≤ 125°F. A single active failure of a component of the ~~CREATCS~~ CRACS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. Redundant detectors and controls are provided for control room temperature control. The ~~CREATCS~~ CRACS is designed in accordance with Seismic Category I requirements. The ~~CREATCS~~ CRACS is capable of removing sensible and latent heat loads from the control room, considering equipment heat loads and personnel occupancy requirements, to ensure equipment OPERABILITY. ③ ①

The ~~CREATCS~~ CRACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant trains of the ~~CREATCS~~ CRACS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other train. Insert 4 Total system failure could result in the equipment operating temperature exceeding limits in the event of an accident.

The ~~CREATCS~~ CRACS is considered OPERABLE when the individual components that are necessary to maintain the control room temperature are OPERABLE in both trains. These components include the cooling coils and associated temperature control instrumentation. In addition, the ~~CREATCS~~ CRACS must be OPERABLE to the extent that air circulation can be maintained. ①

Insert 1 ①

is a subsystem of the Control Room Ventilation System and

Insert 2 ①

during normal operations and accident conditions

Insert 3 ①

for equipment qualification. Since equipment within the control room is qualified for higher temperature, loss of all air conditioning units is acceptable. At 125°F, continued habitability for periods of 2 hours is permissible. Through judicious allocation of plant operating personnel it is possible to maintain continuous occupancy of the control room.

Insert 4

①

Electrical independence requires that the two trains be powered from separate emergency buses.

BASES

APPLICABILITY

In MODES 1, 2, 3, 4, ~~[~~5, and 6,~~]~~ and during movement of ~~[recently]~~ irradiated fuel assemblies ~~[(i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~, the ~~CREATCS~~ CRACS must be OPERABLE to ensure that the control room temperature will not exceed equipment OPERABILITY requirements following isolation of the control room. ③ ①

~~In MODES 5 and 6, CREATCS may not be required for those facilities which do not require automatic control room isolation.~~ ①

ACTIONS

A.1

With one required ~~CREATCS~~ CRACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE ~~CREATCS~~ CRACS train is adequate to maintain the control room temperature within limits. The 30 day Completion Time is reasonable, based on the low probability of an event occurring requiring control room isolation, consideration that the remaining train can provide the required capabilities, and the alternate safety or nonsafety related cooling means that are available. ①

B.1

If two required ~~CREATCS~~ CRACS trains are inoperable, at least one ~~CREATCS~~ CRACS train must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second ~~CREATCS~~ CRACS train is intentionally ~~declared~~ made inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be inoperable, or if both trains are discovered to be inoperable at the same time. The Completion Time is based on Reference ~~2~~ 3 which demonstrated that the 24 hour Completion Time is acceptable based on the infrequent use of the Required Action and the small incremental effect on plant risk. ①

C.1 and C.2

~~REVIEWER'S NOTE~~

~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ④

BASES

ACTIONS (continued)

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~ ④

~~--~~

In MODE 1, 2, 3, or 4, when one or more required ~~CREATCS~~ CRACS trains cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes overall plant risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. ~~2~~ 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. ①

Required Action C.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

~~[~~ D.1 and D.2

In MODE 5 or 6, or during movement of ~~[recently]~~ irradiated fuel assemblies, when Required Action A.1 cannot be completed within the required Completion Time, ~~the~~ an OPERABLE ~~CREATCS~~ CRACS train must be placed in operation immediately. This action ensures that the remaining train is OPERABLE~~, that no failures preventing automatic actuation will occur,~~ and that any active failure will be readily detected. ③

BASES

ACTIONS (continued)

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position. ~~]~~ ③

~~[~~ E.1

In ~~[~~MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies, with two required CRACS ~~CREATCS~~ trains inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position. ~~]~~ ③

SURVEILLANCE REQUIREMENTS

SR 3.7.~~12~~11.1

This SR verifies that the heat removal capability of the system is sufficient to meet design requirements. This SR consists of a combination of testing and calculations. ~~[An [18] month Frequency is appropriate, since significant degradation of the CREATCS is slow and is not expected over this time period.~~ ③

~~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.~~ ④
~~---]~~ ③

REFERENCES ③

1. U FSAR, Section ~~[~~6.4~~]~~.

2. UFSAR, Section 9.4

~~2~~ 3. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. ①

~~3~~ 4. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010.

B 3.7 PLANT SYSTEMS

B 3.7.~~12~~ 11 Control Room ~~Emergency Air Temperature Control~~ Air Conditioning System (~~CREATCS~~ CRACS) ① ②

BASES

BACKGROUND

The ~~CREATCS~~ CRACS Insert 1 provides temperature control for the control room ~~following isolation of the control room~~. Insert 2

The ~~CREATCS~~ CRACS consists of ~~two independent,~~ three redundant trains that provide cooling ~~and heating~~ of recirculated control room air. Each train consists of ~~heating coils,~~ cooling coils, instrumentation, and controls to provide for control room temperature control. ①

The ~~CREATCS~~ CRACS is a~~n emergency~~ system~~, parts of~~ which ~~may~~ also operate s during normal unit operations. A single train will provide the required temperature control to maintain the control room between ~~[~~70~~]~~°F and ~~[85]~~ 80°F. The ~~CREATCS~~ CRACS operation to maintain the control room temperature is discussed in the U FSAR, Section s ~~[~~6.4~~]~~ (Ref. 1) and 9.4 (Ref. 2). ③ ③

APPLICABLE SAFETY ANALYSES

The design basis of the ~~CREATCS~~ CRACS is to maintain ambient temperature of the control room ~~environment throughout 30 days of continuous occupancy.~~ Insert 3

The ~~CREATCS~~ CRACS components are arranged in redundant ~~safety related~~ trains. During emergency operation, the ~~CREATCS~~ CRACS maintains the temperature between ~~[70]~~ 76°F and ~~[85]~~ 84°F. A single active failure of a component of the ~~CREATCS~~ CRACS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. Redundant detectors and controls are provided for control room temperature control. The ~~CREATCS~~ CRACS is designed in accordance with Seismic Category I requirements. The ~~CREATCS~~ CRACS is capable of removing sensible and latent heat loads from the control room, considering equipment heat loads and personnel occupancy requirements, to ensure equipment OPERABILITY. ③ ①

The ~~CREATCS~~ CRACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant trains of the ~~CREATCS~~ CRACS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other train. Insert 4 Total system failure could result in the equipment operating temperature exceeding limits in the event of an accident.

The ~~CREATCS~~ CRACS is considered OPERABLE when the individual components that are necessary to maintain the control room temperature are OPERABLE in both trains. These components include the cooling coils and associated temperature control instrumentation. In addition, the ~~CREATCS~~ CRACS must be OPERABLE to the extent that air circulation can be maintained. ①

Insert 1 ①

is a subsystem of the Control Room Ventilation System and

Insert 2 ①

during normal operations and accident conditions

Insert 3 ①

for equipment qualification. CRACS is designed to control the environment assuming the simultaneous operation of all equipment located in the control room envelope coinciding with the highest site design ambient conditions. Under these assumptions, the system is capable of maintaining the environmental conditions of 76°F to 84°F and less than 70 percent relative humidity during an accident condition.

Insert 4 ①

Electrical independence requires that the two trains be powered from separate emergency buses.

BASES

APPLICABILITY

In MODES 1, 2, 3, 4, ~~[~~5, and 6,~~]~~ and during movement of ~~[recently]~~ irradiated fuel assemblies ~~[(i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~, the ~~CREATCS~~ CRACS must be OPERABLE to ensure that the control room temperature will not exceed equipment OPERABILITY requirements following isolation of the control room. ③ ①

~~In MODES 5 and 6, CREATCS may not be required for those facilities which do not require automatic control room isolation.~~ ①

ACTIONS

A.1

With one ~~CREATCS~~ required CRACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE ~~CREATCS~~ CRACS train is adequate to maintain the control room temperature within limits. The 30 day Completion Time is reasonable, based on the low probability of an event occurring requiring control room isolation, consideration that the remaining train can provide the required capabilities, and the alternate safety or nonsafety related cooling means that are available. ①

B.1

If two ~~CREATCS~~ required CRACS trains are inoperable, at least one ~~CREATCS~~ CRACS train must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second ~~CREATCS~~ CRACS train is intentionally ~~declared~~ made inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be inoperable, or if both trains are discovered to be inoperable at the same time. The Completion Time is based on Reference ~~2~~ 3 which demonstrated that the 24 hour Completion Time is acceptable based on the infrequent use of the Required Action and the small incremental effect on plant risk. ①

C.1 and C.2

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ④

BASES

ACTIONS (continued)

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, “Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422),” Westinghouse, May 2010.~~ ④

In MODE 1, 2, 3, or 4, when one or more required ~~CREATCS~~ CRACS trains cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes overall plant risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. ~~2~~ 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. ①

Required Action C.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

~~[~~ D.1 and D.2

In MODE 5 or 6, or during movement of ~~[recently]~~ irradiated fuel assemblies, when Required Action A.1 cannot be completed within the required Completion Time, ~~the~~ an OPERABLE ~~CREATCS~~ CRACS train must be placed in operation immediately. This action ensures that the remaining train is OPERABLE~~, that no failures preventing automatic actuation will occur,~~ and that any active failure will be readily detected. ③

BASES

ACTIONS (continued)

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position.~~]~~ ③

~~[~~ E.1

In ~~[~~MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies, with two required CRACS ~~CREATCS~~ trains inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position.~~]~~ ③

SURVEILLANCE REQUIREMENTS

SR 3.7.~~12~~ 11 .1

This SR verifies that the heat removal capability of the system is sufficient to meet design requirements. This SR consists of a combination of testing and calculations. ~~[An [18] month Frequency is appropriate, since significant degradation of the CREATCS is slow and is not expected over this time period.~~

~~OR~~ ③

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

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ④
~~--]~~ ③

REFERENCES

1. U FSAR, Section ~~[~~6.4~~]~~. ③

2. UFSAR, Section 9.4

3 ~~2~~. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. ①

4 ~~3~~. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.11 BASES, CONTROL ROOM AIR CONDITIONING SYSTEM (CRACS)

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

2. The ISTS 3.7.12 title "Control Room Emergency Air Temperature Control System (CREATCS)" has been changed to "Control Room Air Conditioning System (CRACS)" consistent with the St. Lucie Plant (PSL) site specific terminology. In addition, PSL design does not include the Essential Chilled Water System (ISTS 3.7.10). Therefore, ISTS 3.7.10 is not included in the PSL ITS. The Control Room Emergency Air Temperature Control System (ISTS 3.6.12) is renumbered as ITS 3.7.11.

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.11, CONTROL ROOM AIR CONDITIONING SYSTEM (CRACS)

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

ATTACHMENT 11

ITS 3.7.11, Control Room Air Conditioning System (CRACS)

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

ITS A01 ITS 3.7.11

PLANT SYSTEMS

AIR CONDITIONING (CRACS)

3/4.7.7 CONTROL ROOM ~~EMERGENCY VENTILATION~~ SYSTEM

LIMITING CONDITION FOR OPERATION

Two CRACS trains

LCO 3.7.11 3.7.7.1 ~~The control room emergency ventilation system~~ shall be OPERABLE ~~with:~~

a. Two booster fans,

b. Two isolation valves in each outside air intake duct,

c. Two isolation valves in the toilet area air exhaust duct,

d. One filter train,

e. ~~At least two air conditioning units, and~~

f. Two isolation valves in the kitchen area exhaust duct.

See ITS 3.7.10

NOTE

The control room envelope boundary may be opened intermittently under administrative control.

Applicability **APPLICABILITY**: MODES 1, 2, 3, 4, 5 and 6 or during movement of irradiated fuel assemblies.

ACTION:

MODES 1, 2, 3 and 4:

a. With one booster fan inoperable, restore the inoperable fan to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

b. With one isolation valve per air duct inoperable, operation may continue provided the other isolation valve in the same duct is maintained closed; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

c. With the filter train inoperable for reasons other than an inoperable Control Room Envelope boundary:

  1. Immediately initiate action to implement mitigating actions, and
  2. Within 1 hour, verify LCO 3.4.8, "Specific Activity," is met, and
  3. Within 24 hours restore the filter train to OPERABLE status.

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

See ITS 3.7.10

ACTION A

ACTION C

Required Action C.2 NOTE

d. ~~With only one air conditioning unit OPERABLE, restore at least two air conditioning units~~ to OPERABLE status within 30 ~~7~~ days or be in at least HOT STANDBY within ~~the next~~ 6 hours and in HOT SHUTDOWN within ~~the following~~ 12 ~~6~~ hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

One required CRACS train inoperable. Restore CRACS train

L01

A01

PLANT SYSTEMS

ACTION: (continued)

MODES 1, 2, 3 and 4: (continued)

See ITS 3.7.10

NOTE

Action not applicable when second booster fan intentionally made inoperable.

e. With two booster fans inoperable for reasons other than an inoperable Control Room Envelope boundary:

1. Immediately initiate action to implement mitigating actions, and
2. Within 1 hour, verify LCO 3.4.8, "Specific Activity," is met, and
3. Within 24 hours restore at least one booster fan to OPERABLE status.

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

Condition B NOTE

NOTE

Action not applicable when second required CRACS train ~~third air conditioning unit~~ intentionally made inoperable.

ACTION B

ACTION C

f. With two required CRACS trains ~~three air conditioning units~~ inoperable ~~for reasons other than an inoperable Control Room Envelope boundary,~~ restore at least one CRACS train ~~air conditioning unit~~ to OPERABLE status within 24 hours or be in MODE 3 ~~at least HOT STANDBY~~ within ~~the next~~ 6 hours and MODE 4 ~~COLD SHUTDOWN~~ within 12 ~~the following 30~~ hours.

A02

L02

g. With the filter train inoperable due to an inoperable Control Room Envelope boundary:

1. Immediately initiate actions to implement mitigating actions, and
2. Within 24 hours, verify mitigating actions to ensure Control Room Envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits, and
3. Restore Control Room Envelope boundary to OPERABLE status within 90 days.

With the above requirements not met, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

See ITS 3.7.10

A01

PLANT SYSTEMS

ACTION: (continued)

See ITS 3.7.10

MODES 5 and 6 or during movement of irradiated fuel assemblies:

a. With one booster fan inoperable, restore the inoperable fan to OPERABLE status within 7 days or initiate and maintain operation of the remaining OPERABLE control room emergency ventilation system in the recirculation mode or suspend movement of irradiated fuel assemblies.

b. With one isolation valve in an air duct inoperable, maintain the other isolation valve in the same air duct closed or suspend movement of irradiated fuel assemblies.

c. With the filter train inoperable, suspend movement of irradiated fuel assemblies.

ACTION A

One required CRACS train inoperable. Restore CRACS train

d. ~~With only one air conditioning unit OPERABLE, restore at least two air conditioning units~~ to OPERABLE status within ~~7~~ 30 days or suspend movement of irradiated fuel assemblies.

Required Action D.2

Add proposed Required Action D.1

L01

L03

M01

Add proposed Action E

SURVEILLANCE REQUIREMENTS

CRACS

4.7.7.1 ~~The control room emergency ventilation system~~ shall be demonstrated OPERABLE:

the CRACS has the capability to remove the assumed heat load

SR 3.7.11.1

a. In accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing~~ ~~that the control room air temperature is ≤ 120°F~~.

M02

b. In accordance with the Surveillance Frequency Control Program by:

1. Initiating flow through the HEPA filter and charcoal adsorber train and verifying that each booster fan operates for at least 15 minutes.

2. Starting (unless already operating) each air conditioning unit and verifying that it operates for at least 8 hours.

c. By performing required control room emergency ventilation system filter testing in accordance with the Ventilation Filter Testing Program.

See ITS 3.7.10

PLANT SYSTEMS

AIR CONDITIONING

(CRACS)

3/4.7.7 CONTROL ROOM ~~EMERGENCY AIR CLEANUP~~ SYSTEM ~~(CREACS)~~

LIMITING CONDITION FOR OPERATION

LCO 3.7.11

3.7.7 Two ~~independent control room emergency air cleanup systems~~ shall be OPERABLE ~~with~~:

CRACS trains

a. A filter train and its associated fan per system, and

b. ~~At least one air conditioning unit per system, and~~

c. Two isolation valves in the kitchen area exhaust duct, and

d. Two isolation valves in the toilet area exhaust duct, and

e. Two isolation valves in each (North and South) air intake duct.

See ITS 3.7.10

NOTE

The control room envelope boundary may be opened intermittently under administrative control.

Applicability

APPLICABILITY: MODES 1, 2, 3, 4, 5 and 6 or during movement of irradiated fuel assemblies.

ACTION:

Add proposed ACTIONS

M03

MODES 1, 2, 3, and 4:

a. With one control room emergency air cleanup system inoperable for reasons other than an inoperable Control Room Envelope boundary, restore the inoperable system to OPERABLE status within 7 days or be in at least HOT STANDBY within 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

See ITS 3.7.10

b. With one or more control room emergency air cleanup systems inoperable due to an inoperable Control Room Envelope boundary:

1. Immediately initiate actions to implement mitigating actions, and
2. Within 24 hours, verify mitigating actions to ensure Control Room Envelope occupant exposures to radiological, chemical, and smoke hazards will not exceed limits, and
3. Restore Control Room Envelope boundary to OPERABLE status within 90 days.

With the above requirements not met, be in at least HOT STANDBY within the next 6 hours and HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

c. With an isolation valve in an air intake duct or air exhaust duct inoperable, operation may continue provided the other isolation valve in the same air intake or air exhaust duct is maintained closed; otherwise be in at least HOT STANDBY in the next 6 hours and in HOT SHUTDOWN within the following 6 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

NOTE

Action not applicable when second CREACS train intentionally made inoperable.

d. With two control room emergency air cleanup systems inoperable for reasons other than an inoperable Control Room Envelope boundary:

1. Immediately initiate actions to implement mitigating actions, and
2. Within 1 hour, verify LCO 3.4.8, "Specific Activity," is met, and
3. Within 24 hours restore at least one CREACS train to OPERABLE status.

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

PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS

4.7.7 ~~Each control room emergency air cleanup system~~ CRACS shall be demonstrated OPERABLE:

SR 3.7.11.1 a. In accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing~~ the CRACS has the capability to remove the assumed heat load ~~that the control room air temperature is ≤ 120°F~~. M02

b. In accordance with the Surveillance Frequency Control Program by (1) initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 15 minutes and ~~(2) starting, unless already operating each air conditioning unit and verifying that it operates for at least 8 hours~~. M02

c. By performing required control room emergency air cleanup system filter testing in accordance with the Ventilation Filter Testing Program.

See ITS 3.7.10

DISCUSSION OF CHANGES
ITS 3.7.11, CONTROL ROOM AIR CONDITIONING SYSTEM (CRACS)

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 3.7.7.1 Action f (MODES 1, 2, 3 and 4) states that with air conditioning units inoperable "for reasons other than an inoperable Control Room Envelope boundary." This excludes any AC unit inoperability due to an inoperable control room envelope boundary. ITS 3.7.11 ACTIONS do not include an exclusion associated with the control room envelope boundary when two required (i.e., three) CRACS trains are inoperable. This changes the CTS by removing the exception associated with the control room envelope boundary when two required CRACS trains are inoperable.

The purpose of the CTS ACTIONS is to clarify that when the control room envelop boundary is breached, the condition related to inoperable AC units does not apply. However, the control room envelop boundary is applicable to the control room filtration function and not the control room cooling function. This change is acceptable because ITS retains the requirements associated with the control room envelope boundary within the Control Room Emergency Ventilation System (CREVS) Technical Specification (ITS 3.7.10) and the Control Room Envelope (CRE) Habitability Program in ITS Section 5.5. This change is designated as administrative and is acceptable because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 **Unit 1 only:** CTS 3.7.7.1 does not provide a specific ACTION for the Condition of two required AC units inoperable when in MODES 5 and 6 or during movement of irradiated fuel assemblies. ITS 3.7.11 ACTION E requires the suspension of irradiated fuel assemblies immediately. This changes CTS by adding actions for two inoperable required CRACS trains in MODES 5 and 6 and during movement of irradiated fuel assemblies.

The purpose of ITS 3.7.7.1 ACTION E is to place the unit in a condition that minimizes accident risk. Suspending movement of irradiated fuel assemblies accomplishes this purpose by precluding an event (i.e., fuel handling accident) that could result in a release of radioactivity requiring isolation of the control room. This change is designated as more restrictive because it adds an additional ACTION that CTS did not have.

M02 Unit 1 CTS 4.7.7.1 and Unit 2 CTS 4.7.7.a require verification that the control room air temperature is ≤ 120°F in accordance with the Surveillance Frequency

Control Program. This check is performed as a parameter check during operator rounds. Unit 2 CTS 4.7.7.b requires, in part, starting each air conditioning unit, unless already operating, and verifying that it operates for at least 8 hours. CTS does not provide a specific surveillance that verifies the design capability of the control room AC units. ITS SR 3.7.11.1 requires a verification that the CRACS has the capability to remove the assumed heat load with a Frequency in accordance with the Surveillance Frequency Control Program. This changes the CTS by removing the parameter check of control room air temperature performed as part of operational and procedural processes and adding a specific surveillance to require verifying the capability of the CRACS to remove the design heat load. This also changes Unit 2 CTS by removing an operational consideration to balance AC unit runtime.

The purpose of the CRACS Surveillance is to ensure the equipment in the control room does not exceed the required equipment qualification requirements. Verifying a temperature of < 120°F does not consider heat load profile during the duration of a design basis accident. Operating each Unit 2 AC unit for 8 hours also does not necessarily confirm the capability of the AC unit under accident conditions. The proposed Surveillance verifies the heat removal capability of the CRACS is sufficient to meet design requirements and consists of a combination of testing and calculations. 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 3.7.11.1 will be performed at a periodic Frequency in accordance with the SFCP with an initial Frequency of 18 months consistent with ISTS SR 3.7.12.1. This Frequency is appropriate since significant degradation of the CRACS is slow and is not expected over this time period. This change is designated as more restrictive because it adds a Surveillance Requirement that is more comprehensive than the simplistic temperature verification provide in CTS.

M03 **Unit 2 only:** CTS 3.7.7 does not contain specific requirements for the Control Room Air Conditioning System (CRACS). Currently CRACS requirements are encompassed within the Control Room Emergency Air Cleanup System (CREACS)) Operability, Applicability and Actions requirements. ITS 3.7.11 provides a specific Technical Specification that addresses the Control Room Air Conditioning System (CRACS) separately with specific ACTIONS that address the inoperability of the air conditioning units. This changes CTS by incorporating new Technical Specification requirements for the CRACS based on ISTS 3.7.12 (ITS 3.7.11).

The purpose of the CRACS is to maintain the temperature of the control room during normal operations and accident conditions to support control room equipment and maintain temperatures within the respective equipment qualification temperature limits. This change is acceptable because the safety analyses assume the OPERABILITY of the control room equipment. This change is designated as more restrictive because it adds new requirements to CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 **Unit 1 only:** *(Category 3 – Relaxation of Completion Time)* CTS 3.7.7.1 Action d (MODES 1, 2, 3 and 4) and Action d (MODES 5 and 6 or during movement of irradiated fuel assemblies) states "with only one air conditioning unit OPERABLE, restore at least two air conditioning units to OPERABLE status within 7 days." ITS 3.7.11 ACTION A allows 30 days to restore a required inoperable CRACS train to OPERABLE status. This changes the CTS by increasing the time allowed to restore the inoperable components from 7 days to 30 days.

The purpose of CTS 3.7.7.1 is to provide a degree of assurance that the CRACS can provide cooling when required. This change is acceptable because the Completion Time is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant systems or features. This includes the capacity and capability of remaining systems or features, a reasonable time for repairs or replacement, and the low probability of a DBA occurring during the allowed Completion Time. The CRACS train is still required to be restored to OPERABLE status and can perform its function without one air conditioning train. This change is designated as less restrictive because additional time is allowed in the ITS to restore inoperable equipment to within the LCO limits than was allowed in the CTS.

L02 **Unit 1 only:** *(Category 4 – Relaxation of Required Action)* CTS 3.7.7.1 Action f (MODES 1, 2, 3 and 4) requires, when three air conditioning units are inoperable for reasons other than an inoperable control room envelope boundary, to restore at least one air conditioning unit within 24 hours or be in at least HOT STANDBY (MODE 3) with 6 hours and COLD SHUTDOWN (MODE 5) within the following 30 hours. ITS ACTION C requires, for a similar condition, to be in MODE 3 within 6 hours and in MODE 4 within 12 hours with a Note stating that LCO 3.0.4.a is not applicable when entering MODE 4. This changes the CTS by changing the end state of CTS 3.7.7.1 Action f from "COLD SHUTDOWN within the following 30 hours" to "MODE 4 within 12 hours."

The purpose in the CTS action to shutdown the unit when the LCO cannot be restored within the required Completion Time is to place the unit in a MODE that minimizes overall plant risk. Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 as indicated in CE-NPSD-1186-A, Revision 00, "Technical Justification for the Risk-Informed Modification to Selected Required Action End States for CEOG Member PWRs," dated October 2001 (ADAMS Accession No. 110410539). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. Voluntary entry into MODE 5 may continue to be made as it is also an acceptable low-risk state. The change is consistent with similar changes made to CTS 3.7.7.1 in Amendment 234, "St. Lucie Plant, Unit Nos. 1 and 2 – Issuance of

Amendments Regarding Changes in Selected Technical Specifications End States (CAC Nos. MF8106 and MF8107; Formerly CAC NOS. MF6683 AND MF6684)," dated August 30, 2016, (ADAMS Accession No. ML16210A374). This change is acceptable because the modification of the end state from MODE 5 to MODE 4 is consistent with CE-NPSD-1186-A and corrects an inconsistency in the CTS end states for Actions intended to place the unit in a condition outside of the LCO Applicability. Therefore, this change corrects that oversight. This change is designated as less restrictive because instead of requiring the plant to achieve MODE 5 (COLD SHUTDOWN), the ITS end state is MODE 4 (HOT SHUTDOWN) with LCO 3.0.4.a allowance not applicable.

L03 **Unit 1 only:** *(Category 4 – Relaxation of Required Action)* CTS 3.7.7.1 Action d (MODES 5 and 6 or during movement of irradiated fuel assemblies) requires immediate suspension of irradiated fuel assembly movement when a required inoperable air conditioning (AC) unit cannot be restored within the required Completion Time. ITS 3.7.11 includes an optional action, Required Action D.1, to place an OPERABLE AC unit in operation. This changes the CTS by adding an optional action in MODES 5 and 6 and during movement of irradiated fuel assemblies to immediately suspend irradiated fuel assemblies.

The purpose of CTS 3.7.7.1 action in MODES 5, 6, or during movement of irradiated fuel assemblies is to place the plant in a condition where the consequences of a fuel handling accident are precluded or mitigated when the LCO cannot be restored within the allowed Completion Time. The proposed action to place the remaining OPERABLE CRACS train in service ensures the train is OPERABLE and any active failure will be readily detected. This change is acceptable because the optional action is consistent with safe operation under the specified Condition, considering the OPERABLE status of the redundant train and single active failure to start is precluded by placing the OPERABLE train in service. In addition, the option to immediately suspend irradiated fuel assemblies is retained in the ITS. Therefore, the remedial actions continue to ensure the consequences of a fuel handling accident are precluded or mitigated when the LCO cannot be restored within the required Completion Time. This change is designated as less restrictive because it adds an optional Required Action and Completion Time that CTS does not include.

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

CTS

3.7 PLANT SYSTEMS

3.7.~~12~~ 11 Control Room ~~Emergency Air Temperature Control~~ Air Conditioning System (~~CREATCS~~ CRACS) ① ②

3.7.7.1 LCO 3.7.~~12~~ 11 Two ~~CREATCS~~ CRACS trains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, 4, ~~[~~5, and 6,~~]~~
During movement of ~~[recently]~~ irradiated fuel assemblies. ③

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action d DOC L01	A. One ~~CREATCS~~ required CRACS train inoperable.	A.1 Restore ~~CREATCS~~ CRACS train to OPERABLE status.	30 days	①
Action f NOTE Action f DOC A02 DOC L02	B. ------------ NOTE ----------- Not applicable when second ~~CREATCS~~ CRACS train intentionally made inoperable. -------------------------------- Two ~~CREATCS~~ required CRACS trains inoperable in MODE 1, 2, 3, or 4.	B.1 Restore at least one ~~CREATCS~~ CRACS train to OPERABLE status.	24 hours	② ①
Action d Action f DOC L02	C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. <u>AND</u> C.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 12 hours	

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC L03 Action d	D. Required Action and associated Completion Time of Condition A not met ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	D.1 Place OPERABLE CRACS ~~CREATCS~~ train in operation. <u>OR</u> D.2 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately Immediately	② ③
DOC M01	E. Two required CRACS ~~CREATCS~~ trains inoperable ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	E.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately	② ③

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.7.1.a DOC M02	SR 3.7.~~12~~11.1	Verify the CRACS ~~each CREATCS train~~ has the capability to remove the assumed heat load.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ③

CTS

3.7 PLANT SYSTEMS

3.7.~~12~~ 11 Control Room Air Conditioning ~~Emergency Air Temperature Control~~ System (CRACS ~~CREATCS~~) ① ②

3.7.7 LCO 3.7.~~12~~ 11 Two CRACS ~~CREATCS~~ trains shall be OPERABLE.

Applicability APPLICABILITY: MODES 1, 2, 3, 4, ~~[~~5, and 6,~~]~~ ③
During movement of ~~[recently]~~ irradiated fuel assemblies.

DOC M03 ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
	A. One required CRACS ~~CREATCS~~ train inoperable.	A.1 Restore CRACS ~~CREATCS~~ train to OPERABLE status.	30 days	①
DOC M03 DOC M03	B. ------------ NOTE ----------- Not applicable when second CRACS ~~CREATCS~~ train intentionally made inoperable. -------------------------------- Two required CRACS ~~CREATCS~~ trains inoperable in MODE 1, 2, 3, or 4.	B.1 Restore at least one CRACS ~~CREATCS~~ train to OPERABLE status.	24 hours	② ①
DOC M03	C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.	C.1 Be in MODE 3. AND C.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	6 hours 12 hours	

CTS

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
DOC M03	D. Required Action and associated Completion Time of Condition A not met ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	D.1 Place OPERABLE CRACS ~~CREATCS~~ train in operation. OR D.2 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately Immediately	② ③
DOC M03	E. Two required CRACS ~~CREATCS~~ trains inoperable ~~[~~in MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies.	E.1 Suspend movement of ~~[recently]~~ irradiated fuel assemblies.	Immediately	② ③

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.7.a DOC M02	SR 3.7.~~12~~ 11.1	Verify the CRACS ~~each CREATCS train~~ has the capability to remove the assumed heat load.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ③

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.11, CONTROL ROOM AIR CONDITIONING SYSTEM (CRACS)

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

2. The ISTS 3.7.12 title "Control Room Emergency Air Temperature Control System (CREATCS)" has been changed to "Control Room Air Conditioning System (CRACS)" consistent with the St. Lucie Plant (PSL) site specific terminology. In addition, PSL design does not include the Essential Chilled Water System (ISTS 3.7.10). Therefore, ISTS 3.7.10 is not included in the PSL ITS. The Control Room Emergency Air Temperature Control System (ISTS 3.6.12) is renumbered as ITS 3.7.11.

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

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

B 3.7 PLANT SYSTEMS

B 3.7.~~12~~ 11 Control Room ~~Emergency Air Temperature Control~~ Air Conditioning System (~~CREATCS~~ CRACS) ① ②

BASES

BACKGROUND

The ~~CREATCS~~ CRACS Insert 1 provides temperature control for the control room ~~following isolation of the control room.~~ Insert 2

The ~~CREATCS~~ CRACS consists of ~~two independent,~~ three redundant trains that provide cooling ~~and heating~~ of recirculated control room air. Each train consists of ~~heating coils,~~ cooling coils, instrumentation, and controls to provide for control room temperature control. ①

The ~~CREATCS~~ CRACS is a~~n emergency~~ system~~, parts of~~ which ~~may~~ also operate s during normal unit operations. A single train will provide the required temperature control to maintain the control room ~~between [70]°F and [85]~~ ≤ 75°F. The ~~CREATCS~~ CRACS operation to maintain the control room temperature is discussed in the U FSAR, Section s ~~[~~6.4~~]~~ (Ref. 1) and 9.4 (Ref. 2). ③ ③

APPLICABLE SAFETY ANALYSES

The design basis of the ~~CREATCS~~ CRACS is to maintain ambient temperature of the control room ~~environment throughout 30 days of continuous occupancy.~~ Insert 3

The ~~CREATCS~~ CRACS components are arranged in redundant ~~safety related~~ trains. During emergency operation, the ~~CREATCS~~ CRACS maintains the temperature ~~between [70]°F and [85]~~ ≤ 125°F. A single active failure of a component of the ~~CREATCS~~ CRACS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. Redundant detectors and controls are provided for control room temperature control. The ~~CREATCS~~ CRACS is designed in accordance with Seismic Category I requirements. The ~~CREATCS~~ CRACS is capable of removing sensible and latent heat loads from the control room, considering equipment heat loads and personnel occupancy requirements, to ensure equipment OPERABILITY. ③ ①

The ~~CREATCS~~ CRACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant trains of the ~~CREATCS~~ CRACS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other train. Insert 4 Total system failure could result in the equipment operating temperature exceeding limits in the event of an accident. ①

The ~~CREATCS~~ CRACS is considered OPERABLE when the individual components that are necessary to maintain the control room temperature are OPERABLE in both trains. These components include the cooling coils and associated temperature control instrumentation. In addition, the ~~CREATCS~~ CRACS must be OPERABLE to the extent that air circulation can be maintained.

Insert 1 ①

is a subsystem of the Control Room Ventilation System and

Insert 2 ①

during normal operations and accident conditions

Insert 3 ①

for equipment qualification. Since equipment within the control room is qualified for higher temperature, loss of all air conditioning units is acceptable. At 125°F, continued habitability for periods of 2 hours is permissible. Through judicious allocation of plant operating personnel it is possible to maintain continuous occupancy of the control room.

Insert 4

①

Electrical independence requires that the two trains be powered from separate emergency buses.

BASES

APPLICABILITY

In MODES 1, 2, 3, 4, ~~[~~5, and 6,~~]~~ and during movement of ~~[recently]~~ irradiated fuel assemblies ~~[(i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~, the ~~CREATCS~~ CRACS must be OPERABLE to ensure that the control room temperature will not exceed equipment OPERABILITY requirements following isolation of the control room. ③ ①

~~In MODES 5 and 6, CREATCS may not be required for those facilities which do not require automatic control room isolation.~~ ①

ACTIONS

A.1

With one ~~CREATCS~~ required CRACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE ~~CREATCS~~ CRACS train is adequate to maintain the control room temperature within limits. The 30 day Completion Time is reasonable, based on the low probability of an event occurring requiring control room isolation, consideration that the remaining train can provide the required capabilities, and the alternate safety or nonsafety related cooling means that are available. ①

B.1

If two required ~~CREATCS~~ CRACS trains are inoperable, at least one ~~CREATCS~~ CRACS train must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second ~~CREATCS~~ CRACS train is intentionally ~~declared~~ made inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be inoperable, or if both trains are discovered to be inoperable at the same time. The Completion Time is based on Reference ~~2~~ 3 which demonstrated that the 24 hour Completion Time is acceptable based on the infrequent use of the Required Action and the small incremental effect on plant risk. ①

C.1 and C.2

~~------------------------------REVIEWER'S NOTE------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ④

BASES

ACTIONS (continued)

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~ ④

~~---~~

In MODE 1, 2, 3, or 4, when one or more required ~~CREATCS~~ CRACS trains cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes overall plant risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. ~~2~~ 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. ①

Required Action C.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

~~[~~ D.1 and D.2

In MODE 5 or 6, or during movement of ~~[recently]~~ irradiated fuel assemblies, when Required Action A.1 cannot be completed within the required Completion Time, ~~the~~ an OPERABLE ~~CREATCS~~ CRACS train must be placed in operation immediately. This action ensures that the remaining train is OPERABLE~~, that no failures preventing automatic actuation will occur,~~ and that any active failure will be readily detected. ③

BASES

ACTIONS (continued)

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position. ~~]~~ ③

~~[~~ E.1

In ~~[~~MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies, with two required CRACS ~~CREATCS~~ trains inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position. ~~]~~ ③

SURVEILLANCE REQUIREMENTS

SR 3.7.~~12~~ 11 .1

This SR verifies that the heat removal capability of the system is sufficient to meet design requirements. This SR consists of a combination of testing and calculations. ~~[An [18] month Frequency is appropriate, since significant degradation of the CREATCS is slow and is not expected over this time period.~~

~~OR~~ ③

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

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ④
~~--]~~ ③

REFERENCES

1. U FSAR, Section ~~[~~6.4~~]~~. ③

2. UFSAR, Section 9.4

3 ~~2~~. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. ①

4 ~~3~~. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010.

B 3.7 PLANT SYSTEMS

B 3.7.~~12~~ 11 Control Room ~~Emergency Air Temperature Control~~ Air Conditioning System (~~CREATCS~~ CRACS) ① ②

BASES

BACKGROUND

The ~~CREATCS~~ CRACS Insert 1 provides temperature control for the control room ~~following isolation of the control room~~. Insert 2

The ~~CREATCS~~ CRACS consists of ~~two independent,~~ three redundant trains that provide cooling ~~and heating~~ of recirculated control room air. Each train consists of ~~heating coils,~~ cooling coils, instrumentation, and controls to provide for control room temperature control. ①

The ~~CREATCS~~ CRACS is a~~n emergency~~ system~~, parts of~~ which ~~may~~ also operate s during normal unit operations. A single train will provide the required temperature control to maintain the control room between ~~[70]~~ 70°F and ~~[85]~~ 80°F. The ~~CREATCS~~ CRACS operation to maintain the control room temperature is discussed in the U FSAR, Section s ~~[~~6.4~~]~~ and 9.4 (Ref. 2) (Ref. 1). ③ ③

APPLICABLE SAFETY ANALYSES

The design basis of the ~~CREATCS~~ CRACS is to maintain ambient temperature of the control room ~~environment throughout 30 days of continuous occupancy.~~ Insert 3

The ~~CREATCS~~ CRACS components are arranged in redundant ~~safety related~~ trains. During emergency operation, the ~~CREATCS~~ CRACS maintains the temperature between ~~[70]~~ 76°F and ~~[85]~~ 84°F. A single active failure of a component of the ~~CREATCS~~ CRACS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. Redundant detectors and controls are provided for control room temperature control. The ~~CREATCS~~ CRACS is designed in accordance with Seismic Category I requirements. The ~~CREATCS~~ CRACS is capable of removing sensible and latent heat loads from the control room, considering equipment heat loads and personnel occupancy requirements, to ensure equipment OPERABILITY. ③ ①

The ~~CREATCS~~ CRACS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant trains of the ~~CREATCS~~ CRACS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other train. Insert 4 Total system failure could result in the equipment operating temperature exceeding limits in the event of an accident.

The ~~CREATCS~~ CRACS is considered OPERABLE when the individual components that are necessary to maintain the control room temperature are OPERABLE in both trains. These components include the cooling coils and associated temperature control instrumentation. In addition, the ~~CREATCS~~ CRACS must be OPERABLE to the extent that air circulation can be maintained. ①

Insert 1 ①

is a subsystem of the Control Room Ventilation System and

Insert 2 ①

during normal operations and accident conditions

Insert 3 ①

for equipment qualification. CRACS is designed to control the environment assuming the simultaneous operation of all equipment located in the control room envelope coinciding with the highest site design ambient conditions. Under these assumptions, the system is capable of maintaining the environmental conditions of 76°F to 84°F and less than 70 percent relative humidity during an accident condition.

Insert 4 ①

Electrical independence requires that the two trains be powered from separate emergency buses.

BASES

APPLICABILITY

In MODES 1, 2, 3, 4, ~~[~~5, and 6,~~]~~ and during movement of ~~[recently]~~ irradiated fuel assemblies ~~[(i.e., fuel that has occupied part of a critical reactor core within the previous [X] days)]~~, the ~~CREATCS~~ CRACS must be OPERABLE to ensure that the control room temperature will not exceed equipment OPERABILITY requirements following isolation of the control room. ③ ①

~~In MODES 5 and 6, CREATCS may not be required for those facilities which do not require automatic control room isolation.~~ ①

ACTIONS

A.1

With one ~~CREATCS~~ CRACS required train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE ~~CREATCS~~ CRACS train is adequate to maintain the control room temperature within limits. The 30 day Completion Time is reasonable, based on the low probability of an event occurring requiring control room isolation, consideration that the remaining train can provide the required capabilities, and the alternate safety or nonsafety related cooling means that are available. ①

B.1

If two required ~~CREATCS~~ CRACS trains are inoperable, at least one ~~CREATCS~~ CRACS train must be returned to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second ~~CREATCS~~ CRACS train is intentionally ~~declared~~ made inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be inoperable, or if both trains are discovered to be inoperable at the same time. The Completion Time is based on Reference ~~2~~ 3 which demonstrated that the 24 hour Completion Time is acceptable based on the infrequent use of the Required Action and the small incremental effect on plant risk. ①

C.1 and C.2

~~------------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ④

BASES

ACTIONS (continued)

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~ ④

~~---~~

In MODE 1, 2, 3, or 4, when one or more required ~~CREATCS~~ CRACS trains cannot be restored to OPERABLE status within the required Completion Time, the unit must be placed in a MODE that minimizes overall plant risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. ~~2~~ 3). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. ①

Required Action C.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

~~[~~ D.1 and D.2

In MODE 5 or 6, or during movement of ~~[recently]~~ irradiated fuel assemblies, when Required Action A.1 cannot be completed within the required Completion Time, ~~the~~ an OPERABLE ~~CREATCS~~ CRACS train must be placed in operation immediately. This action ensures that the remaining train is OPERABLE~~, that no failures preventing automatic actuation will occur,~~ and that any active failure will be readily detected. ③

BASES

ACTIONS (continued)

An alternative to Required Action D.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel assemblies to a safe position. ~~]~~ ③

~~[~~ E.1

In ~~[~~MODE 5 or 6, or~~]~~ during movement of ~~[recently]~~ irradiated fuel assemblies, with two required CRACS ~~CREATCS~~ trains inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes the accident risk. This does not preclude the movement of fuel to a safe position. ~~]~~ ③

SURVEILLANCE REQUIREMENTS

SR 3.7.~~12~~ 11.1

This SR verifies that the heat removal capability of the system is sufficient to meet design requirements. This SR consists of a combination of testing and calculations. ~~[An [18] month Frequency is appropriate, since significant degradation of the CREATCS is slow and is not expected over this time period.~~

~~OR~~ ③

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

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Plants controlling Surveillance Frequencies under a Surveillance Frequency Control Program should utilize the appropriate Frequency description, given above, and the appropriate choice of Frequency in the Surveillance Requirement.~~ ④
~~---]~~ ③

REFERENCES

1. U FSAR, Section ~~[~~6.4~~]~~. ③

2. UFSAR, Section 9.4

3 ~~2~~. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. ①

4 ~~3~~. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.11 BASES, CONTROL ROOM AIR CONDITIONING SYSTEM (CRACS)

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

2. The ISTS 3.7.12 title "Control Room Emergency Air Temperature Control System (CREATCS)" has been changed to "Control Room Air Conditioning System (CRACS)" consistent with the St. Lucie Plant (PSL) site specific terminology. In addition, PSL design does not include the Essential Chilled Water System (ISTS 3.7.10). Therefore, ISTS 3.7.10 is not included in the PSL ITS. The Control Room Emergency Air Temperature Control System (ISTS 3.6.12) is renumbered as ITS 3.7.11.

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.11, CONTROL ROOM AIR CONDITIONING SYSTEM (CRACS)

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

ATTACHMENT 12

3.7.12, Emergency Core Cooling System (ECCS) Area Ventilation System

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

A01

PLANT SYSTEMS

3/4.7.8 ECCS AREA VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

LA01

LCO 3.7.12 ~~3.7.8.1~~ Two ~~independent~~ ECCS area ~~exhaust air filter~~ ventilation trains shall be OPERABLE.

Applicability **APPLICABILITY**: MODES 1, 2, 3 and 4. Add proposed LCO Note L01

ACTION:

ACTION A ~~With~~ one ECCS area ~~exhaust air filter~~ ventilation train inoperable~~,~~ restore ~~the inoperable~~ ECCS area ventilation train to OPERABLE

ACTION A.1 status within 7 days or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT~~

ACTION D ~~SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours. LCO 3.0.4.a is not applicable when entering HOT

ACTION D.2 Note SHUTDOWN.

Add proposed ACTION B L02

Add proposed ACTION C L02

SURVEILLANCE REQUIREMENTS

~~4.7.8.1 Each ECCS area exhaust air filter train shall be demonstrated OPERABLE:~~

SR 3.7.12.1 ~~a.~~ In accordance with the Surveillance Frequency Control Program ~~by initiating, from the control room, flow through the HEPA filter and charcoal adsorber train and verifying that the~~ Operate each ECCS area ventilation train ~~operates~~ for ~~at least~~ ≥ 15 continuous minutes. LA02

SR 3.7.12.2 ~~b.~~ ~~By~~ perform~~ing~~ required ECCS area ventilation system filter testing in accordance with the Ventilation Filter Testing Program (VFTP).

~~c.~~ In accordance with the Surveillance Frequency Control Program:

~~1.~~ Verifying that the air flow distribution is uniform within 20% across HEPA filters and charcoal adsorbers when tested in accordance with ASME N510-1989. See ITS 5.5.8

SR 3.7.12.3 ~~2.~~ Verify~~ing that the filter~~ each ECCS area ventilation train ~~starts on a Safety Injection~~ actuates on an actual or simulated actuation signal except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position. L03 L04

Add proposed SR 3.7.12.4 M01

Ⓐ01

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Ⓐ01

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A01

PLANT SYSTEMS

3/4.7.8 ECCS AREA VENTILATION SYSTEM

LIMITING CONDITION FOR OPERATION

LCO 3.7.12 ~~3.7.8~~ Two ~~independent~~ ECCS area ventilation trains ~~systems~~ shall be OPERABLE. LA01

Add proposed LCO Note L01

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

ACTION:

ACTION A
ACTION A.1
ACTION D
ACTION D.2
Note

~~With~~ one ECCS area ventilation train ~~system~~ inoperable, restore ECCS area ventilation train ~~the inoperable system~~ to OPERABLE status within 7 days or be in ~~at least HOT STANDBY~~ MODE 3 within ~~the next~~ 6 hours and in ~~HOT SHUTDOWN~~ MODE 4 within ~~the following 6~~ 12 hours. LCO 3.0.4.a is not applicable when entering HOT SHUTDOWN.

Add proposed ACTION B L02

Add proposed ACTION C L02

SURVEILLANCE REQUIREMENTS

~~4.7.8 Each ECCS area ventilation system shall be demonstrated OPERABLE:~~

SR 3.7.12.1 ~~a.~~ In accordance with the Surveillance Frequency Control Program ~~by initiating from the control room and verifying that the system operates~~ Operate each ECCS area ventilation train for ~~at least~~ ≥ 15 continuous minutes. LA02

SR 3.7.12.2 ~~b.~~ ~~By~~ perform~~ing~~ required ECCS area ventilation system filter testing in accordance with the Ventilation Filter Testing Program (VFTP).

SR 3.7.12.3 ~~c.~~ In accordance with the Surveillance Frequency Control Program ~~by~~ verify~~ing~~ ~~that the~~ each ECCS area ventilation train ~~system starts on a~~ safety injection actuates on an actual or simulated actuation ~~test~~ signal except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position. L04 L03

Add proposed SR 3.7.12.4 M01

DISCUSSION OF CHANGES
ITS 3.7.12, ECCS AREA VENTILATION SYSTEM

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.

MORE RESTRICTIVE CHANGES

M01 ITS SR 3.7.12.4 states "Verify one ECCS area ventilation train can maintain a negative pressure relative to adjacent areas during the post accident mode of operation at a flow rate of < 27,000 cfm." CTS does not require this Surveillance. This changes CTS by adding a requirement that equipment be able to provide a negative pressure relative to adjacent areas inside the ECCS pump room boundary. PSL controls periodic Frequencies for Surveillances in accordance with the Surveillance Frequency Control Program per CTS 6.8.4.o (Unit 1) and CTS 6.8.4.q (Unit 2). Therefore, SR 3.7.12.4 will be performed at a Frequency in accordance with the Surveillance Frequency Control Program with an initial Frequency of 18 months on a staggered test basis consistent with the ISTS SR 3.7.12.4 Frequency.

The purpose of ITS SR 3.7.12.4 is to provide assurance that the ECCS pump room boundary can support the function of the ECCS Area Ventilation System of maintaining a negative pressure inside the ECCS pump room boundary while filtering air discharged from those areas to prevent unfiltered LEAKAGE. This change is necessary to ensure sufficient testing is conducted at a frequency to assure that the necessary quality of systems and components is maintained, and that the ECCS Area Ventilation System LCO will be met. This SR verifies the integrity of the ECCS pump room boundary.

The performance Frequency of ITS SR 3.7.12.4 is in accordance with the Surveillance Frequency Control Program (SFCP). 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). The initial periodic Frequency established in accordance with the SFCP will be 18 months on a staggered test basis. See 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), which approved the adoption of a SFCP at PSL.

This change is designated as more restrictive because a Surveillance Requirement is added to the Technical Specifications.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* Unit 1 CTS 3.7.8.1 and Unit 2 CTS 3.7.8 state that two "independent" ECCS area ventilation systems shall be OPERABLE. ITS LCO 3.7.12 states that two ECCS area ventilation trains shall be OPERABLE. This changes the CTS by removing details that the trains are "independent" from the CTS to the Bases.

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

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* Unit 1 CTS 4.7.8.1.a and Unit 2 CTS 4.7.8.a state, in part, that each ECCS area ventilation train shall be demonstrated OPERABLE by “initiating, from the control room, and verifying that the system operates for at least 15 minutes.” ITS SR 3.7.12.1 states "Operate each ECCS area ventilation train for ≥ 15 continuous minutes." This changes the CTS by moving the requirement to actuate the train from the control room to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement to operate the ECCS area ventilation trains for ≥ 15 continuous minutes. Also, this change is acceptable because these types of procedural details will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirements)* Unit 1 CTS 3.7.8.1 and Unit 2 CTS 3.7.8 requires two ECCS area ventilation trains to be OPERABLE. ITS LCO 3.7.12 includes the same ECCS area ventilation trains OPERABILITY requirement but is modified by a Note, which states "The ECCS pump room boundary may be opened intermittently under administrative control." This changes the CTS by allowing the ECCS pump room boundary to be opened under administrative control when the ECCS area ventilation trains are required to be OPERABLE.

The purpose of the Note to ITS LCO 3.7.12 is to allow the ECCS pump room negative pressure boundary to be opened under administrative control. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. The ITS allowance requires administrative controls to be in place in order to open the boundary. For entry and exit through doors the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for ECCS pump room negative pressure boundary isolation is indicated. These administrative controls minimize risk by providing compensatory actions that ensure the boundary can be rapidly restored to the design condition. The required administrative controls are described in the Bases. 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)* Unit 1 CTS 3.7.8.1 and Unit 2 CTS 3.7.8 Action contain compensatory actions to take when one ECCS area ventilation train is inoperable. The Unit 1 CTS 3.7.8.1 and Unit 2 CTS 3.7.8 Action does not contain compensatory actions to take when two ECCS area ventilation trains are inoperable. Therefore, CTS 3.0.3 would be entered for two ECCS area ventilation trains inoperable. CTS 3.0.3 requires action to be initiated within one hour to be in HOT STANDBY (ITS MODE 3) in the following 6 hours, to be in HOT SHUTDOWN (ITS MODE 4) in the following 6 hours, and to be in COLD SHUTDOWN (ITS MODE 5) in the subsequent 36 hours. ITS 3.7.12 ACTION B states, with two ECCS area ventilation trains inoperable due to an inoperable ECCS pump room boundary, to restore the ECCS pump room boundary to OPERABLE status within 24 hours. Additionally, ITS 3.7.12 ACTION C requires, when two ECCS area ventilation trains are unintentionally inoperable for reasons other than Condition B (i.e., an inoperable ECCS pump room boundary), one ECCS area ventilation train to be restored to OPERABLE status within 24 hours. This changes the CTS by not requiring entry into LCO 3.0.3 and allowing 24 hours to restore the ECCS pump room boundary to OPERABLE status and allowing 24 hours to restore at least one ECCS area ventilation train to OPERABLE status when two ECCS area ventilation trains are unintentionally inoperable for reasons other than Condition B.

ITS 3.7.12 ACTION B allows 24 hours to restore the pressure ECCS pump room boundary to OPERABLE status before requiring an orderly shutdown from operating conditions. This change is acceptable because this change would allow for routine repairs. Compensatory measures will be taken to protect plant personnel from potential hazards, and preplanned compensatory measures will be in place to address both the intentional and unintentional inoperability of the ECCS pump room boundary. Furthermore, the 24 hour Completion Time is based on the low probability of a DBA occurring during this time period and the compensatory measures that will be taken.

The addition of ITS 3.7.12 ACTION B is consistent with the Revision 5 of the ISTS as adopted by Technical Specifications Task Force (TSTF) traveler TSTF-287-A, Revision 5, “Ventilation System Envelope Allowed Outage Time” dated March 16, 2000. As stated in the Unit 1 and Unit 2 UFSAR, Section 9.4.3.1, the ECCS Area Ventilation System is sized to maintain a slightly negative pressure in the ECCS pump room area with respect to surrounding areas of the reactor auxiliary building. Access into the ECCS pump room area from other areas of the reactor auxiliary building is through gasketed self-closing or locked closed doors. Opening of locked doors is controlled under administrative controls.

ITS 3.7.12 ACTION C allows 24 hours to restore at least one ECCS area ventilation trains to OPERABLE status before requiring an orderly shutdown from operating conditions. This change is acceptable because overall safety is enhanced by avoiding an unnecessary plant shutdown and minimizing plant transients and associated transitions and realignment risks. The Condition is modified by a Note stating it is not applicable if the second ECCS area ventilation train is intentionally declared inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. ITS 3.7.12, Condition C is only applicable if one ECCS area ventilation train is inoperable for any reason and the second ECCS area ventilation train is discovered to be inoperable, or if both ECCS area ventilation trains are discovered to be inoperable at the same time.

The addition of ITS 3.7.12 ACTION C is consistent with Revision 5 of the ISTS as adopted by TSTF traveler TSTF-426-A, Revision 5, “Revise or Add Actions to Preclude Entry into LCO 3.0.3 - RITSTF Initiatives 6b & 6c” dated May 30, 2013. The TSTF was approved for licensee adoption as documented in Federal Register Notice *78 FR 32476* (NRC ADAMS Accession No. ML13036A381). The PSL Unit 1 and Unit 2 ECCS Area Ventilation System design does not rely upon the system to provide temperature control of the ECCS pump rooms, and therefore, does not affect OPERABILITY of the ECCS pumps. The reactor auxiliary building ventilation systems are designed to provide ventilation to permit proper functioning of equipment during normal operation.

Additionally, ITS 3.7.12 ACTION D continues to require the unit to be placed outside of the MODE of Applicability when two ECCS area ventilation trains are inoperable if any Required Action of Condition A, B, or C cannot be met with the associated Completion Time. LCO 3.0.3 continues to apply when two ECCS area ventilation trains are intentionally made inoperable for reasons other than an inoperable ECCS pump room boundary.

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

L03 *(Category 6 - Relaxation Of Surveillance Requirement Acceptance Criteria)* Unit 1 CTS 4.7.8.1.c.2 and Unit 2 CTS 4.7.8.c require verification of the automatic actuation of ECCS area ventilation trains on a safety injection actuation signal (Unit 1) and safety injection actuation “test” signal (Unit 2). ITS SR 3.7.12.3 specifies that the signal may be from either an "actual" or simulated (i.e., test) signal. This changes the CTS by explicitly allowing the use of either an actual or simulated signal for the test.

The purpose of the ECCS area ventilation train actuation test is to ensure the ECCS area ventilation trains operate correctly upon receipt of an actuation signal. This change is acceptable because it has been determined that the relaxed Surveillance Requirement acceptance criteria are not necessary for verification that the equipment used to meet the LCO can perform its required functions. Equipment cannot discriminate between an "actual," "simulated," or "test" signal and, therefore, the results of the testing are unaffected by the type of signal used to initiate the test. This change allows taking credit for unplanned actuation if sufficient information is collected to satisfy the Surveillance test requirements. The change also allows a simulated signal to be used, if necessary. This change is designated as less restrictive because less stringent Surveillance Requirements are being applied in the ITS than were applied in the CTS.

L04 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* Unit 1 CTS 4.7.8.1.c.2 and Unit 2 CTS 4.7.8.c require verification of the automatic actuation of ECCS area ventilation trains on a safety injection actuation signal (Unit 1) and safety injection actuation “test” signal (Unit 2). ITS SR 3.7.12.3 requires verification that each ECCS area ventilation train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position. This changes the CTS by excluding those ECCS area ventilation automatic dampers and valves that are locked, sealed, or otherwise secured in position from the verification.

The purpose of the ECCS area ventilation train actuation test is to provide assurance that if an event occurred requiring the ECCS area ventilation dampers and valves to be in their correct position, those requiring automatic actuation would actuate to their correct position. 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. Those automatic dampers and valves that are locked, sealed, or otherwise secured in the actuated position are not required to actuate on a safety injection actuation signal in order to perform their safety function because they are already in the required position. Testing such valves would not provide any additional assurance of OPERABILITY. Valves and dampers that are required to actuate will continue to be tested. In addition, restoration of an automatic valve or damper to the non-actuated position requires verification that the SR has been met within its required Frequency. 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

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 Emergency Core Cooling System (ECCS) Area Ventilation ~~Pump Room Exhaust Air Cleanup~~ System ~~(PREACS)~~

① ③

3.7.8.1 LCO 3.7.~~13~~ 12 Two ECCS area ventilation ~~PREACS~~ trains shall be OPERABLE. ① ③

DOC L01 ---NOTE---
The ECCS pump room boundary may be opened intermittently under administrative control.

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.7.8.1 Action	A. One ECCS area ventilation ~~PREACS~~ train inoperable.	A.1 Restore ECCS area ventilation ~~PREACS~~ train to OPERABLE status.	7 days	①
DOC L02	B. Two ECCS area ventilation ~~PREACS~~ trains inoperable due to inoperable ECCS pump room boundary.	B.1 Restore ECCS pump room boundary to OPERABLE status.	24 hours	①
DOC L02	C. ------------ NOTE ------------ Not applicable when second ECCS area ventilation ~~PREACS~~ train intentionally made inoperable. -------------------------------- Two ECCS area ventilation ~~PREACS~~ trains inoperable for reasons other than Condition B.	C.1 Restore at least one ECCS area ventilation ~~PREACS~~ train to OPERABLE status.	24 hours	① ①

③ ①

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
3.7.8.1 Action	D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND	6 hours
3.7.8.1 Action		D.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.8.1.a	SR 3.7.~~13~~ 12.1	Operate each ECCS ~~PREACS~~ area ventilation train for ≥ 15 continuous minutes ~~[with heater operating]~~.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ② ②
4.7.8.1.b	SR 3.7.~~13~~ 12.2	Perform required ECCS ~~PREACS~~ area ventilation filter testing in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~.	In accordance with the ~~[~~VFTP~~]~~	③ ① ②

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.7.8.1.c.2 DOC L03 DOC L04	SR 3.7.~~13~~ 12 .3	Verify each ECCS ~~PREACS~~ area ventilation train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ② ②
DOC M01	SR 3.7.~~13~~ 12 .4	Verify one ECCS ~~PREACS~~ area ventilation train can maintain a negative pressure ~~≥ [ ] inches water gauge~~ relative to atmospheric pressure during the ~~[~~post accident~~]~~ mode of operation at a flow rate of ≤ ~~[20,000]~~ 27,000 cfm.	~~[[18] months on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ② ② ②
	~~SR 3.7.13.5~~	~~[Verify each ECCS PREACS filter bypass damper can be opened, except for dampers that are locked, sealed, or otherwise secured in the open position.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	④

3.7 PLANT SYSTEMS

3.7.~~13~~ 12 Emergency Core Cooling System (ECCS) Area Ventilation ~~Pump Room Exhaust Air Cleanup~~ System ~~(PREACS)~~ ① ③

3.7.8 **LCO 3.7.~~13~~ 12** Two ECCS area ventilation ~~PREACS~~ trains shall be OPERABLE. ① ③

DOC L01 --NOTE--
The ECCS pump room boundary may be opened intermittently under administrative control.

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

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
3.7.8 Action	A. One ECCS area ventilation ~~PREACS~~ train inoperable.	A.1 Restore ECCS area ventilation ~~PREACS~~ train to OPERABLE status.	7 days	①
DOC L02	B. Two ECCS area ventilation ~~PREACS~~ trains inoperable due to inoperable ECCS pump room boundary.	B.1 Restore ECCS pump room boundary to OPERABLE status.	24 hours	①
DOC L02	C. ------------ NOTE ------------ Not applicable when second ECCS area ventilation ~~PREACS~~ train intentionally made inoperable. -------------------------------- Two ECCS area ventilation ~~PREACS~~ trains inoperable for reasons other than Condition B.	C.1 Restore at least one ECCS area ventilation ~~PREACS~~ train to OPERABLE status.	24 hours	① ①

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
3.7.8 Action D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	AND	
3.7.8 Action	D.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY	
4.7.8.a	SR 3.7.~~13~~.1 12	Operate each ECCS ~~PREACS~~ area ventilation train for ≥ 15 continuous minutes ~~[with heater operating]~~.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ② ②
4.7.8.b	SR 3.7.~~13~~.2 12	Perform required ECCS ~~PREACS~~ area ventilation filter testing in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~.	In accordance with the ~~[~~VFTP~~]~~	③ ① ②

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
4.7.8.c DOC L03 DOC L04	SR 3.7.~~13~~12.3	Verify each ECCS ~~PREACS~~ area ventilation train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	~~[[18] months~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ② ②
DOC M01	SR 3.7.~~13~~12.4	Verify one ECCS ~~PREACS~~ area ventilation train can maintain a negative pressure ~~≥ [ ] inches water gauge~~ relative to atmospheric pressure during the ~~[~~post accident~~]~~ mode of operation at a flow rate of ≤ ~~[20,000]~~ 27,000 cfm.	~~[[18] months on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	③ ① ② ② ②
	~~SR 3.7.13.5~~	~~[Verify each ECCS PREACS filter bypass damper can be opened, except for dampers that are locked, sealed, or otherwise secured in the open position.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	④

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.12, ECCS AREA VENTILATION SYSTEM

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. Changes are made to reflect the ITS Specification number and title.

4. As stated in the Unit 1 and Unit 2 UFSAR, Section 9.4.3.1, the ECCS Area Ventilation System is sized to maintain a slightly negative pressure in the ECCS area with respect to surrounding areas of the reactor auxiliary building. Access into the ECCS pump room area from other areas of the reactor auxiliary building is through gasketed self-closing or locked closed doors. Opening of locked doors is controlled under administrative controls.

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

B 3.7 PLANT SYSTEMS

B 3.7.12~~13~~ Emergency Core Cooling System (ECCS) Area Ventilation System ~~Pump Room Exhaust Air Cleanup System (PREACS)~~ ③

BASES

BACKGROUND

The ECCS Area Ventilation System ~~PREACS~~ filters air from the area of the active ECCS components during the recirculation phase of a loss of coolant accident (LOCA). The ECCS Area Ventilation System ~~PREACS~~, in conjunction with other, normally operating systems, also provides environmental control of temperature and humidity in the ECCS pump room area and the lower reaches of the Auxiliary Building. ① ①

The ECCS Area Ventilation System ~~PREACS~~ consists of two independent and redundant trains. Each train consists of ~~a heater,~~ a prefilter ~~or demister~~, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system~~, as well as demisters functioning to reduce the relative humidity of the air stream~~. ~~A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case the main HEPA filter bank fails. The downstream HEPA filter is not credited in the accident analysis, but serves to collect charcoal fines and to back up the upstream HEPA filter, should it develop a leak~~. The system initiates filtered ventilation of the pump room and lower region of the Reactor Auxiliary Building following receipt of a safety injection actuation signal ~~or coolant injection actuation signal~~. ① ① ①

The ECCS Area Ventilation System ~~PREACS~~ is a standby system, parts of which may also operate during normal unit operations. The Reactor Auxiliary Building Main Ventilation System provides normal cooling. During emergency operations, the ECCS Area Ventilation System ~~PREACS~~ dampers are realigned and fans are started to initiate filtration. Upon receipt of ~~the actuating Engineered~~ a safety injection actuation ~~Safety Feature Actuation System~~ signal~~(s)~~, normal air discharges from the ECCS pump room, the pump room is isolated, and the stream of ventilation air discharges through the system filter trains. The prefilters ~~or demisters~~ remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers. ① ① ① ①

The ECCS Area Ventilation System ~~PREACS~~ is discussed in the UFSAR, Sections 6.3.1 ~~[6.5.1]~~, 9.4.3 ~~[9.4.5]~~, and 15.4.1 ~~[15.6.5]~~ (Refs. 1, 2, and 3, respectively), as it may be used for normal, as well as post accident, atmospheric cleanup functions. ~~The primary purpose of the heaters is to maintain the relative humidity at an acceptable level consistent with iodine removal efficiencies, as discussed in the Regulatory Guide 1.52 (Ref. 4).~~ ① ② ①

BASES

APPLICABLE SAFETY ANALYSES

The design basis of the ECCS ~~PREACS~~ Area Ventilation System is established by the large break LOCA. The system evaluation assumes a passive failure of the ECCS outside containment, such as safety injection pump seal failure, during the recirculation mode. In such a case, the system limits the radioactive release to within 10 CFR 50.67 ~~10 CFR 100~~ limits (Ref. ~~5~~ 4~~), or the NRC staff approved licensing basis (e.g., a specified fraction of 10 CFR 100 limits)~~. The analysis of the effects and consequences of a large break LOCA is presented in Reference 3. The ECCS ~~PREACS~~ Area Ventilation System also actuates following a small break LOCA, requiring the unit to go into the recirculation mode of long term cooling and to clean up releases of smaller leaks, such as from valve stem packing. ① ① ①

The two types of system failures that are considered in the accident analysis are complete loss of function and excessive LEAKAGE. Either type of failure may result in a lower efficiency of removal for any gaseous and particulate activity released to the ECCS pump rooms following a LOCA.

The ECCS ~~PREACS~~ Area Ventilation System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). ①

LCO

Two independent and redundant ECCS ~~PREACS~~ area ventilation trains are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other train coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ECCS pump room exceeding the required limits in the event of a Design Basis Accident (DBA). ①

ECCS ~~PREACS~~ Area Ventilation System is considered OPERABLE when the individual components necessary to maintain the ECCS Pump Room filtration are OPERABLE in both trains. ①

An ECCS ~~PREACS~~ area ventilation train is considered OPERABLE when its associated: ①

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow and are capable of performing their filtration functions, and

c. ~~Heater, demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. ①

BASES

LCO (continued)

The LCO is modified by a Note allowing the ECCS pump room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for ECCS pump room isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ECCS ~~PREACS~~ Area Ventilation System is required to be OPERABLE consistent with the OPERABILITY requirements of the ECCS. ①

In MODES 5 and 6, the ECCS ~~PREACS~~ Area Ventilation System is not required to be OPERABLE, since the ECCS is not required to be OPERABLE. ①

ACTIONS

A.1

With one ECCS ~~PREACS~~ area ventilation train inoperable, action must be taken to restore OPERABLE status within 7 days. During this time, the remaining OPERABLE train is adequate to perform the ECCS ~~PREACS~~ Area Ventilation System function. ① ①

The 7 day Completion Time is appropriate because the risk contribution is less than that for the ECCS (72 hour Completion Time) and this system is not a direct support system for the ECCS. The 7 day Completion Time is reasonable, based on the low probability of a DBA occurring during this time period, and the consideration that the remaining train can provide the required capability.

B.1

~~-------------------------------REVIEWER'S NOTE-------------------------------~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.~~ ④
~~---~~

ACTIONS (continued)

If the ECCS pump room boundary is inoperable, the ECCS ~~PREACS~~ area ventilation ①
trains cannot perform their intended functions. Actions must be taken to
restore an OPERABLE ECCS pump room boundary within 24 hours.
During the period that the ECCS pump room boundary is inoperable,
appropriate compensatory measures ~~[~~consistent with the intent, as
applicable, of GDC 19~~, 60, 64 and 10 CFR Part 100]~~ should be utilized to ②
protect plant personnel from potential area ventilation system hazards such as radioactive ①
contamination, toxic chemicals, smoke, temperature and relative
humidity, and physical security. Preplanned measures should be
available to address these concerns for intentional and unintentional entry
into the condition. The 24 hour Completion Time is reasonable based on
the low probability of a DBA occurring during this time period, and the use
of compensatory measures. The 24 hour Completion Time is a typically
reasonable time to diagnose, plan and possibly repair, and test most
problems with the ECCS pump room boundary.

~~-----------------------------------REVIEWER'S NOTE -----------------------------------~~
~~Condition C is not applicable to plant designs that rely on the ECCS~~
~~PREACS to provide temperature control of the ECCS pump rooms.~~
~~Reference 6 did not evaluate the effect of two inoperable ECCS PREACS~~ ⑤
~~trains on the ECCS pump room cooling function.~~
~~--~~

C.1 ④

With two ECCS ~~PREACS~~ area ventilation trains inoperable for reasons other than an ①
inoperable boundary, action must be taken to restore at least one ECCS
~~PREACS~~ area ventilation train to OPERABLE status within 24 hours. The Condition is ①
modified by a Note stating it is not applicable if the second ECCS
~~PREACS~~ area ventilation train is intentionally declared inoperable. The Required Action ①
is not intended for voluntary removal of redundant systems or
components from service. The Required Action is only applicable if one
train is inoperable for any reason and the second train is found to be
inoperable, or if both trains are found to be inoperable at the same time.
The Completion Time is based on Reference ~~6~~ 5 which demonstrated that ①
the 24 hour Completion Time is acceptable based on the low frequency of
the potential challenge and the small incremental risk associated with
continued operation.

BASES

ACTIONS (continued)

D.1 and D.2

~~----------------------------------REVIEWER'S NOTE ----------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ②

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~
~~---~~

If the ECCS ~~PREACS~~ area ventilation train or ECCS pump room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be in a MODE in which overall plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. ~~7~~ 6). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. ①

Required Action C.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.~~13~~ 12 .1 ③

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train ~~once a month~~ periodically with initiation from the control room provides an adequate check on this system. Operation ~~[with the heaters on]~~ for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that ~~[heater failure,]~~ blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~[The 31 day Frequency is based on the known reliability of equipment, and the two train redundancy available.~~ ① ② ② 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 3.7.~~13~~ 12 .2 ③

This SR verifies that the required ECCS ~~PREACS~~ Area Ventilation System testing is performed in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~. ① ②

SR 3.7.~~13~~ 12 .3 ③

This SR verifies that each ECCS ~~PREACS~~ area ventilation train starts and operates on an actual or simulated actuation signal. The SR excludes automatic dampers and valves that are locked, sealed, or otherwise secured in the actuated position. The SR does not apply to dampers or valves that are locked, sealed, or otherwise secured in the actuated position since the affected dampers or valves were verified to be in the actuated position ①

BASES

SURVEILLANCE REQUIREMENTS (continued)

prior to being locked, sealed, or otherwise secured. Placing an automatic valve or damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the valve or damper to be repositioned to the non-actuated position to support the accident analysis. Restoration of an automatic valve or damper to the non-actuated position requires verification that the SR has been met within its required Frequency. ~~[The [18] month Frequency is consistent with that specified in Regulatory Guide 1.52 (Ref. 4).~~ 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 3.7.~~13~~ 12 .4 ③

This SR verifies the integrity of the ECCS pump room enclosure. The ability of the ECCS pump room to maintain a negative pressure, with respect to potentially uncontaminated adjacent areas, is periodically tested to verify proper function of the ECCS Area Ventilation System ~~PREACS~~. During the post accident mode of operation, the ECCS Area Ventilation System ~~PREACS~~ is designed to maintain a slight negative pressure in the ECCS pump room with respect to adjacent areas to prevent unfiltered LEAKAGE. The ECCS Area Ventilation System ~~PREACS~~ is designed to maintain this negative pressure at a flow rate of ≤ 27,000 ~~[20,000]~~ cfm from the ECCS pump room. ~~[The Frequency of [18] months is consistent with the guidance provided in the NUREG-0800, Section 6.5.1 (Ref. 8).~~ ① ① ②

~~This test is conducted with the tests for filter penetration; thus, an [18] month Frequency, on a STAGGERED TEST BASIS is consistent with other filtration SRs.~~ 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
~~---~~]

~~[SR 3.7.13.5~~ ① ④

~~Operating the ECCS PREACS filter bypass damper is necessary to ensure that the system functions properly. The OPERABILITY of the bypass damper is verified if it can be opened. The SR excludes automatic dampers that are locked, sealed, or otherwise secured in the open position. The SR does not apply to dampers that are locked, sealed, or otherwise secured in the open position since the affected dampers were verified to be in the open position prior to being locked, sealed, or otherwise secured. Placing an automatic damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the damper to be closed to support the accident analysis. Restoration of an automatic damper to the closed position requires verification that the SR has been met within its required Frequency. [An [18] month Frequency is consistent with that specified in Reference 4.~~

~~OR~~

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

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

REFERENCES

1. U FSAR, Section [~~6.5.1~~]. 6.3.1 ① ②
2. U FSAR, Section ~~[9.4.5]~~. 9.4.3 ① ②
3. U FSAR, Section ~~[15.6.5]~~. 15.4.1 ① ②

BASES

REFERENCES (continued)

~~4. Regulatory Guide 1.52, Rev. [2].~~ ①

4 ~~5~~. 10 CFR ~~100.11.~~ 50.67 ①

5 ~~6~~. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010. ①

6 ~~7~~. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. ①

~~8. NUREG-0800, Section 6.5.1, Rev. 2, July 1981.~~ ①

B 3.7 PLANT SYSTEMS

B 3.7.~~13~~12 Emergency Core Cooling System (ECCS) Area Ventilation System ~~Pump Room Exhaust Air Cleanup System (PREACS)~~ ③

BASES

BACKGROUND

The ECCS Area Ventilation System ~~PREACS~~ filters air from the area of the active ECCS ①
components during the recirculation phase of a loss of coolant accident
(LOCA). The ECCS Area Ventilation System ~~PREACS~~, in conjunction with other, normally
operating systems, also provides environmental control of temperature ①
and humidity in the ECCS pump room area and the lower reaches of the
Auxiliary Building.

The ECCS Area Ventilation System ~~PREACS~~ consists of two independent and redundant trains.
Each train consists of ~~a heater,~~ a prefilter ~~or demister~~, a high efficiency ①
particulate air (HEPA) filter, an activated charcoal adsorber section for
removal of gaseous activity (principally iodines), and a fan. Ductwork,
valves or dampers, and instrumentation also form part of the system~~, as~~
~~well as demisters functioning to reduce the relative humidity of the air~~
~~stream~~. ~~A second bank of HEPA filters follows the adsorber section to~~
~~collect carbon fines and provide backup in case the main HEPA filter~~
~~bank fails. The downstream HEPA filter is not credited in the accident~~ ①
~~analysis, but serves to collect charcoal fines and to back up the upstream~~
~~HEPA filter, should it develop a leak~~. The system initiates filtered
ventilation of the pump room and lower region of the Reactor Auxiliary Building
following receipt of a safety injection actuation signal ~~or coolant injection~~ ①
~~actuation signal~~.

The ECCS Area Ventilation System ~~PREACS~~ is a standby system, parts of which may also ①
operate during normal unit operations. The Reactor Auxiliary Building
Main Ventilation System provides normal cooling. During emergency
operations, the ECCS Area Ventilation System ~~PREACS~~ dampers are realigned and fans are ①
started to initiate filtration. Upon receipt of ~~the actuating Engineered~~
a safety injection actuation ~~Safety Feature Actuation System~~ signal~~(s)~~, normal air discharges from ①
the ECCS pump room, the pump room is isolated, and the stream of
ventilation air discharges through the system filter trains. The prefilters ~~or~~
~~demisters~~ remove any large particles in the air, and any entrained water ①
droplets present, to prevent excessive loading of the HEPA filters and
charcoal adsorbers.

The ECCS Area Ventilation System ~~PREACS~~ is discussed in the U FSAR, Sections ~~[~~6.5.1~~]~~, 9.4.3 ~~[9.4.5]~~, ① ②
and ~~[~~15.6.5~~]~~ (Refs. 1, 2, and 3, respectively), as it may be used for
normal, as well as post accident, atmospheric cleanup functions. ~~The~~
~~primary purpose of the heaters is to maintain the relative humidity at an~~
~~acceptable level consistent with iodine removal efficiencies, as discussed~~ ①
~~in the Regulatory Guide 1.52 (Ref. 4).~~

BASES

APPLICABLE SAFETY ANALYSES

The design basis of the ECCS ~~PREACS~~ Area Ventilation System is established by the large break LOCA. The system evaluation assumes a passive failure of the ECCS outside containment, such as safety injection pump seal failure, during the recirculation mode. In such a case, the system limits the radioactive release to within ~~10 CFR 100~~ 10 CFR 50.67 limits (Ref. ~~5~~ 4~~), or the NRC staff approved licensing basis (e.g., a specified fraction of 10 CFR 100 limits)~~. The analysis of the effects and consequences of a large break LOCA is presented in Reference 3. The ECCS ~~PREACS~~ Area Ventilation System also actuates following a small break LOCA, requiring the unit to go into the recirculation mode of long term cooling and to clean up releases of smaller leaks, such as from valve stem packing. ① ① ①

The two types of system failures that are considered in the accident analysis are complete loss of function and excessive LEAKAGE. Either type of failure may result in a lower efficiency of removal for any gaseous and particulate activity released to the ECCS pump rooms following a LOCA.

The ECCS ~~PREACS~~ Area Ventilation System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii). ①

LCO

Two independent and redundant ECCS ~~PREACS~~ area ventilation trains are required to be OPERABLE to ensure that at least one is available, assuming a single failure disables the other train coincident with a loss of offsite power. Total system failure could result in the atmospheric release from the ECCS pump room exceeding the required limits in the event of a Design Basis Accident (DBA). ①

ECCS ~~PREACS~~ Area Ventilation System is considered OPERABLE when the individual components necessary to maintain the ECCS Pump Room filtration are OPERABLE in both trains. ①

An ECCS ~~PREACS~~ area ventilation train is considered OPERABLE when its associated: ①

a. Fan is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow and are capable of performing their filtration functions, and

c. ~~Heater, demister,~~ ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. ①

BASES

LCO (continued)

The LCO is modified by a Note allowing the ECCS pump room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for ECCS pump room isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ECCS ~~PREACS~~ Area Ventilation System is required to be OPERABLE consistent with the OPERABILITY requirements of the ECCS. ①

In MODES 5 and 6, the ECCS ~~PREACS~~ Area Ventilation System is not required to be OPERABLE, since the ECCS is not required to be OPERABLE. ①

ACTIONS

A.1

With one ECCS ~~PREACS~~ area ventilation train inoperable, action must be taken to restore OPERABLE status within 7 days. During this time, the remaining OPERABLE train is adequate to perform the ECCS ~~PREACS~~ Area Ventilation System function. ① ①

The 7 day Completion Time is appropriate because the risk contribution is less than that for the ECCS (72 hour Completion Time) and this system is not a direct support system for the ECCS. The 7 day Completion Time is reasonable, based on the low probability of a DBA occurring during this time period, and the consideration that the remaining train can provide the required capability.

B.1

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.~~ ④
~~--~~

ACTIONS (continued)

If the ECCS pump room boundary is inoperable, the ECCS ~~PREACS~~ area ventilation ① trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE ECCS pump room boundary within 24 hours. During the period that the ECCS pump room boundary is inoperable, appropriate compensatory measures ~~[~~consistent with the intent, as applicable, of GDC 19~~, 60, 64 and 10 CFR Part 100]~~ ② should be utilized to protect plant personnel from potential area ventilation system ① hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the ECCS pump room boundary.

~~-----REVIEWER'S NOTE-----~~
~~Condition C is not applicable to plant designs that rely on the ECCS PREACS to provide temperature control of the ECCS pump rooms. Reference 6 did not evaluate the effect of two inoperable ECCS PREACS trains on the ECCS pump room cooling function.~~ ⑤
~~-----~~

C.1 ④

With two ECCS ~~PREACS~~ area ventilation ① trains inoperable for reasons other than an inoperable boundary, action must be taken to restore at least one ECCS ~~PREACS~~ area ventilation ① train to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second ECCS ~~PREACS~~ area ventilation ① train is intentionally declared inoperable. The Required Action is not intended for voluntary removal of redundant systems or components from service. The Required Action is only applicable if one train is inoperable for any reason and the second train is found to be inoperable, or if both trains are found to be inoperable at the same time. The Completion Time is based on Reference ~~6~~ 5 ① which demonstrated that the 24 hour Completion Time is acceptable based on the low frequency of the potential challenge and the small incremental risk associated with continued operation.

BASES

ACTIONS (continued)

D.1 and D.2

~~------------------------------------REVIEWER'S NOTE------------------------------------~~
~~Adoption of a MODE 4 end state requires the licensee to make the following commitments:~~

~~1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].~~ ②

~~2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~
~~--~~

If the ECCS ~~PREACS~~ area ventilation train or ECCS pump room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be in a MODE in which overall plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. ①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. ~~7~~6). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state. ①

Required Action C.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.~~13~~12.1 ③

Standby systems should be checked periodically to ensure that they function properly. Since the environment and normal operating conditions on this system are not severe, testing each train ~~once a month~~ periodically with initiation from the control room provides an adequate check on this system. Operation ~~[with the heaters on]~~ for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that ~~[heater failure,]~~ blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ~~[The 31 day Frequency is based on the known reliability of equipment, and the two train redundancy available.~~ ① ② ② 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 3.7.~~13~~12.2 ③

This SR verifies that the required ECCS ~~PREACS~~ Area Ventilation System testing is performed in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~. ① ②

SR 3.7.~~13~~12.3 ③

This SR verifies that each ECCS ~~PREACS~~ area ventilation train starts and operates on an actual or simulated actuation signal. The SR excludes automatic dampers and valves that are locked, sealed, or otherwise secured in the actuated position. The SR does not apply to dampers or valves that are locked, sealed, or otherwise secured in the actuated position since the affected dampers or valves were verified to be in the actuated position ①

BASES

SURVEILLANCE REQUIREMENTS (continued)

prior to being locked, sealed, or otherwise secured. Placing an automatic valve or damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the valve or damper to be repositioned to the non-actuated position to support the accident analysis. Restoration of an automatic valve or damper to the non-actuated position requires verification that the SR has been met within its required Frequency. ~~[The [18] month Frequency is consistent with that specified in Regulatory Guide 1.52 (Ref. 4).~~ 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 3.7.~~13~~ 12 .4 ③

This SR verifies the integrity of the ECCS pump room enclosure. The ability of the ECCS pump room to maintain a negative pressure, with respect to potentially uncontaminated adjacent areas, is periodically tested to verify proper function of the ECCS Area Ventilation System ~~PREACS~~. During the post accident mode of operation, the ECCS Area Ventilation System ~~PREACS~~ is designed to maintain a slight negative pressure in the ECCS pump room with respect to adjacent areas to prevent unfiltered LEAKAGE. The ECCS Area Ventilation System ~~PREACS~~ is designed to maintain this negative pressure at a flow rate of ≤ 27,000 ~~[20,000]~~ cfm from the ECCS pump room. ~~[The Frequency of [18] months is consistent with the guidance provided in the NUREG-0800, Section 6.5.1 (Ref. 8).~~ ① ① ②

~~This test is conducted with the tests for filter penetration; thus, an [18] month Frequency, on a STAGGERED TEST BASIS is consistent with other filtration SRs.~~ 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
~~--~~]

~~[SR 3.7.13.5~~ ① ④

~~Operating the ECCS PREACS filter bypass damper is necessary to ensure that the system functions properly. The OPERABILITY of the bypass damper is verified if it can be opened. The SR excludes automatic dampers that are locked, sealed, or otherwise secured in the open position. The SR does not apply to dampers that are locked, sealed, or otherwise secured in the open position since the affected dampers were verified to be in the open position prior to being locked, sealed, or otherwise secured. Placing an automatic damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the damper to be closed to support the accident analysis. Restoration of an automatic damper to the closed position requires verification that the SR has been met within its required Frequency. [An [18] month Frequency is consistent with that specified in Reference 4.~~

~~OR~~

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

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

REFERENCES

1. U FSAR, Section ~~[~~6.5.1~~]~~. ① ②
2. U FSAR, Section ~~[9.4.5]~~. 9.4.3 ① ②
3. U FSAR, Section ~~[~~15.6.5~~]~~. ① ②

BASES

REFERENCES (continued)

~~4. Regulatory Guide 1.52, Rev. [2].~~ ①

4 ~~5~~. 10 CFR ~~100.11.~~ 50.67 ①

5 ~~6~~. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010. ①

6 ~~7~~. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001. ①

~~8. NUREG-0800, Section 6.5.1, Rev. 2, July 1981.~~ ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.12, BASES, ECCS AREA VENTILATION SYSTEM

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 are made to reflect the ITS Specification number and title.

4. As stated in the Unit 1 and Unit 2 UFSAR, Section 9.4.3.1, the ECCS Area Ventilation System is sized to maintain a slightly negative pressure in the ECCS area with respect to surrounding areas of the reactor auxiliary building. Access into the ECCS pump room area from other areas of the reactor auxiliary building is through gasketed self-closing or locked closed doors. Opening of locked doors is controlled under administrative controls.

5. PSL Unit 1 and Unit 2 ECCS Area Ventilation System design does not rely upon the ECCS Area Ventilation System to provide temperature control of the ECCS pump rooms during normal operation. Under normal operation, the reactor auxiliary building main ventilation supply (HVS-4A/B) and exhaust system (HVE-10A/B) provides the necessary ventilation of the ECCS pump rooms. Under accident conditions when ECCS pumps are operating, the ventilation supply to the nonessential section of the reactor auxiliary building is directed to the pump rooms to provide the additional cooling air requirement. Dampers are positioned automatically on SIAS signal to provide the proper flow path for supply air to the ECCS pump areas. The ECCS Area Ventilation System fans (HVE-9A and 9B) are automatically energized and dampers in the exhaust ductwork are automatically positioned to allow the fans to draw all exhaust air from the ECCS pump areas through the HEPA and charcoal filter banks before exhausting the air to the outside atmosphere. Additionally, the ECCS Area Ventilation System establishes and maintains a slightly negative pressure relative to surrounding areas assuming leakage in the ECCS areas.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.12, ECCS AREA VENTILATION SYSTEM

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

ATTACHMENT 13

3.7.13, Spent Fuel Storage Pool Water Level

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

A01

REFUELING OPERATIONS

SPENT FUEL STORAGE POOL

LIMITING CONDITION FOR OPERATION

~~3.9.11~~ ~~The Spent Fuel Pool shall be maintained with:~~

LCO 3.7.13 ~~a.~~ The spent fuel storage pool water level ~~greater than or equal to~~ shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks~~, and~~

b. The fuel storage pool boron concentration greater than or equal to 1900 ppm. See ITS 3.7.14

Applicability **APPLICABILITY**: ~~Whenever~~ During movement of irradiated fuel assemblies in the spent fuel storage pool. L01

ACTION:

ACTION A ~~a.~~ Spent fuel storage pool ~~With the~~ water level ~~requirement~~ not within limit ~~satisfied~~, immediately suspend ~~all~~ movement of irradiated fuel assemblies ~~and crane operations with loads~~ in the spent fuel storage pool ~~areas and restore the water level to within its limit within 4 hours~~. L02 L01

b. With the boron concentration requirement not satisfied, immediately suspend all movement of fuel assemblies in the fuel storage pool and initiate action to restore the fuel storage pool boron concentration to within the required limit. See ITS 3.7.14

ACTION A.1 Note ~~c.~~ The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1 ~~4.9.11~~ ~~The water level in~~ Verify the spent fuel storage pool water level is ≥ 23 feet above the top of irradiated fuel assemblies seated in the storage racks ~~shall be determined to be at least its minimum required depth~~ in accordance with the Surveillance Frequency Control Program ~~when irradiated fuel assemblies are in the fuel storage pool~~. L01

4.9.11.1 Verify the fuel storage pool boron concentration is within limit in accordance with the Surveillance Frequency Control Program. See ITS 3.7.14

ITS ITS 3.7.13

A01

REFUELING OPERATIONS

3/4.9.11 SPENT FUEL STORAGE POOL

LIMITING CONDITION FOR OPERATION

~~3.9.11~~ ~~The Spent Fuel Pool shall be maintained with:~~

LCO 3.7.13

a. The spent fuel storage pool water level ~~greater than or equal to~~ shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks~~, and~~

b. The fuel storage pool boron concentration greater than or equal to 1900 ppm.

See ITS 3.7.14

Applicability

APPLICABILITY: ~~Whenever~~ During movement of irradiated fuel assemblies ~~are~~ in the spent fuel storage pool.

L01

ACTION:

ACTION A

~~a.~~ Spent fuel storage pool ~~With the~~ water level ~~requirement~~ not within limit ~~satisfied~~, immediately suspend spent ~~all~~ movement of irradiated fuel assemblies ~~and crane operations with loads~~ in the fuel storage pool ~~areas and restore the water level to within its limit within 4 hours~~.

L02 L01

b. With the boron concentration requirement not satisfied, immediately suspend all movement of fuel assemblies in the fuel storage pool and initiate action to restore fuel storage pool boron concentration to within the required limit.

See ITS 3.7.14

ACTION A.1 Note

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

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1

~~4.9.11~~ Verify ~~The water level in~~ the spent fuel storage pool water level is ≥ 23 feet above the top of irradiated fuel assemblies seated in the storage racks ~~shall be determined to be at least its minimum required depth~~ in accordance with the Surveillance Frequency Control Program ~~when irradiated fuel assemblies are in the fuel storage pool~~.

L01

4.9.11.1 Verify the fuel storage pool boron concentration is within limit in accordance with the Surveillance Frequency Control Program.

See ITS 3.7.14

A01

~~INTENTIONALLY DELETED~~

DISCUSSION OF CHANGES
ITS 3.7.13, SPENT FUEL STORAGE POOL 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.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.11 states that the requirements on spent fuel storage pool water level are applicable "Whenever irradiated fuel assemblies are in the spent fuel storage pool." CTS 4.9.11 requires the water level in the storage pool to be verified in accordance with the Surveillance Frequency Control Program when irradiated fuel assemblies are in the spent fuel storage pool. ITS 3.7.13 is applicable "During movement of irradiated fuel assemblies in the spent fuel storage pool." ITS SR 3.7.14.1 requires verification of the spent fuel pool water level in accordance with the Surveillance Frequency Control Program. This changes the CTS by restricting the Applicability of the spent fuel pool water level Specification and performance of the Surveillance to only when there is a potential for a fuel handling accident, that is, during the movement of irradiated fuel assemblies in the spent fuel storage pool. In addition, since the Applicability is now limited to when irradiated fuel is being moved, the portion of CTS Action a. to restore water level to within its limit within 4 hours, after movement of fuel has been suspended, has also been deleted.

The purpose of CTS 3.9.11 is to ensure that the minimum spent fuel storage pool water level assumption in the fuel handling accident analysis is met. This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the specified conditions assumed in the safety analyses and licensing basis. According to UFSAR Section 15.4.3 (Unit 1) 15.7.4.1.2 (Unit 2), a fuel handling accident is initiated by the dropping of an irradiated fuel assembly either in the containment or in the fuel building and assumes all the fuel rods in the assembly are damaged. The PSL fuel handling accident analysis (outside containment) assumes a minimum water level of 23 feet above the damaged fuel assembly for both the containment and fuel handling building release locations. A minimum water level of 23 feet ensures an effective iodine decontamination factor of 200 per the guidance provided in NRC Regulatory Issue Summary 2006-04. A fuel handling accident is assumed to occur when an irradiated fuel assembly is being moved and is precluded when irradiated fuel assemblies are not being moved. Imposing the minimum spent fuel storage pool water level requirement whenever irradiated fuel assemblies are in the spent fuel storage pool is unnecessary. Therefore, the ITS imposes the controls on minimum spent fuel storage pool water level during the movement of irradiated fuel assemblies in the spent fuel storage pool. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L02 *(Category 4 – Relaxation of Required Action)* CTS 3.9.11 Action a. states that when the spent fuel pool water level is not met, suspend all movement of fuel assemblies and crane operations with loads in the fuel storage areas. ITS 3.7.13 Required Action A.1 states that when spent fuel storage pool water level is not within limit, immediately suspend movement of irradiated fuel assemblies in the spent fuel storage pool. This changes the CTS by deleting the requirement to suspend crane operation over the spent fuel storage areas.

The purpose of the CTS 3.9.11 Action is to preclude a fuel handling accident from occurring when the initial conditions for that accident are not met. This change is acceptable because the Required Action places the plant in a condition where a fuel handling accident is precluded. The initiator to a fuel handling accident assumed in the accident analysis is the damaging of a single irradiated fuel assembly. Damaging a fuel assembly which has not been irradiated has no significant radiological effects and is not assumed in the fuel handling accident analysis. Therefore, stopping the handling of fuel assemblies which have not been irradiated when the spent fuel pool water level is less than the limit is not required.

Crane travel related requirements were relocated from the CTS in Unit 1 and Unit 2 PSL Amendments 190 and 134, respectively, (“St. Lucie Units 1 and 2 – Issuance of Amendments Regarding the Relocation of Spent Fuel Pool Crane Technical Specification Requirements (TAC NOS. MB5667 and MB5668),” dated April 28, 2004 (ADAMS Accession No. ML 040440111)) to the respective unit Updated Final Safety Analysis Report where the operational detail is controlled under 10 CFR 50.59 criteria. As cited in the NRC Safety Evaluation associated with Amendments 190 (Unit 1) and 134 (Unit 2), NUREG-0612, “Control of Heavy Loads at Nuclear Power Plants,” regulatory guidelines for control of heavy load lifts provide assurance of safe handling of heavy loads in areas where a load drop could impact stored spent fuel, fuel in the reactor core, or equipment that may be required to achieve safe shutdown or permit continued decay heat removal. Section 5.1.1 of NUREG 0612 provides guidelines for reducing the likelihood of dropping heavy loads and provides criteria for establishing safe load paths; procedures for load-handling operations; training of crane operators; design, testing, inspection, and maintenance of cranes and lifting devices; and analyses of the impact of heavy load drops. The guidelines in Sections 5.1.2 through 5.1.6 address alternatives to either further reduce the probability of a load-handling accident or mitigate the consequences of heavy load drops. These alternatives include using a single-failure-proof crane to improve reliability through increased factors of safety and through redundancy or duality in certain active components. Criteria for design of single-failure-proof cranes are included in NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants."

This change is acceptable because the possibility of damage to an irradiated fuel assembly as a consequence of mishandling components other than an irradiated fuel assembly is minimized by thorough training, detailed procedures and equipment design. The PSL crane design precludes the handling of heavy objects, such as shipping casks, over the spent fuel pool storage racks. Administrative controls prevent the movement of heavy loads over the cask pit whenever the cask pit rack is installed in the cask area of the spent fuel storage pool. In addition, the cask handling crane design meets the regulatory guidance for single-failure-proof cranes in NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants" and NUREG-0612. Administrative controls that control the 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 load other than an irradiated fuel assembly and damaging of irradiated fuel assemblies in the spent fuel storage pool is remote. Therefore, the CTS 3.9.11 action related to suspension of crane operation with loads in the fuel storage areas is not necessary to be included in the technical specifications and is removed.

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)

3.7 PLANT SYSTEMS

3.7.~~16~~ 13 Spent Fuel Storage Pool Water Level ③ ①

3.9.11.a LCO 3.7.~~16~~ 13 The spent fuel storage pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks. ③ ①

Applicability APPLICABILITY: During movement of irradiated fuel assemblies in the spent fuel storage pool. ①

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent Fuel storage pool water level not within limit. ①	A.1 ---------------NOTE-------------- LCO 3.0.3 is not applicable. ------------------------------------- Suspend movement of irradiated fuel assemblies in spent fuel storage pool. ①	Immediately

Action a.
Action c.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.~~16~~ 13.1 Verify the spent fuel storage pool water level is ≥ 23 ft above the top of irradiated fuel assemblies seated in the storage racks. ① ③	~~[7 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ② ②

4.9.11

3.7 PLANT SYSTEMS

3.7.~~16~~13 Spent Fuel Storage Pool Water Level ③ ①

3.9.11.a LCO 3.7.~~16~~13 The spent fuel storage pool water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks. ① ③

Applicability APPLICABILITY: During movement of irradiated fuel assemblies in the spent fuel storage pool. ①

ACTIONS

Action a.
Action c.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent Fuel storage pool water level not within limit. ①	A.1 ---------------NOTE-------------- LCO 3.0.3 is not applicable. ------------------------------------- Suspend movement of irradiated fuel assemblies in spent fuel storage pool. ①	Immediately

SURVEILLANCE REQUIREMENTS

4.9.11

SURVEILLANCE	FREQUENCY
SR 3.7.~~16~~13.1 Verify the spent fuel storage pool water level is ≥ 23 ft above the top of irradiated fuel assemblies seated in the storage racks. ① ③	~~[7 days~~ ② ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.13, SPENT FUEL STORAGE POOL 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. Changes are made to reflect the ITS Specification number and title. The numbering is changed from 3.7.16 to 3.7.13, and the title is changed to "Spent Fuel Pool Water Level."

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

B 3.7 PLANT SYSTEMS

B 3.7.~~16~~ 13 Spent Fuel Storage Pool Water Level

Sufficient water is necessary to retain iodine fission product activity in the water in the event of an FHA (Refs. 1 and 2). Sufficient iodine activity would be retained to limit offsite doses from the accident to within the radiation dose criteria set forth in 10 CFR 50.67, as provided by the guidance of Reference 1. ① ③

BASES

BACKGROUND

The minimum water level in the fuel storage pool meets the assumptions of iodine decontamination factors following a fuel handling accident (FHA). The specified water level shields and minimizes the general area dose when the storage racks are filled to their maximum capacity. The water also provides shielding during the movement of spent fuel. ①

A general description of the fuel storage pool design is given in the U FSAR, Section ~~[~~9.1.2~~]~~, Reference ~~1~~ 3, and the Spent Fuel Pool Cooling and Purification ~~Cleanup~~ System is given in the U FSAR, Section ~~[~~9.1.3~~]~~ (Ref. ~~2~~ 4). The assumptions of the fuel handling accident are given in the U FSAR, Section ~~[15.7.4]~~ 15.4.3 (Ref. ~~3~~ 2). ② ① ② ②

APPLICABLE SAFETY ANALYSES

~~The minimum water level in the fuel storage pool meets the assumptions of the fuel handling accident described in Regulatory Guide 1.25 (Ref. 4). The resultant 2 hour thyroid dose to a person at the exclusion area boundary is a small fraction of the 10 CFR 100 (Ref. 5) limits.~~ ①

INSERT 1 ~~According to Reference 4, there is 23 ft of water between the top of the damaged fuel bundle and the fuel pool surface for a fuel handling accident. With a 23 ft water level, the assumptions of Reference 4 can be used directly. In practice, this LCO preserves this assumption for the bulk of the fuel in the storage racks. In the case of a single bundle, dropped and lying horizontally on top of the spent fuel racks, however, there may be < 23 ft of water above the top of the bundle and the surface, by the width of the bundle. To offset this small nonconservatism, the analysis assumes that all fuel rods fail, although analysis shows that only the first few rods fail from a hypothetical maximum drop.~~ ①

The fuel storage pool water level satisfies Criteria 2 and 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The specified water level preserves the assumptions of the FHA ~~fuel handling accident~~ analysis (Ref. ~~3~~ 2). As such, it is the minimum required for fuel storage and movement within the fuel storage pool. ①

APPLICABILITY

This LCO applies during movement of irradiated fuel assemblies in the fuel storage pool since the potential for a release of fission products exists.

①

INSERT 1

The FHA analysis is described in Reference 2. During movement of irradiated fuel assemblies, the water level in the spent fuel storage pool is an initial condition design parameter in the analysis of the FHA in the spent fuel storage pool postulated in Appendix B of 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 (FHB) 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. 5). The FHA assumes 100% of the noble gas is released from the damaged fuel assembly and escapes from the pool. 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 spent fuel pool level.

BASES

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the initial conditions for an accident cannot be met, steps should be taken to preclude the accident from occurring. When the fuel storage pool water level is lower than the required level, the movement of irradiated fuel assemblies in the fuel storage pool is immediately suspended. This ~~effectively~~ precludes ~~a spent fuel handling accident~~ an FHA from occurring. This does not preclude moving a fuel assembly to a safe position. ①

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODES 1, 2, 3, and 4, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~16~~13.1 ③

This SR verifies sufficient fuel storage pool water is available in the event of ~~a fuel handling accident~~ an FHA. The water level in the fuel storage pool must be checked periodically. ~~[The 7 day Frequency is appropriate because the volume in the pool is normally stable. Water level changes are controlled by unit procedures and are acceptable, based on operating experience.~~ ① 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
~~---]~~

~~During refueling operations, the level in the fuel storage pool is at equilibrium with that of the refueling canal, and the level in the refueling canal is checked daily in accordance with LCO 3.7.17, "Fuel Storage Pool Boron Concentration."~~ ④

BASES

REFERENCES

3 ~~1~~. U FSAR, Section ~~[~~9.1.2~~]~~. ②

4 ~~2~~. U FSAR, Section ~~[~~9.1.3~~]~~. ②

2 ~~3~~. U FSAR, Section ~~[15.7.4]~~ 15.4.3. ②

1 4. Regulatory Guide ~~1.25~~ 1.183, July 2000. ①

5. ~~10 CFR 100.11.~~ NRC Regulatory Issue Summary 2006-04, “Experience with Implementation of Alternate Source Terms,” March 7, 2006. ①

B 3.7 PLANT SYSTEMS

B 3.7.~~16~~ 13 Spent Fuel Storage Pool Water Level

BASES

BACKGROUND

The minimum water level in the fuel storage pool meets the assumptions of iodine decontamination factors following a fuel handling accident (FHA). The specified water level shields and minimizes the general area dose when the storage racks are filled to their maximum capacity. The water also provides shielding during the movement of spent fuel. Sufficient water is necessary to retain iodine fission product activity in the water in the event of an FHA (Refs. 1 and 2). Sufficient iodine activity would be retained to limit offsite doses from the accident to within the radiation dose criteria set forth in 10 CFR 50.67, as provided by the guidance of Reference 1. ① ③ ①

A general description of the fuel storage pool design is given in the U FSAR, Section ~~[~~9.1.2~~]~~, Reference ~~1~~ 3, and the Spent Fuel Pool Cooling and ~~Cleanup~~ Purification System is given in the U FSAR, Section ~~[~~9.1.3~~]~~ (Ref. ~~2~~ 4). The assumptions of the fuel handling accident are given in the U FSAR, Section ~~[~~15.7.4~~]~~ (Ref. ~~3~~ 2). ② ① ② ②

APPLICABLE SAFETY ANALYSES

INSERT 1

~~The minimum water level in the fuel storage pool meets the assumptions of the fuel handling accident described in Regulatory Guide 1.25 (Ref. 4). The resultant 2 hour thyroid dose to a person at the exclusion area boundary is a small fraction of the 10 CFR 100 (Ref. 5) limits.~~ ①

~~According to Reference 4, there is 23 ft of water between the top of the damaged fuel bundle and the fuel pool surface for a fuel handling accident. With a 23 ft water level, the assumptions of Reference 4 can be used directly. In practice, this LCO preserves this assumption for the bulk of the fuel in the storage racks. In the case of a single bundle, dropped and lying horizontally on top of the spent fuel racks, however, there may be < 23 ft of water above the top of the bundle and the surface, by the width of the bundle. To offset this small nonconservatism, the analysis assumes that all fuel rods fail, although analysis shows that only the first few rods fail from a hypothetical maximum drop.~~ ①

The fuel storage pool water level satisfies Criteria 2 and 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The specified water level preserves the assumptions of the ~~fuel handling accident~~ FHA analysis (Ref. ~~3~~ 2). As such, it is the minimum required for fuel storage and movement within the fuel storage poo l. ①

APPLICABILITY

This LCO applies during movement of irradiated fuel assemblies in the fuel storage pool since the potential for a release of fission products exists.

①

INSERT 1

The FHA analysis is described in Reference 2. During movement of irradiated fuel assemblies, the water level in the spent fuel storage pool is an initial condition design parameter in the analysis of the FHA in the spent fuel storage pool postulated in Appendix B of 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 (FHB) 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. 5). The FHA assumes 100% of the noble gas is released from the damaged fuel assembly and escapes from the pool. 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 spent fuel pool level.

BASES

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the initial conditions for an accident cannot be met, steps should be taken to preclude the accident from occurring. When the fuel storage pool water level is lower than the required level, the movement of irradiated fuel assemblies in the fuel storage pool is immediately suspended. This ~~effectively~~ precludes ~~a spent fuel handling accident~~ an FHA from occurring. This does not preclude moving a fuel assembly to a safe position. ①

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODES 1, 2, 3, and 4, the fuel movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~16~~ 13 .1 ③

This SR verifies sufficient fuel storage pool water is available in the event of ~~a fuel handling accident~~ an FHA. The water level in the fuel storage pool must be checked periodically. ~~[The 7 day Frequency is appropriate because the volume in the pool is normally stable. Water level changes are controlled by unit procedures and are acceptable, based on operating experience.~~ ① 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
~~---]~~

~~During refueling operations, the level in the fuel storage pool is at equilibrium with that of the refueling canal, and the level in the refueling canal is checked daily in accordance with LCO 3.7.17, "Fuel Storage Pool Boron Concentration."~~ ④

BASES

REFERENCES

3 ~~1~~. U FSAR, Section ~~[~~9.1.2~~]~~. ②

4 ~~2~~. U FSAR, Section ~~[~~9.1.3~~]~~. ②

2 ~~3~~. U FSAR, Section ~~[~~15.7.4~~]~~. ②

1 4. Regulatory Guide ~~1.25~~ 1.183, July 2000. ①

5. ~~10 CFR 100.11.~~ NRC Regulatory Issue Summary 2006-04, "Experience with Implementation of Alternate Source Terms," March 7, 2006. ①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.13, BASES, SPENT FUEL STORAGE POOL 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 are made to reflect the ITS Specification number and title. The numbering is changed from 3.7.16 to 3.7.13, and the title is changed to “Spent Fuel Pool Water Level.”

4. ISTS SR 3.7.16.1 Bases refers to the incorrect ISTS LCO regarding refueling water level. Also, this statement does not provide any additional supporting information related to the Surveillance associated with spent fuel storage pool water level. Therefore, the statement is not included in the Bases for ITS SR 3.7.13.1

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.13, SPENT FUEL STORAGE POOL WATER LEVEL

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

ATTACHMENT 14

3.7.14, Spent Fuel Storage Pool Boron Concentration

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

A01

REFUELING OPERATIONS

SPENT FUEL STORAGE POOL

LIMITING CONDITION FOR OPERATION

~~3.9.11~~ ~~The Spent Fuel Pool shall be maintained with:~~

a. The fuel storage pool water level greater than or equal to 23 ft over the top of irradiated fuel assemblies seated in the storage racks, and

See ITS 3.7.13

spent

shall be ≥

LCO 3.7.14 ~~b.~~ The fuel storage pool boron concentration ~~greater than or equal to~~ 1900 ppm.

stored

Applicability **APPLICABILITY**: When~~ever~~ ~~irradiated~~ fuel assemblies are in the spent fuel storage pool.

Add proposed ITS 3.7.14 Applicability (second part)

L01

ACTION:

a. With the water level requirement not satisfied, immediately suspend all movement of fuel assemblies and crane operations with loads in the fuel storage areas and restore the water level to within its limit within 4 hours.

See ITS 3.7.13

Spent fuel storage pool

within limit

Condition A

ACTION A.1

ACTION A.2.1

~~b.~~ ~~With the~~ boron concentration ~~requirement~~ not ~~satisfied~~, immediately suspend ~~all~~ movement of fuel assemblies in the fuel storage pool and initiate action to restore ~~the~~ fuel storage pool boron concentration to within ~~the required~~ limit.

spent

spent

Add proposed ITS 3.7.14 ACTION A.2.2

L01

ACTION A.1, A.2.1, and A.2.2 Note

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

SURVEILLANCE REQUIREMENTS

4.9.11 The water level in the spent fuel storage pool shall be determined to be at least its minimum required depth in accordance with the Surveillance Frequency Control Program when irradiated fuel assemblies are in the fuel storage pool.

See ITS 3.7.13

spent

SR 3.7.14.1 ~~4.9.11.1~~ Verify the fuel storage pool boron concentration is within limit in accordance with the Surveillance Frequency Control Program.

REFUELING OPERATIONS

3/4.9.11 SPENT FUEL STORAGE POOL

LIMITING CONDITION FOR OPERATION

~~3.9.11 The Spent Fuel Pool shall be maintained with:~~

a. The fuel storage pool water level greater than or equal to 23 ft over the top of irradiated fuel assemblies seated in the storage racks, and

See ITS 3.7.13

LCO 3.7.14 ~~b.~~ The spent fuel storage pool boron concentration shall be ≥ ~~greater than or equal to~~ 1900 ppm.

Applicability **APPLICABILITY**: When~~ever~~ ~~irradiated~~ fuel assemblies are stored in the spent fuel storage pool. Add proposed ITS 3.7.14 Applicability (second part) L01

ACTION:

a. With the water level requirement not satisfied, immediately suspend all movement of fuel assemblies and crane operations with loads in the fuel storage areas and restore the water level to within its limit within 4 hours.

See ITS 3.7.13

Condition A ~~b.~~ ~~With the~~ Spent fuel storage pool boron concentration ~~requirement~~ not within limit ~~satisfied~~, immediately suspend

ACTION A.1 ~~all~~ movement of fuel assemblies in the spent fuel storage pool and initiate action to

ACTION A.2.1 restore spent fuel storage pool boron concentration to within ~~the required~~ limit. Add proposed ITS 3.7.14 ACTION A.2.2 L01

ACTION A.1, A.2.1, and A.2.2 Note ~~c.~~ The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.11 The water level in the spent fuel storage pool shall be determined to be at least its minimum required depth in accordance with the Surveillance Frequency Control Program when irradiated fuel assemblies are in the fuel storage pool.

See ITS 3.7.13

~~4.9.11.1~~ Verify the spent fuel storage pool boron concentration is within limit in accordance with the Surveillance Frequency Control Program.

DISCUSSION OF CHANGES
ITS 3.7.14, SPENT FUEL STORAGE POOL BORON CONCENTATIION

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.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.11 is applicable whenever irradiated fuel assemblies are in the spent fuel storage pool. ITS 3.7.14 is applicable when fuel assemblies are stored in the fuel storage pool and a fuel storage pool verification has not been performed since the last movement of fuel assemblies in the fuel storage pool. In addition, ITS 3.7.14 Required Action A.2.2 provides an alternative action to allow exiting the specified condition in the Applicability when the LCO is not met. This changes the CTS by adding the Applicability statement "and a spent fuel storage pool verification has not been performed since the last movement of fuel assemblies in the fuel storage pool," and adding an ACTION that allows exiting the Applicability if the LCO is not met.

The purpose of CTS 3.9.11 is to ensure adequate dissolved boron is in the spent fuel storage pool water to maintain the required subcriticality margin. This change is acceptable because the requirements continue to ensure that the process variable is maintained in the specified condition assumed in the safety analyses and licensing basis. Following performance of a fuel storage pool verification to ensure the fuel assemblies are in the prescribed spent fuel storage rack location, there is no potential for criticality based on the design of the storage racks. Performing a fuel storage pool verification provides assurance that no fuel assemblies have been inadvertently misplaced in the fuel storage pool. This change is consistent with the ISTS and is designated as less restrictive because the LCO requirements are applicable in a less stringent operating condition than in the CTS and because less stringent Required Actions are being applied in the ITS than applied in the CTS.

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

3.7 PLANT SYSTEMS

3.7.~~17~~ 14 Spent Fuel Storage Pool Boron Concentration ①

3.9.11.b LCO 3.7.~~17~~ 14 The spent fuel storage pool boron concentration shall be ≥ 1900 ~~[2000]~~ ppm. ① ②

Applicability
L01 APPLICABILITY: When fuel assemblies are stored in the spent fuel storage pool and a spent fuel storage pool verification has not been performed since the last movement of fuel assemblies in the spent fuel storage pool. ① ①

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action b. Action c.	A. Spent Fuel storage pool boron concentration not within limit.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. ---		①
Action b.		A.1 Suspend movement of fuel assemblies in the spent fuel storage pool.	Immediately	①
		<u>AND</u>		
Action b.		A.2.1 Initiate action to restore spent fuel storage pool boron concentration to within limit.	Immediately	①
		<u>OR</u>		
L01		A.2.2 Initiate action to perform a spent fuel storage pool verification.	Immediately	①

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
4.9.11.1 SR 3.7.~~17~~ 14.1 Verify the spent fuel storage pool boron concentration is within limit.	~~[7 days~~ ① ② ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

3.7 PLANT SYSTEMS

3.7.~~17~~ 14 Spent Fuel Storage Pool Boron Concentration ①

3.9.11.b LCO 3.7.~~17~~ 14 The spent fuel storage pool boron concentration shall be ≥ ~~[2000]~~ 1900 ppm. ① ②

Applicability
L01 APPLICABILITY: When fuel assemblies are stored in the spent fuel storage pool and a spent fuel storage pool verification has not been performed since the last movement of fuel assemblies in the spent fuel storage pool. ① ①

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action b. Action c.	A. Spent Fuel storage pool boron concentration not within limit.	--------------------NOTE------------------- LCO 3.0.3 is not applicable. ---		①
Action b.		A.1 Suspend movement of fuel assemblies in the spent fuel storage pool.	Immediately	①
		AND		
Action b.		A.2.1 Initiate action to restore spent fuel storage pool boron concentration to within limit.	Immediately	①
		OR		
L01		A.2.2 Initiate action to perform a spent fuel storage pool verification.	Immediately	①

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
4.9.11.1 SR 3.7.~~17~~ 14.1	Verify the spent fuel storage pool boron concentration is within limit.	~~[7 days~~ ① ② ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.14, SPENT FUEL STORAGE POOL BORON CONCENTATION

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 3.7 PLANT SYSTEMS

B 3.7.~~17~~ 14 Spent Fuel Storage Pool Boron Concentration ①

BASES

BACKGROUND

As described in LCO 3.7.~~18~~ 15, "Spent Fuel ~~Assembly~~ Pool Storage," fuel assemblies are stored in the spent fuel racks ~~[~~in ~~a "checkerboard" pattern]~~ separate and distinct regions, each with various prescribed patterns, in accordance with criteria based on ~~[~~initial enrichment and discharge burnup~~]~~. Although the water in the spent fuel storage pool is normally borated to ≥ ~~[1800]~~ 1900 ppm, the criteria that limit the storage of a fuel assembly to specific rack locations is conservatively developed ~~without taking credit for boron~~ assuming a minimum soluble boron concentration in the spent fuel storage pool of 500 ppm for normal conditions and 1500 ppm for accident conditions. ① ② ② ①

APPLICABLE SAFETY ANALYSES

Most accident conditions do not result in an increase in the activity of the spent fuel pool storage regions. However, accidents can be postulated that could increase the reactivity. A fuel assembly could be inadvertently loaded into a spent fuel rack location not allowed by LCO 3.7.~~18~~ 15 (e.g., an unirradiated fuel assembly ~~or an insufficiently depleted fuel assembly~~). ~~This accident is analyzed assuming the extreme case of completely loading the fuel pool racks with unirradiated assemblies of maximum enrichment.~~ Another type of postulated accident is associated with a fuel assembly that is dropped onto the fully loaded fuel pool storage rack. Either incident could have a positive reactivity effect, decreasing the margin to criticality. However, the negative reactivity effect of the soluble boron compensates for the increased reactivity caused by either one of the two postulated accident scenarios. ①

The concentration of dissolved boron in the fuel pool satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The fuel storage pool boron concentration is required to be ≥ 1900 ppm. The specified concentration of dissolved boron in the fuel pool preserves the assumptions used in the analyses of the potential accident scenarios described above. This concentration of dissolved boron is the minimum required concentration for fuel assembly storage and movement within the fuel pool. ①

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the spent fuel pool until a complete spent fuel storage pool verification has been performed following the last movement of fuel assemblies in the spent fuel pool. This LCO does not apply following the verification since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movements in progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly. ①

BASES

ACTIONS

A.1, A.2.1, and A.2.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply. ①

When the concentration of boron in the spent fuel storage pool is less than required, immediate action must be taken to preclude an accident from happening or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. This does not preclude the movement of fuel assemblies to a safe position. In addition, action must be immediately initiated to restore boron concentration to within limit. Alternately, beginning a verification of the spent fuel storage pool fuel locations, to ensure proper locations of the fuel, can be performed. ① ①

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown. ①

SURVEILLANCE REQUIREMENTS

SR 3.7.~~17~~ 14.1 ①

This SR verifies that the concentration of boron in the spent fuel pool is within the required limit. As long as this SR is met, the analyzed incidents are fully addressed. ~~[The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over a short period of time.~~ 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

None.

B 3.7 PLANT SYSTEMS

B 3.7.~~17~~ 14 Spent Fuel Storage Pool Boron Concentration ①

BASES

BACKGROUND

As described in LCO 3.7.~~18~~ 15, "Spent Fuel ~~Assembly~~ Pool Storage," fuel assemblies are stored in the spent fuel racks [in ~~a "checkerboard" pattern]~~ separate and distinct regions, each with various prescribed patterns, in accordance with criteria based on ~~[~~initial enrichment and discharge burnup~~]~~. Although the water in the spent fuel storage pool is normally borated to ≥ ~~[1800]~~ 1900 ppm, the criteria that limit the storage of a fuel assembly to specific rack locations is conservatively developed ~~without taking credit for boron~~ assuming a minimum soluble boron concentration in the spent fuel storage pool of 500 ppm for normal conditions and 1500 ppm for accident conditions. ① ② ② ①

APPLICABLE SAFETY ANALYSES

Most accident conditions do not result in an increase in the activity of the spent fuel pool storage regions. However, accidents can be postulated that could increase the reactivity. A fuel assembly could be inadvertently loaded into a spent fuel rack location not allowed by LCO 3.7.~~18~~ 15 (e.g., an unirradiated fuel assembly ~~or an insufficiently depleted fuel assembly~~). ~~This accident is analyzed assuming the extreme case of completely loading the fuel pool racks with unirradiated assemblies of maximum enrichment.~~ Another type of postulated accident is associated with a fuel assembly that is dropped onto the fully loaded fuel pool storage rack. Either incident could have a positive reactivity effect, decreasing the margin to criticality. However, the negative reactivity effect of the soluble boron compensates for the increased reactivity caused by either one of the two postulated accident scenarios. ①

The concentration of dissolved boron in the fuel pool satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The fuel storage pool boron concentration is required to be ≥ 1900 ppm. The specified concentration of dissolved boron in the fuel pool preserves the assumptions used in the analyses of the potential accident scenarios described above. This concentration of dissolved boron is the minimum required concentration for fuel assembly storage and movement within the fuel pool. ①

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the spent fuel pool until a complete spent fuel storage pool verification has been performed following the last movement of fuel assemblies in the spent fuel pool. This LCO does not apply following the verification since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movements in progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly. ①

BASES

ACTIONS

A.1, A.2.1, and A.2.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply. ①

When the concentration of boron in the spent fuel storage pool is less than required, immediate action must be taken to preclude an accident from happening or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. This does not preclude the movement of fuel assemblies to a safe position. In addition, action must be immediately initiated to restore boron concentration to within limit. Alternately, beginning a verification of the spent fuel storage pool fuel locations, to ensure proper locations of the fuel, can be performed. ① ①

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown. ①

SURVEILLANCE REQUIREMENTS

SR 3.7.~~17~~14.1 ①

This SR verifies that the concentration of boron in the spent fuel pool is within the required limit. As long as this SR is met, the analyzed incidents are fully addressed. ~~[The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over a short period of time.~~ 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

None.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.14, BASES, SPENT FUEL STORAGE POOL BORON CONCENTATION

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 3.7.14, SPENT FUEL STORAGE POOL BORON CONCENTATION

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

ATTACHMENT 15

3.7.15, Spent Fuel Pool Storage

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

DESIGN FEATURES

CRITICALITY (Continued)

4. For storage of enriched fuel assemblies, requirements of Criteria in 5.6.1.a.1 and 5.6.1.a.3 shall be met by positioning fuel in the spent fuel storage racks consistent with the requirements of Specification 5.6.1.c.

See ITS 4.0

5. Vessel Flux Reduction Assemblies (VFRAs), as defined in Section 9.1 of the Updated Final Safety Analysis Report, may be placed in any allowable fuel storage location.

6. Fissile material, not contained in a fuel assembly lattice, shall be stored in accordance with the requirements of Criteria in 5.6.1.a.1 and 5.6.1.a.3.

7. The Metamic neutron absorber inserts shall have a ^{10}B areal density greater than or equal to 0.015 grams ^{10}B/cm^2.

b. The Region 1 cask pit storage rack shall contain neutron absorbing material (Boral) between stored fuel assemblies when installed in the spent fuel pool.

LCO 3.7.15 Add proposed LCO 3.7.15 and Applicability A02

~~c. Loading of spent fuel storage racks shall be controlled as described below.~~ Criteria ~~in 5.6.1.c.2, 5.6.1.c.3, 5.6.1.c.5 and 5.6.1.c.6~~ b, c, e, and f do not apply to the Region 1 cask pit storage rack.

LCO 3.7.15.a a ~~1~~. The maximum initial planar average U-235 enrichment of any fuel assembly inserted in a spent fuel storage rack shall be less than or equal to 4.6 weight percent.

LCO 3.7.15.b b ~~2~~. Fuel placed in Region 1 of the spent fuel pool storage racks shall comply with the storage patterns and alignment restrictions of Figure ~~5.6~~ 3.7.15-1 and the minimum burnup requirements of Table ~~5.6~~ 3.7.15-1.

LCO 3.7.15.c c ~~3~~. Fuel placed in Region 2 of the spent fuel pool storage racks shall comply with the storage patterns or allowed special arrangements of Figure ~~5.6~~ 3.7.15-2 and the minimum burnup requirements of Table ~~5.6~~ 3.7.15-1. The allowed special arrangement for fresh fuel may be repeated, provided the applicable interface requirements specified by the safety analysis are met.

LCO 3.7.15.d d ~~4~~. Any fuel satisfying ~~criteria 5.6.1.c.1~~ Specification 3.7.15.a, including fresh fuel, may be placed in the Region 1 cask pit storage rack.

LCO 3.7.15.e e ~~5~~. The same directional orientation for Metamic inserts is required for contiguous groups of 2x2 arrays where Metamic inserts are required.

LCO 3.7.15.f f ~~6~~. Any 2x2 array of Region 2 storage cells that interface with Region 1 shall comply with the rules of Figure ~~5.6~~ 3.7.15-3. The allowed special arrangement in Region 2 as shown in Figure ~~5.6~~ 3.7.15-2 shall not be placed adjacent to Region 1.

d. The new fuel storage racks are designed for dry storage of unirradiated fuel assemblies having a maximum planar average U-235 enrichment less than or equal to 4.6 weight percent, while maintaining a k_{eff} of less than or equal to 0.98 under the most reactive condition.

See ITS 4.0

LCO 3.7.15 ACTION A Add proposed LCO 3.7.15 ACTION A A02

SR 3.7.15.1 Add proposed SR 3.7.15.1 M01

A01

Table 3.7.15-1

~~TABLE 5.6-1~~ Table 3.7.15-1 (page 1 of 1)

Minimum Burnup as a Function of Enrichment

Fuel Type	Cooling Time (Years)	Coefficients		
		A	B	C
1	0	-36.6860	22.4942	-1.4413
2	0	-36.1742	16.6000	-0.8958
3	0	-34.7091	23.1361	-1.6204
4	0	-24.5145	21.3404	-1.2444
	2.5	-26.8311	22.5246	-1.5029
	5	-24.7233	20.9763	-1.3246
	10	-23.6285	19.9541	-1.2505
	15	-23.5458	19.9336	-1.3180
	20	-22.4382	19.2460	-1.2629
5	0	-8.1856	14.5275	-0.0719
	2.5	-11.8506	16.1475	-0.3969
	5	-16.5196	18.5309	-0.7837
	10	-13.6831	16.3475	-0.5844
	15	-12.5819	15.6175	-0.5656
	20	-12.6469	15.4575	-0.5906

NOTES:

1. To qualify in a ”fuel type,” the burnup of a fuel assembly must exceed the minimum burnup “BU” calculated by inserting the “coefficients” for the associated “fuel type” and “cooling time” into the polynomial function:

   BU = A + B*E + C*E^2, where:

   BU = Minimum Burnup (GWD/MTU)

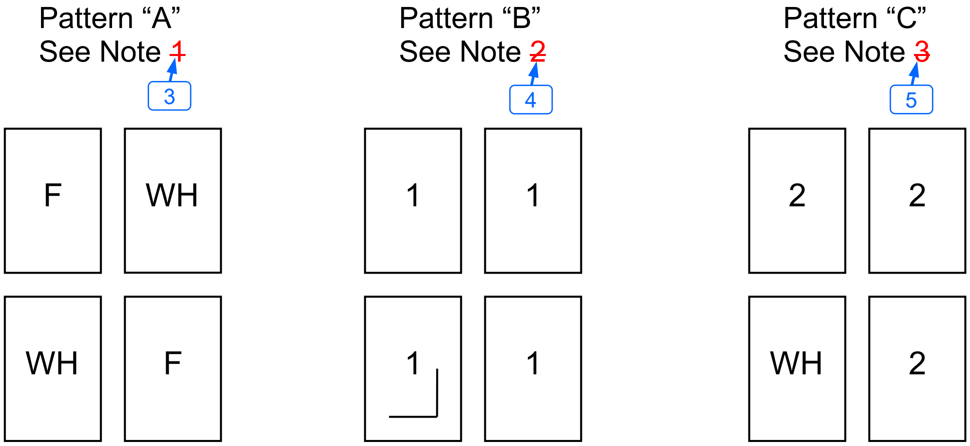
   E = Initial Maximum Planar Average Enrichment (weight percent uranium-235)

   A, B, C = Coefficients

2. Interpolation between values of cooling time is not permitted.

Figure 3.7.15-1 (page 1 of 1)

Allowable Checkerboard Storage Patterns
(See Notes ~~4~~ 1 and ~~5~~ 2)



NOTES:

3 ~~1~~. F represents Fresh Fuel. WH represents an empty cell. Allowable Pattern is Fresh Fuel checkerboarded with empty cells. Diagram is for illustration only.

4 ~~2~~. Numbering denotes fuel assembly type. Minimum burnup for fuel assembly type 1 is defined in Table ~~5.6-1~~ 3.7.15-1. Allowable pattern is at least one insert [either Metamic or full-length full-strength CEA] in any one of the 2x2 array locations. Diagram is for illustration only.

5 ~~3~~. Numbering denotes fuel assembly type. WH represents an empty cell. Minimum burnup for fuel assembly type 2 is defined in Table ~~5.6-1~~ 3.7.15-1. Allowable pattern is at least one empty cell in any of the 2x2 array locations. Diagram is for illustration only.

1 ~~4~~. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2 ~~5~~. Empty cells within any pattern are acceptable.

Figure 3.7.15-1 (page 1 of 1)

Figure 3.7.15-1 (page 1 of 1)

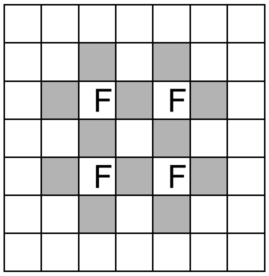
~~FIGURE 5.6-1~~
Allowable Region 1 Storage Patterns and Fuel Arrangements

A01

ALLOWED SPECIAL ARRANGEMENT

Figure 3.7.15-2 (page 1 of 2)

Fresh Fuel Assemblies in Pattern “C”, “D”, or “E” Racks



F = FRESH FUEL ASSEMBLY

▨ = EMPTY CELL

ALLOWABLE CHECKERBOARD STORAGE PATTERNS (See Notes 1 ~~4~~ and 2 ~~5~~)

Pattern “C”
See Note ~~1~~ 3

Pattern “D”
See Note ~~2~~ 4

Pattern “E”
See Note ~~3~~ 5

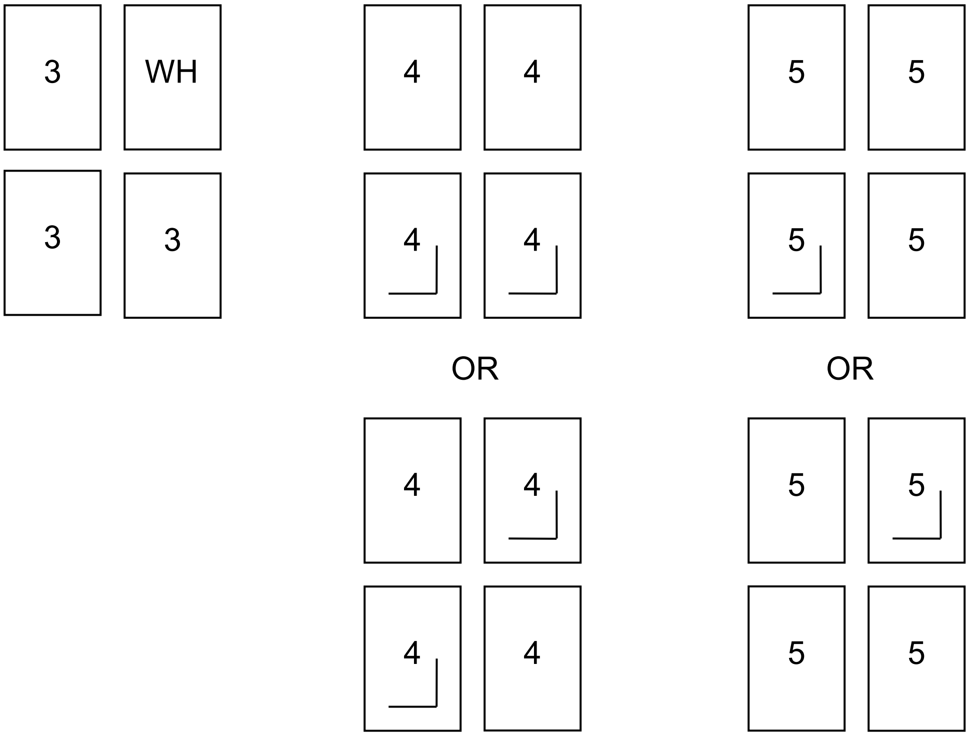


Figure 3.7.15-2 (page 1 of 2)

~~**FIGURE 5.6-2 (Sheet 1 of 2)**~~
Figure 3.7.15-2 (page 1 of 2)

Allowable Region 2 Storage Patterns and Fuel Alignments

Figure 3.7.15-2 (page 2 of 2)

NOTES to ~~Figure 5.6-2~~ Figure 3.7.15-2 (page 1 of 2)

NOTES:

3 ~~1~~. Numbering denotes fuel assembly type. WH represents an empty cell. Minimum burnup for fuel assembly type 3 is defined in Table ~~5.6-1~~ 3.7.15-1. Allowable pattern is at least one empty cell in any of the 2x2 array locations. Diagram is for illustration only.

4 ~~2~~. Numbering denotes fuel assembly type. Minimum burnup for fuel assembly type 4 is defined in Table ~~5.6-1~~ 3.7.15-1. Allowable pattern is at least two inserts, (either Metamic or full-length, full-strength CEA) in the 2x2 array. Diagrams are for illustration only.

5 ~~3~~. Numbering denotes fuel assembly type. Minimum burnup for fuel assembly type 5 is defined in Table ~~5.6-1~~ 3.7.15-1. Allowable pattern is one insert, (either Metamic or full-length, full-strength CEA) in the 2x2 array. Diagrams are for illustration only.

1 4. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2 ~~5~~. Empty cells within any pattern are acceptable.

Figure 3.7.15-2 (page 2 of 2)

~~FIGURE 5.6-2 (Sheet 2 of 2)~~ Figure 3.7.15-2 (page 2 of 2)

Allowable Region 2 Storage Patterns and Fuel Arrangements

A01

Figure 3.7.15-3 (page 1 of 2)

Allowed Region 2 to Region 1 Fuel Alignments
(See Notes ~~4~~ 1 and ~~5~~ 2)

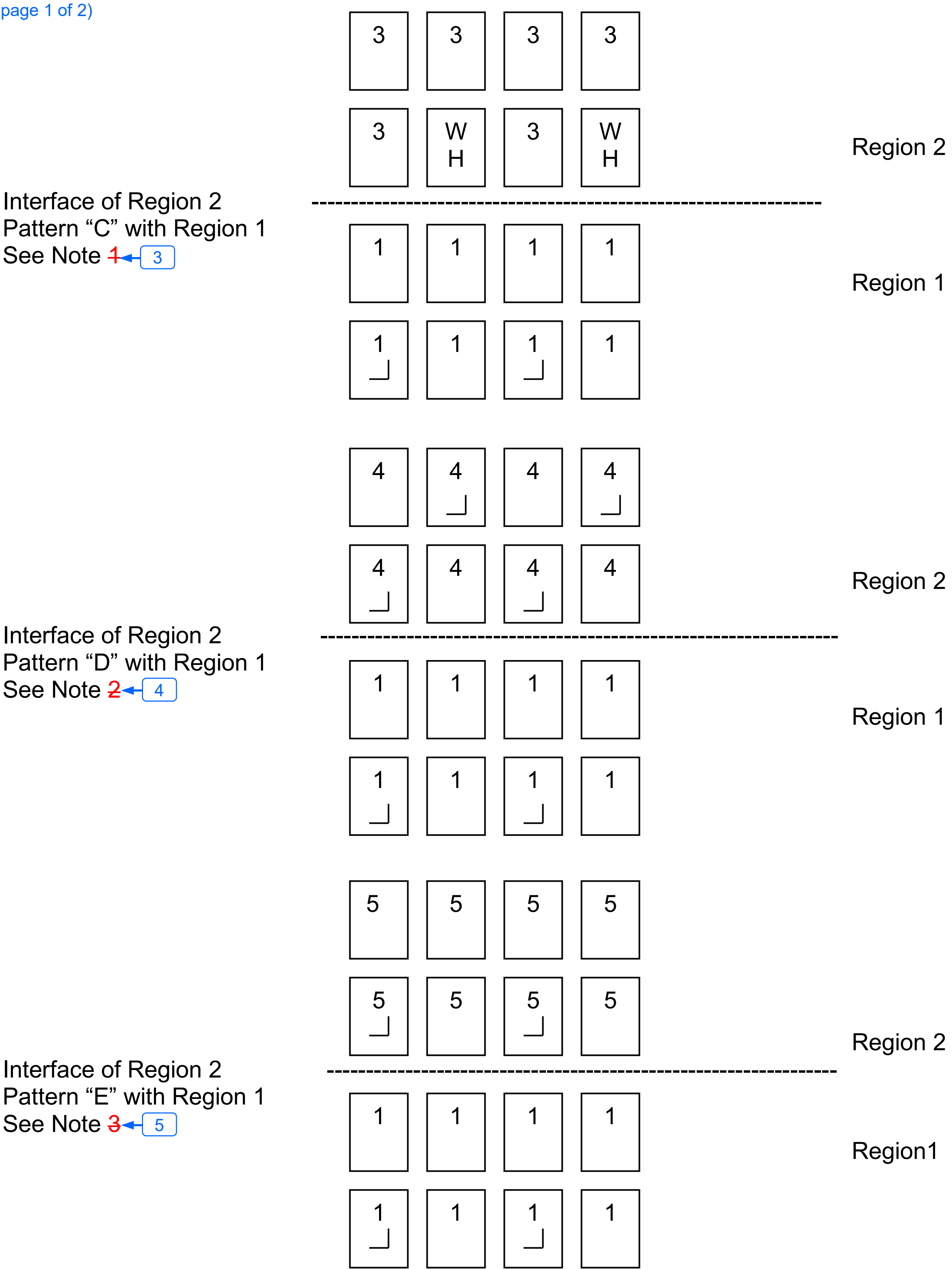


Figure 3.7.15-3 (page 1 of 2)

~~FIGURE 5.6-3 (Sheet 1 of 2)~~

Figure 3.7.15-3 (page 1 of 2)

Region 2 Interface Requirements with Region 1

Figure 3.7.15-3 (page 2 of 2)

NOTES to ~~Figure 5.6-3~~

Figure 3.7.15-3 (page 1 of 2)

NOTES:

3 → ~~1~~. WH represents an empty cell. For the interface of Pattern “C” with Region 1, the empty cell must be on the rack periphery facing Region 1 racks. Diagrams are for illustration only.

4 → ~~2~~. For the interface of pattern “D” with Region 1, at least one cell on the rack periphery facing Region 1 rack must contain an insert (either Metamic of full-length full-strength CEA) in the 2x2 array. If the insert is Metamic, the insert must be oriented so that the corner of the L-shape is located closest to the Region 1 rack. Diagram is for illustration only.

5 → ~~3~~. For the interface of Pattern “E” with Region 1, the insert must be on the rack periphery facing the Region 1 rack. The insert may be either a Metamic of full-length full strength CEA. If the insert is Metamic, the insert must be oriented so that the corner of the L-shape is located closest to the Region 1 rack. Diagram is for illustration only.

1 → ~~4~~. Empty cells with any pattern are acceptable.

2 → ~~5~~. There are no interface requirements within Region 1. Any Pattern within Region 1 may be used for the interface. Pattern “B” was used only as an illustration.

Figure 3.7.15-3 (page 2 of 2)

Figure 3.7.15-3 (page 2 of 2)

~~FIGURE 5.6-3 (Sheet 2 of 2)~~

Region 2 Interface requirements with Region 1

A01

DESIGN FEATURES

5.5 DELETED

5.6 FUEL STORAGE

CRITICALITY

See ITS 4.0

5.6.1 a. The spent fuel storage racks are designed and shall be maintained with:

1. A k_{eff} equivalent to less than 1.0 when flooded with unborated water, including a conservative allowance for biases and uncertainties as described in Section 9.1 of the Updated Final Safety Analysis Report.

2. A k_{eff} equivalent to less than or equal to 0.95 when flooded with water containing 500 ppm boron, including a conservative allowance for biases and uncertainties as described in Section 9.1 of the Updated Final Safety Analysis Report.

3. A nominal 8.965 inch center-to-center distance between fuel assemblies placed in the spent fuel pool storage racks and a nominal 8.80 inch center-to-center distance between fuel assemblies placed in the cask pit storage rack.

4. For storage of enriched fuel assemblies, requirements of Specification 5.6.1.a.1 and 5.6.1.a.2 shall be met by positioning fuel in the spent fuel pool storage racks consistent with the requirements of Specification 5.6.1.c.

5. Fissile material, not contained in a fuel assembly lattice, shall be stored in accordance with the requirements of Specifications 5.6.1.a.1 and 5.6.1.a.2.

6. The Metamic neutron absorber inserts shall have a ^{10}B areal density greater than or equal to 0.015 grams ^{10}B/cm^2.

b. The cask pit storage rack shall contain neutron absorbing material (Boral) between stored fuel assemblies when installed in the spent fuel pool.

LCO 3.7.15 Add proposed LCO 3.7.15 and Applicability A02

~~c.~~ ~~Loading of spent fuel pool storage racks shall be controlled as described below.~~

LCO 3.7.15.a a ~~1~~. The maximum initial planar average U-235 enrichment of any fuel assembly inserted in a spent fuel pool storage rack shall be less than or equal to 4.6 weight percent.

LCO 3.7.15.b b ~~2~~. Fuel placed in Region 1 of the spent fuel pool storage racks shall comply with the storage pattern definitions of Figure ~~5.6~~ 3.7.15-1 and the minimum burnup requirements as defined in Table ~~5.6~~ 3.7.15-1. (See 3.7.15 Specification ~~5.6.1.c.7~~ 3.7.15.g for exceptions)

LCO 3.7.15.c c ~~3~~. Fuel placed in Region 2 of the spent fuel pool storage racks shall comply with the storage pattern definitions or allowed special arrangement definitions of Figure ~~5.6~~-2 and the minimum burnup requirements as defined in Table ~~5.6~~ 3.7.15-1 (See Specification ~~5.6.1.c.7~~ 3.7.15.g for exceptions)

~~DESIGN FEATURES (continued)~~

~~CRITICALITY (continued)~~

~~5.6.1 c. (continued)~~

LCO 3.7.15.d d ~~4~~. The 2x2 array of fuel assemblies that span the interface between Region 1 and Region 2 of the spent fuel pool storage racks shall comply with the storage pattern definitions of Figure ~~5.6~~ 3.7.15-3 and the minimum burnup requirements as defined in Table 5.6-1. The allowed special arrangements in Region 2 as shown in Figure ~~5.6~~ 3.7.15-2 shall not be placed adjacent to Region 1. (See Specification ~~5.6.1.c.7~~ 3.7.15.g for exceptions)

LCO 3.7.15.e e ~~5~~. Fuel placed in the cask pit storage rack shall comply with the storage pattern definitions of Figure ~~5.6~~-4 and the minimum burnup requirements as defined in Table ~~5.6~~ 3.7.15-1. (See Specification ~~5.6.1.c.7~~ 3.7.15.g for exceptions)

LCO 3.7.15.f f ~~6~~. The same directional orientation for Metamic inserts is required for contiguous groups of 2x2 arrays where Metamic inserts are required.

LCO 3.7.15.g g ~~7~~. Fresh or spent fuel in any allowed configuration may be replaced with non-fuel hardware, and fresh fuel in any allowed configuration may be replaced with a fuel rod storage basket containing fuel rod(s). ~~Also,~~ storage of Metamic inserts or control rods, without any fissile material, is acceptable in locations designated as completely water-filled cells.

d. The new fuel storage racks are designed for dry storage of unirradiated fuel assemblies having a maximum planar average U-235 enrichment less than or equal to 4.6 weight percent, while maintaining a k_{eff} of less than or equal to 0.98 under the most reactive condition.

See ITS 4.0

DRAINAGE

5.6.2 The spent fuel storage pool is designed and shall be maintained to prevent inadvertent draining of the pool below elevation 56 feet.

CAPACITY

5.6.3 The spent fuel pool storage racks are designed and shall be maintained with a storage capacity limited to no more than 1491 fuel assemblies, and the cask pit storage rack is designed and shall be maintained with a storage capacity limited to no more than 225 fuel assemblies. The total Unit 2 spent fuel pool and cask pit storage capacity is limited to no more than 1716 fuel assemblies.

5.7 DELETED

LCO 3.7.15 ACTION A ← Add proposed LCO 3.7.15 ACTION A — A02

SR 3.7.15.1 ← Add proposed SR 3.7.15.1 — M01

A01

Table 3.7.15-1

~~TABLE 5.6-1~~ Table 3.7.15-1 (page 1 of 1)

Minimum Burnup Coefficients

Fuel Type	Cooling Time (Years)	Coefficients		
		A	B	C
1	0	-33.4237	25.6742	-1.6478
2	0	-25.3198	14.3200	-0.4042
3	0	-23.4150	16.2050	-0.5500
4	0	-33.2205	24.8136	-1.5199
	2.5	-31.4959	23.4776	-1.4358
	5	-30.4454	22.7456	-1.4147
	10	-28.4361	21.2259	-1.2946
	15	-27.2971	20.3746	-1.2333
	20	-26.1673	19.4753	-1.1403
5	0	-24.8402	23.5991	-1.2082
	2.5	-22.9981	21.6295	-1.0249
	5	-21.8161	20.5067	-0.9440
	10	-20.0864	19.0127	-0.8545
	15	-19.4795	18.3741	-0.8318
	20	-18.8225	17.7194	-0.7985
6	0	-32.4963	25.3143	-1.5534
	2.5	-30.6688	23.6229	-1.4025
	5	-29.2169	22.5424	-1.3274
	10	-27.2539	21.0241	-1.2054
	15	-25.7327	19.8655	-1.1091
	20	-25.2717	19.5222	-1.1163
7	0	-24.6989	24.1660	-1.2578
	2.5	-23.0399	22.3047	-1.0965
	5	-21.2473	20.6553	-0.9403
	10	-20.1775	19.5506	-0.9015
	15	-19.4037	18.6626	-0.8490
	20	-18.3326	17.7040	-0.7526
8	0	-43.4750	11.6250	0.0000

NOTES:

1. To qualify in a “fuel type”, the burnup of a fuel assembly must exceed the minimum burnup “BU” calculated by inserting the “coefficients” for the associated “fuel type” and “cooling time” into the following polynomial function:

   $BU = A + B*E + C*E^2$, where:

   BU = Minimum Burnup (GWD/MTU)

   E = Maximum Initial Planar Average Enrichment (weight percent U-235)

   A, B, C = Coefficients for each fuel type

2. Interpolation between values of cooling time is not permitted.

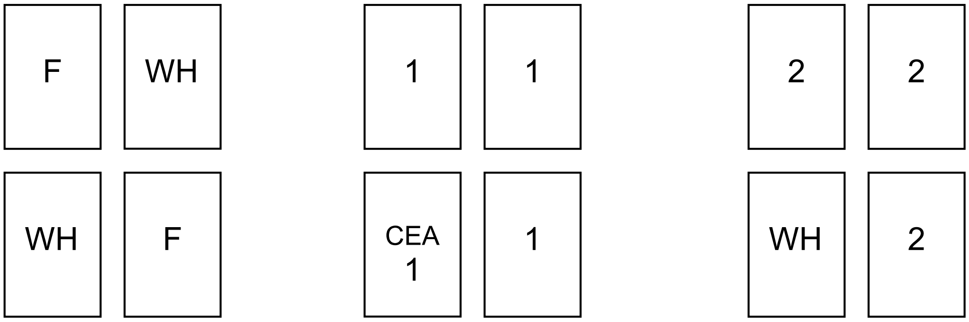
Figure 3.7.15-1 (page 1 of 1)

Allowable Storage Patterns
(See Notes 1 and 2)

Pattern "A"
See ~~Definition 1~~ Note 3

Pattern "B"
See ~~Definition 2~~ Note 4

Pattern "C"
See ~~Definition 3~~ Note 5



~~DEFINITIONS:~~

3 → ~~1.~~ Allowable pattern is fresh or burned fuel checkerboarded with completely water-filled cells. Diagram is for illustration only, where F represents Fuel and WH represents a completely water-filled cell.

4 → ~~2.~~ Allowable pattern is placement of fuel assemblies that meet the requirements of type 1 in each 2x2 array location with at least one full-length full-strength CEA placed in any cell. Minimum burnup for fuel assembly type 1 is defined in Table ~~5.6~~-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

3.7.15-1

5 → ~~3.~~ Allowable pattern is placement of fuel assemblies that meet the requirements of type 2 in three of the 2x2 array locations in combination with one completely water-filled cell. Minimum burnup for fuel assembly type 2 is defined in Table ~~5.6~~-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

3.7.15-1

NOTES:

1. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2. Completely water-filled cells within any pattern are acceptable.

Figure 3.7.15-1 (page 1 of 1)

Figure 3.7.15-1 (page 1 of 1)

~~**FIGURE 5.6-1**~~

Allowable Region 1 Storage Patterns and Fuel Arrangements

A01

Figure 3.7.15-2 (page 1 of 3)

ALLOWED SPECIAL ARRANGEMENTS (See Notes 1 and 2)
Fresh Fuel Assemblies in Region 2 Racks

See ~~Definition~~ Note SR1

▨		▨		▨		▨
	▨	F	▨	F	▨	
▨		▨		▨		▨
	▨	F	▨	F	▨	
▨		▨		▨		▨

See ~~Definition~~ Note SR2

	M		M		M	
	M	▨	M	▨	M	
	▨	F	▨	F	▨	
	M	▨	M	▨	M	
	▨	F	▨	F	▨	
	M	▨	M	▨	M	
	M		M		M	

See ~~Definition~~ Note SR3

	M	▨	M	▨	M	
	▨	F	▨	F	▨	
	M	▨	M	▨	M	
	▨	F	▨	F	▨	
	M	▨	M	▨	M	

F = Fresh Fuel Assembly

M = Fuel Assembly with Metamic Insert

▨ = Empty Cell

☐ = Fuel Assembly per ~~Definition~~ Notes

ALLOWABLE STORAGE PATTERNS (See Notes 1 and 2)

Pattern “D”
See ~~Definition~~ Note 3 ~~1~~

3	WH
3	3

Pattern “E”
See ~~Definition~~ Note 4 ~~2~~

4	4
4 ⌟	4 ⌟

Pattern “F”
See ~~Definition~~ Note 5 ~~3~~

5	5
5 ⌟	5

Pattern “G”
See ~~Definition~~ Note 6 ~~4~~

6	6 CEA
6	6 CEA

Pattern “H”
See ~~Definition~~ Note 7 ~~5~~

7 CEA	7
7	7

Figure 3.7.15-2 (page 1 of 3)

Figure 3.7.15-2 (page 1 of 3) ~~FIGURE 5.6-2 (Sheet 1 of 3)~~
Allowable Region 2 Storage Patterns and Fuel Arrangements

A01

~~DEFINITIONS for Figure 5.6-2~~ Notes for Figure 3.7.15-2

Figure 3.7.15-2 (page 2 of 3)

3 ~~1~~. Allowable pattern is fuel assemblies that meet the requirements of type 3 in three of the 2x2 array locations in combination with one completely water-filled cell. Minimum burnup for fuel assembly type 3 is defined in Table ~~5.6~~ 3.7.15-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

4 ~~2~~. Allowable pattern is fuel assemblies that meet the requirements of type 4 in each of the 2x2 array locations with at least two Metamic inserts placed anywhere in the 2x2 array. Minimum burnup for fuel assembly type 4 is defined in Table ~~5.6~~ 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

5 ~~3~~. Allowable pattern is fuel assemblies that meet the requirements of type 5 in each of the 2x2 array locations with at least one Metamic insert placed anywhere in the 2x2 array. Minimum burnup for fuel assembly type 5 is defined in Table ~~5.6~~ 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

6 ~~4~~. Allowable pattern is fuel assemblies that meet the requirements of type 6 in each of the 2x2 array locations with at least two full-length, full strength 5 finger CEAs placed anywhere in the 2x2 array. Minimum burnup for fuel assembly type 6 is defined in Table ~~5.6~~ 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

7 ~~5~~. Allowable pattern is fuel assemblies that meet the requirements of type 7 in each of the 2x2 array locations with at least one full-length, full strength 5 finger CEA placed anywhere in the 2x2 array. Minimum burnup for fuel assembly type 7 is defined in Table ~~5.6~~ 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

SR1. Allowable pattern is up to four fresh or burned fuel assemblies placed in a 3x3 array in combination with Pattern "D" placed outside the 3x3 array. Fresh or burned fuel shall be placed in the corners of the 3x3 array with completely water-filled cells placed face-adjacent on all sides. A fuel assembly that meets the requirements of type 3 shall be placed in the center of the 3x3 array. Minimum burnup for fuel assembly type 3 is defined in Table ~~5.6~~ 3.7.15-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

SR2. Allowable pattern is up to four fresh or burned fuel assemblies placed in a 3x3 array in combination with Pattern "E" placed outside the 3x3 array. Fresh or burned fuel shall be placed in the corners of the 3x3 array with completely water-filled cells placed face-adjacent on all sides. A fuel assembly that meets the requirements of type 4 with a Metamic insert shall be placed in the center of the 3x3 array. Minimum burnup for fuel assembly type 4 is defined in Table ~~5.6~~ 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

Figure 3.7.15-2 (page 2 of 3)

~~FIGURE 5.6-2 (Sheet 2 of 3)~~ Figure 3.7.15-2 (page 2 of 3)

Allowable Region 2 Storage Patterns and Fuel Arrangements

Notes for Figure 3.7.15-2 (continued)

Figure 3.7.15-2 (page 3 of 3)

SR3. Allowable pattern is up to four fresh or burned fuel assemblies placed in a 3x3 array in combination with Pattern "F" placed outside the 3x3 array. Fresh or burned fuel shall be placed in the corners of the 3x3 array with completely water-filled cells placed face-adjacent on all sides. A fuel assembly that meets the requirements of type 5 with a Metamic insert shall be placed in the center of the 3x3 array. Minimum burnup for fuel assembly type 5 is defined in Table ~~5.6~~ 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

NOTES

1. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2. Completely water-filled cells within any pattern are acceptable.

Figure 3.7.15-2 (page 3 of 3)

Figure 3.7.15-2 (page 3 of 3)

~~FIGURE 5.6-2 (Sheet 3 of 3)~~

Allowable Region 2 Storage Patterns and Fuel Arrangements

A01

Allowed Region 2 to Region 1 Fuel Alignments
(See Note 1)

Figure 3.7.15-3 (page 1 of 2)

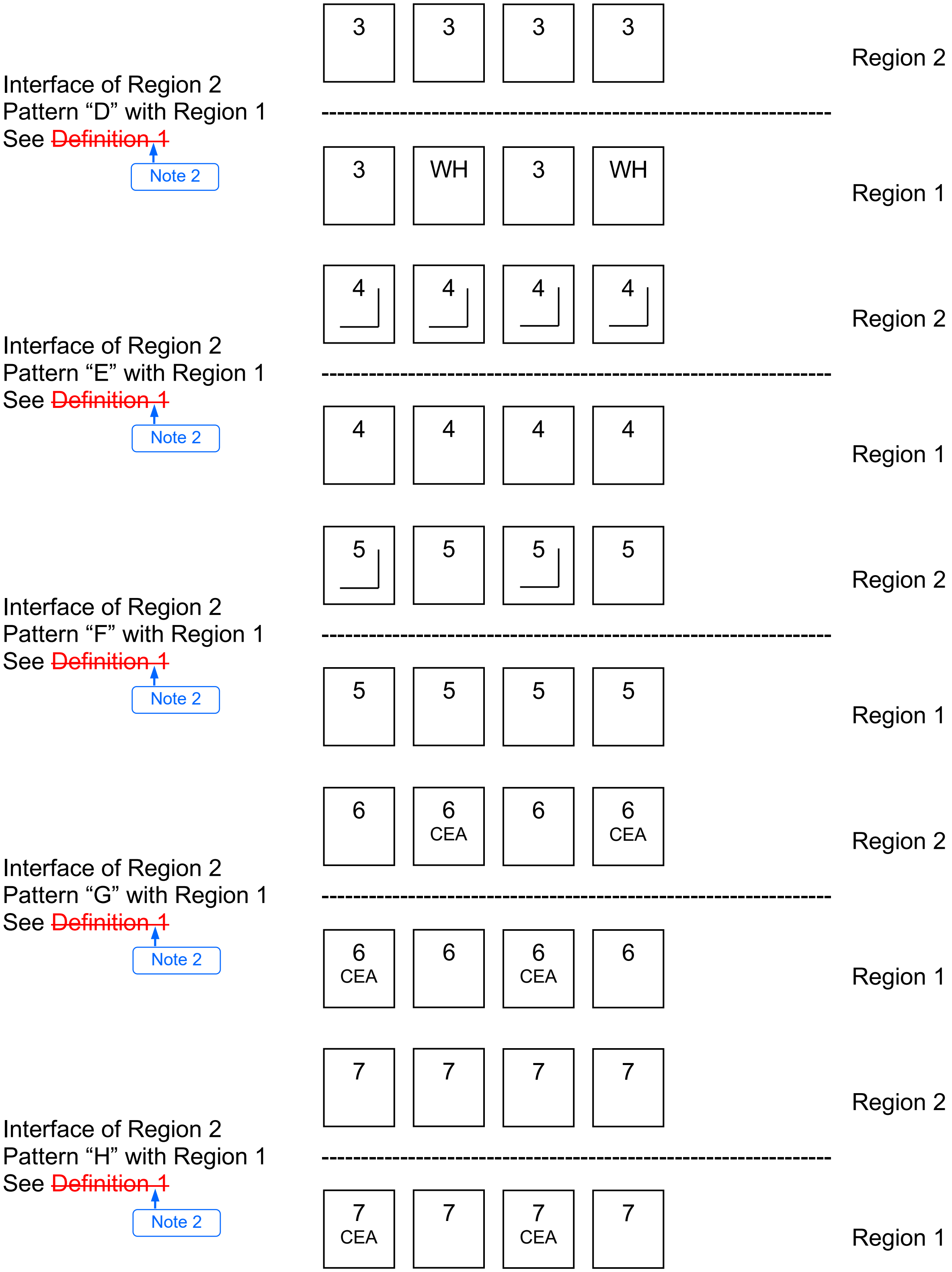


Figure 3.7.15-3 (page 1 of 2)

~~FIGURE 5.6-3 (Sheet 1 of 2)~~

Interface Requirements between Region 1 and Region 2

Figure 3.7.15-3 (page 1 of 2)

~~DEFINITION:~~

Figure 3.7.15-3 (page 2 of 2)

2 ~~1~~. Each 2x2 array that spans Region 1 and Region 2 shall match 3.7.15.c one of the Region 2 allowable storage patterns as defined by Specification ~~5.6.1.c.3~~. Any required Metamic inserts must be placed into the fuel assemblies in Region 2. Locations of completely water-filled cells or CEAs may be in either Region 1 or Region 2. For interface assemblies, the requirements of Specification~~s~~ ~~5.6.1.c.2~~ 3.7.15.b and Specification ~~5.6.1.c.3~~ 3.7.15.c shall be followed within Region 1 and Region 2, respectively. The Diagrams are for illustration only.

NOTES:

1. Completely water-filled cells within any pattern are acceptable.

Figure 3.7.15-3 (page 2 of 2)

Figure 3.7.15-3 (page 2 of 2)

~~FIGURE 5.6-3 (Sheet 2 of 2)~~

Interface Requirements between Region 1 and Region 2

A01

Figure 3.7.15-4 (page 1 of 1)

Allowable Storage Patterns
(See Notes 1 and 2)

Pattern “A”
See ~~Definition 1~~
Note 3

F	WH
WH	F

Pattern “B”
See ~~Definition 2~~
Note 4

8	8
WH	8

~~DEFINITIONS:~~

3 ~~1.~~ Allowable pattern is fresh or burned fuel checkerboarded with completely water-filled cells. Diagram is for illustration only, where F represents Fuel and WH represents a completely water-filled cell.

4 ~~2.~~ Allowable pattern is placement of fuel assemblies that meet the requirements of type 8 in three of the 2x2 array locations in combination with one completely water-filled cell in any location. Minimum burnup for fuel assembly type 8 is defined in Table ~~5.6~~-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.
3.7.15

NOTES:

1. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2. Completely water-filled cells within any pattern are acceptable.

Figure 3.7.15-4 (page 1 of 1)

Figure 3.7.15-4 (page 1 of 1)

~~FIGURE 5.6-4~~
Allowable Cask Pit Storage Rack Patterns

DISCUSSION OF CHANGES
ITS 3.7.15, SPENT FUEL POOL STORAGE

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 5.6.1.c provides the criteria for fuel storage in the spent fuel storage pool, based on enrichment and burnup, for Region 1, Region 2, or cask pit storage racks. Unit 1 ITS LCO 3.7.15 requires that the initial enrichment and burnup of each fuel assembly stored in Region 1 or Region 2 be in accordance with Table 3.7.15-1 and the configuration requirements specified in LCO 3.7.15.a, b, c, d, e and f. Unit 2 ITS LCO 3.7.15 requires that the initial enrichment and burnup of each fuel assembly stored in Region 1, Region 2, or cask pit storage rack be in accordance with Table 3.7.15-1 and the configuration requirements specified in LCO 3.7.15.a, b, c, d, e, f, and g. In addition, ITS 3.7.15 provides an explicit ACTION to initiate action to immediately move the noncomplying fuel assembly to an acceptable location if the requirements of the LCO are not met. This changes the CTS by moving the storage requirements for spent fuel stored in Region 1, Region 2, and cask pit storage racks to an explicit LCO and adds an explicit ACTION to be taken if the LCO is not met.

The purpose of CTS 5.6.1 is to provide the design criteria to preserve assumptions in the spent fuel storage pool criticality analysis. Spent fuel storage requirements are more appropriately provided in an LCO. Therefore, the spent fuel storage requirements specified in CTS 5.6.1.c, including associated table and figures are moved to a separate Technical Specifications; ITS 3.7.15, “Spent Fuel Storage.” Although the CTS does not provide an explicit Action associated with noncompliance with the storage requirements of CTS 5.6.1.c, this condition would result in the spent fuel storage pool being in an unanalyzed condition and immediate corrective action would be taken to restore compliance. This change is acceptable because the ITS preserves the assumptions of the spent fuel storage pool criticality analysis and provides an appropriate ACTION to restore compliance when fuel storage is not within the required configuration. This change is designated as an administrative change because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

M01 The CTS does not provide a Surveillance Requirement for spent fuel storage. ITS SR 3.7.15.1 requires a verification by administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with Table 3.7.15-1 and configuration requirements of LCO 3.7.15.a, b, c, d, e, f and g (Unit 2 only). This changes the CTS by incorporating the requirements of ITS SR 3.7.15.1.

The safety related function of the spent fuel storage pool is to assure by the spacing and geometrically safe configurations of new and spent fuel assemblies with initial planar average U-235 enrichment up to 4.6 wt% ensure a subcritical array of keff ≤ 0.95 is maintained, assuming credit for a portion of the soluble boron present in the fuel pool water. This change is acceptable because the proposed Surveillance Requirement provides assurance that fuel assembly storage will be controlled in accordance with the assumptions of the spent fuel storage pool criticality analysis. 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

None

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

3.7 PLANT SYSTEMS

3.7.~~18~~ 15 Spent Fuel Pool Storage ③

5.6.1.c
DOC A02

LCO 3.7.~~18~~ 15 The combination of initial enrichment and burnup of each fuel assembly stored in ~~[Region 2]~~ Region 1, Region 2, or cask pit shall be ~~within the acceptable [burnup domain] of Figure 3.7.18-1 [or~~ in accordance with the following configuration requirements: ~~Specification 4.3.1.1].~~ ③ ②

5.6.1.c.1, c.2, c.3, c.4, c.5, c.6 Insert 1 ②

DOC A02 APPLICABILITY: Whenever any fuel assembly is stored in ~~[Region 2]~~ Region 1, Region 2, or cask pit storage rack of the fuel storage pool. ②

ACTIONS

DOC A02

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 ---------------NOTE-------------- LCO 3.0.3 is not applicable. ------------------------------------- Initiate action to move the noncomplying fuel assembly ~~from [Region 2]~~ to an acceptable location.	Immediately

②

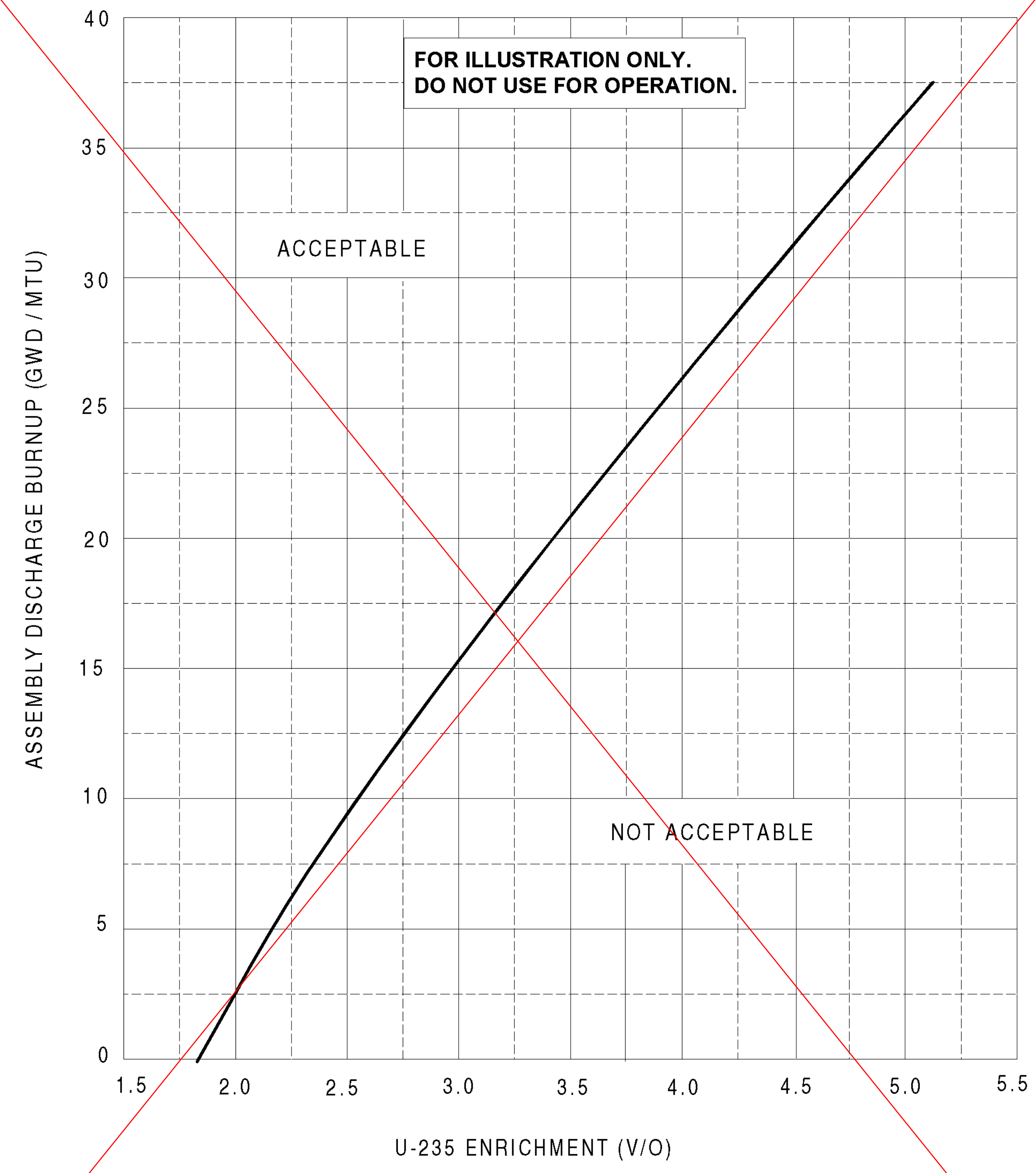
SURVEILLANCE REQUIREMENTS

DOC M01

SURVEILLANCE	FREQUENCY
SR 3.7.~~18~~ 15.1 Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with ~~Figure 3.7.18-1 or Specification 4.3.1.1~~ Table 3.7.15-1 and the configuration requirements of LCO 3.7.15.a, b, c, d, e and f.	Prior to storing the fuel assembly in ~~[Region 2]~~ Region 1, Region 2, or cask pit storage rack

③ ②

Insert 2 (Table 3.7.15-1)
Insert 3 (Figure 3.7.15-1)
Insert 4 (Figure 3.7.15-2)
Insert 5 (Figure 3.7.15-3)
A02



①

Figure 3.7.18-1 (page 1 of 1)
Discharge Burnup vs. Initial Enrichment for Region II Racks

CTS

Insert 1 ④

5.6.1.c.1 a. The maximum initial planar average U-235 enrichment of any fuel assembly inserted in a spent fuel storage rack shall be less than or equal to 4.6 weight percent.

5.6.1.c.2 b. Fuel placed in Region 1 of the spent fuel pool storage racks shall comply with the storage patterns and alignment restrictions of Figure 3.7.15-1 and the minimum burnup requirements of Table 3.7.15-1;

5.6.1.c.3 c. Fuel placed in Region 2 of the spent fuel pool storage racks shall comply with the storage patterns or allowed special arrangements of Figure 3.7.15-2 and the minimum burnup requirements of Table 3.7.15-1;

---NOTE---

The allowed special arrangement for fresh fuel may be repeated provided the applicable interface requirements specified by the safety analysis are met.

5.6.1.c.4 d. Any fuel satisfying Specification 3.7.15.a, including fresh fuel, may be placed in the Region 1 cask pit storage rack.

---NOTE---

LCO 3.7.15.b, c, e, and f, do not apply to the Region 1 cask pit storage rack.

5.6.1.c.5 e. The same directional orientation for Metamic inserts is required for contiguous groups of 2x2 arrays where Metamic inserts are required; and

5.6.1.c.6 f. Any 2x2 array of Region 2 storage cells that interface with Region 1 shall comply with the requirements of Figure 3.7.15-3.

--NOTE---

The allowed special arrangement in Region 2 as shown in Figure 3.7.15-2 shall not be placed adjacent to Region 1.

----

①

INSERT 2

Table 3.7.15-1 (page 1 of 1)
Minimum Burnup as a Function of Enrichment

Fuel Type	Cooling Time (Years)	Coefficients		
		A	B	C
1	0	-36.6860	22.4942	-1.4413
2	0	-36.1742	16.6000	-0.8958
3	0	-34.7091	23.1361	-1.6204
4	0	-24.5145	21.3404	-1.2444
	2.5	-26.8311	22.5246	-1.5029
	5	-24.7233	20.9763	-1.3246
	10	-23.6285	19.9541	-1.2505
	15	-23.5458	19.9336	-1.3180
	20	-22.4382	19.2460	-1.2629
5	0	-8.1856	14.5275	-0.0719
	2.5	-11.8506	16.1475	-0.3969
	5	-16.5196	18.5309	-0.7837
	10	-13.6831	16.3475	-0.5844
	15	-12.5819	15.6175	-0.5656
	20	-12.6469	15.4575	-0.5906

Notes:

1. To qualify in a ”fuel type,” the burnup of a fuel assembly must exceed the minimum burnup “BU” calculated by inserting the “coefficients” for the associated “fuel type” and “cooling time” into the polynomial function:

   BU = A + B*E + C*E^{2}, where:

   BU = Minimum Burnup (GWD/MTU)

   E = Initial Maximum Planar Average Enrichment (weight percent uranium-235)

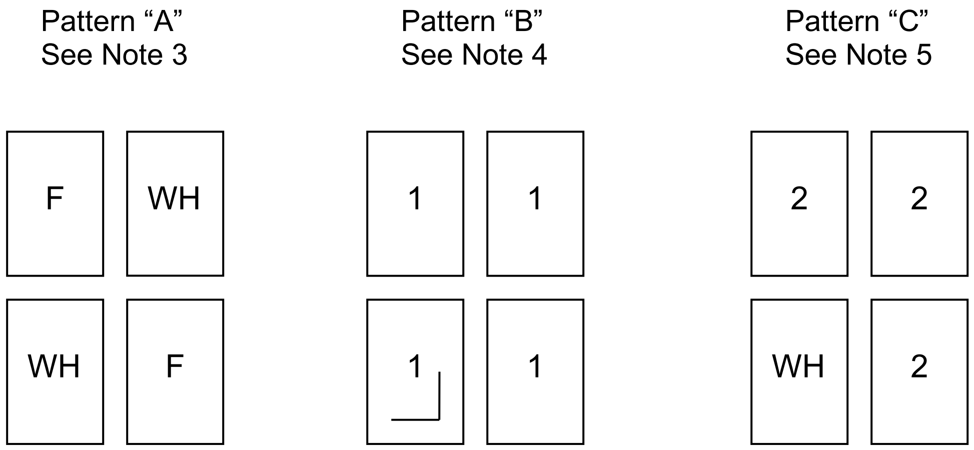
   A, B, C = Coefficients

2. Interpolation between values of cooling time is not permitted.

①

INSERT 3

Allowable Checkerboard Storage Patterns
(See Notes 1 and 2)



Notes:

1. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2. Empty cells within any pattern are acceptable.

3. F represents Fresh Fuel. WH represents an empty cell. Allowable Pattern is Fresh Fuel checkerboarded with empty cells. Diagram is for illustration only.

4. Numbering denotes fuel assembly type. Minimum burnup for fuel assembly type 1 is defined in Table 3.7.15-1. Allowable pattern is at least one insert [either Metamic or full-length full-strength CEA] in any one of the 2x2 array locations. Diagram is for illustration only.

5. Numbering denotes fuel assembly type. WH represents an empty cell. Minimum burnup for fuel assembly type 2 is defined in Table 3.7.15-1. Allowable pattern is at least one empty cell in any of the 2x2 array locations. Diagram is for illustration only.

Figure 3.7.15-1 (page 1 of 1)
Allowable Region 1 Storage Patterns and Fuel Arrangements

①

INSERT 4

ALLOWED SPECIAL ARRANGEMENT

Fresh Fuel Assemblies in Pattern “C”, “D”, or “E” Racks

		▨		▨		
	▨	F	▨	F	▨	
		▨		▨		
	▨	F	▨	F	▨	
		▨		▨		

F = FRESH FUEL ASSEMBLY

▨ = EMPTY CELL

ALLOWABLE CHECKERBOARD STORAGE PATTERNS (See Notes 1 and 2)

Pattern “C”
See Note 3

Pattern “D”
See Note 4

Pattern “E”
See Note 5

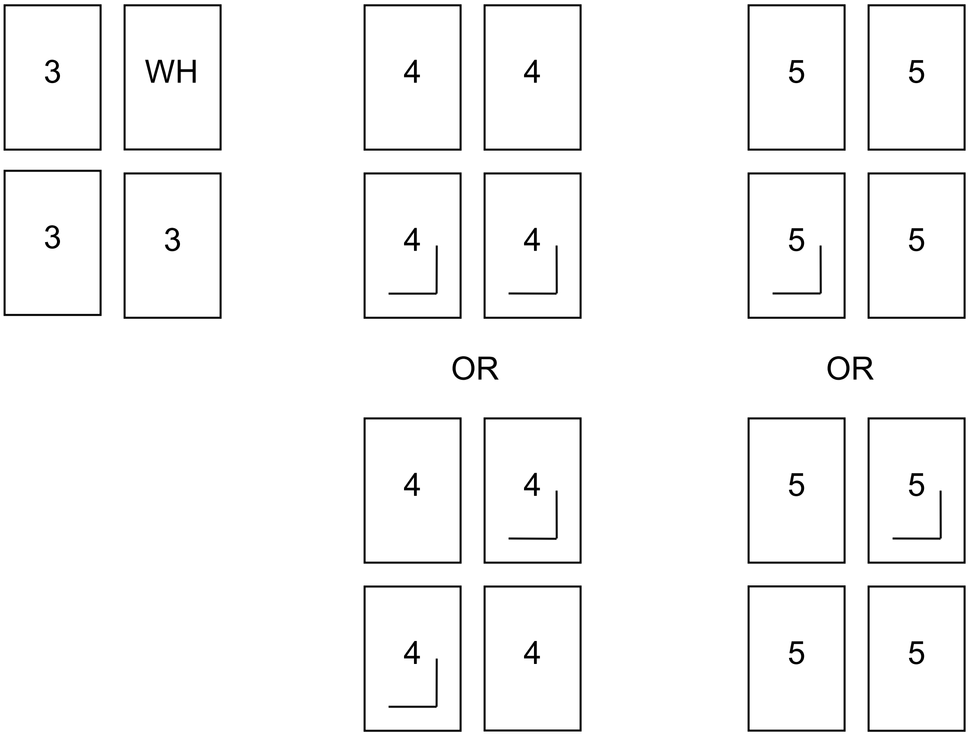


Figure 3.7.15-2 (page 1 of 2)
Allowable Region 2 Storage Patterns and Fuel Alignments

① **INSERT 4 (continued)**

Notes to Figure 3.7.15-2

Notes:

1. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2. Empty cells within any pattern are acceptable.

3. Numbering denotes fuel assembly type. WH represents an empty cell. Minimum burnup for fuel assembly type 3 is defined in Table 3.7.15-1. Allowable pattern is at least one empty cell in any of the 2x2 array locations. Diagram is for illustration only.

4. Numbering denotes fuel assembly type. Minimum burnup for fuel assembly type 4 is defined in Table 3.7.15-1. Allowable pattern is at least two inserts, (either Metamic or full-length, full-strength CEA) in the 2x2 array. Diagrams are for illustration only.

5. Numbering denotes fuel assembly type. Minimum burnup for fuel assembly type 5 is defined in Table 3.7.15-1. Allowable pattern is one insert, (either Metamic or full-length, full-strength CEA) in the 2x2 array. Diagrams are for illustration only.

Figure 3.7.15-2 (page 2 of 2)
Allowable Region 2 Storage Patterns and Fuel Arrangements

①

INSERT 5

Allowed Region 2 to Region 1 Fuel Alignments
(See Notes 1 and 2)

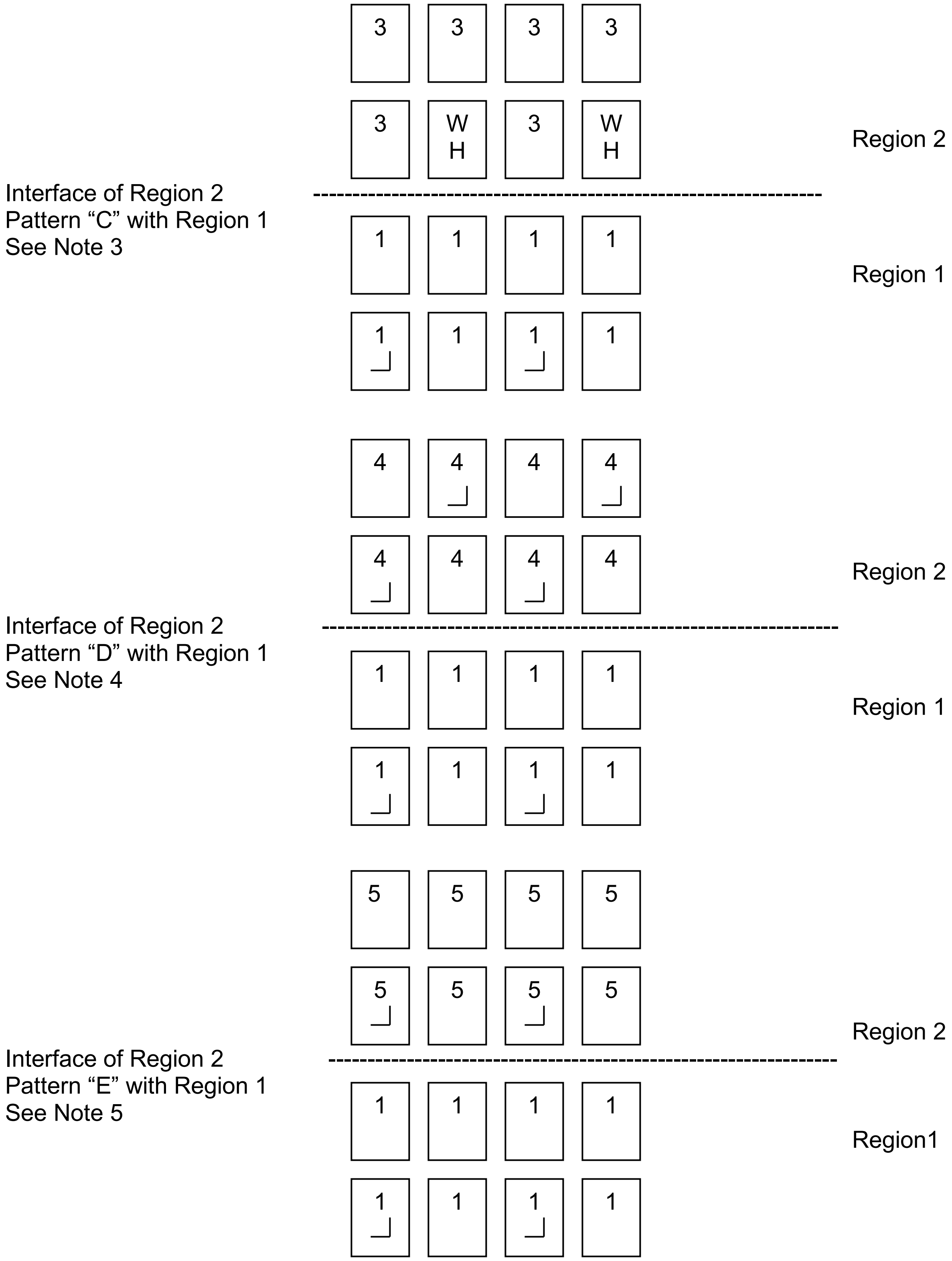


Figure 3.7.15-3 (page 1 of 2)
Region 2 Interface Requirements with Region 1

①

INSERT 5 (continued)

Notes to Figure 3.7.15-3

Notes:

1. Empty cells with any pattern are acceptable.

2. There are no interface requirements within Region 1. Any Pattern within Region 1 may be used for the interface. Pattern “B” was used only as an illustration.

3. WH represents an empty cell. For the interface of Pattern “C” with Region 1, the empty cell must be on the rack periphery facing Region 1 racks. Diagrams are for illustration only.

4. For the interface of pattern “D” with Region 1, at least one cell on the rack periphery facing Region 1 rack must contain an insert (either Metamic of full-length full-strength CEA) in the 2x2 array. If the insert is Metamic, the insert must be oriented so that the corner of the L-shape is located closest to the Region 1 rack. Diagram is for illustration only.

5. For the interface of Pattern “E” with Region 1, the insert must be on the rack periphery facing the Region 1 rack. The insert may be either a Metamic of full-length full strength CEA. If the insert is Metamic, the insert must be oriented so that the corner of the L-shape is located closest to the Region 1 rack. Diagram is for illustration only.

Figure 3.7.15-3 (page 2 of 2)
Region 2 Interface requirements with Region 1

3.7 PLANT SYSTEMS

3.7.~~18~~ 15 Spent Fuel Pool Storage ③

5.6.1.c
DOC A02 LCO 3.7.~~18~~ 15 The combination of initial enrichment and burnup of each fuel assembly stored in ~~[Region 2]~~ Region 1, Region 2, or cask pit shall be ~~within the acceptable [burnup domain] of Figure 3.7.18-1 [or~~ in accordance with ~~Specification 4.3.1.1].~~ the following configuration requirements: ③ ②

5.6.1.c.1, c.2, c.3, c.4, c.5, c.6, c.7 Insert 1 ②

DOC A02 APPLICABILITY: Whenever any fuel assembly is stored in ~~[Region 2]~~ Region 1, Region 2, or cask pit storage rack of the fuel storage pool. ②

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
DOC A02 A. Requirements of the LCO not met.	A.1 ---------------NOTE-------------- LCO 3.0.3 is not applicable. ------------------------------------- Initiate action to move the noncomplying fuel assembly ~~from [Region 2]~~ to an acceptable location.	Immediately ②

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
DOC M01 SR 3.7.~~18~~ 15.1 Verify by administrative means the initial enrichment and burnup of the fuel assembly is in accordance with ~~Figure 3.7.18-1 or Specification 4.3.1.1~~ Table 3.7.15-1 and the configuration requirements of LCO 3.7.15.a, b, c, d, e, f and g.	Prior to storing the fuel assembly in ~~[Region 2]~~ Region 1, Region 2, or cask pit storage rack ③ ②

Insert 2 (Table 3.7.15-1)
Insert 3 (Figure 3.7.15-1)
Insert 4 (Figure 3.7.15-2)
Insert 5 (Figure 3.7.15-3)
Insert 6 (Figure 3.7.15-4) ②

③

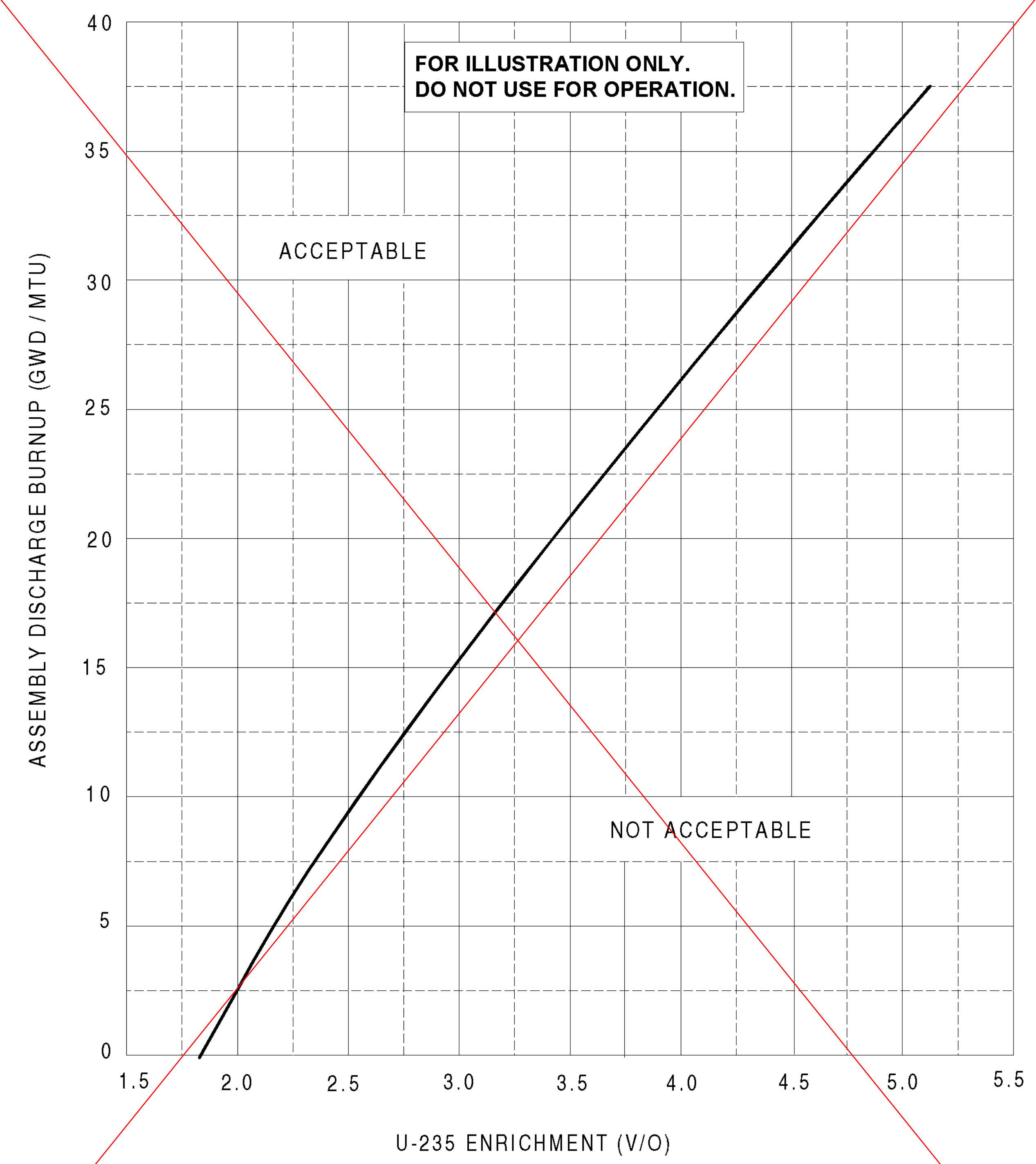


Figure 3.7.18-1 (page 1 of 1)
Discharge Burnup vs. Initial Enrichment for Region II Racks

①

CTS

Insert 1 ④

5.6.1.c.1 a. The maximum initial planar average U-235 enrichment of any fuel assembly inserted in a spent fuel storage rack shall be less than or equal to 4.6 weight percent.

5.6.1.c.2 b. Fuel placed in Region 1 of the spent fuel pool storage racks shall comply with the requirements of Figure 3.7.15-1 and the minimum burnup requirements of Table 3.7.15-1, except as specified in LCO 3.7.15.g;

5.6.1.c.3 c. Fuel placed in Region 2 of the spent fuel pool storage racks shall comply with the requirements of Figure 3.7.15-2 and the minimum burnup requirements of Table 3.7.15-1, except as specified in LCO 3.7.15.g;

5.6.1.c.4 d. Any 2x2 array of fuel assemblies that span the interface between Region 1 and Region 2 of the spent fuel pool storage racks shall comply with the storage patterns of Figure 3.7.15-3 and the minimum burnup requirements of Table 3.7.15-1, except as specified in LCO 3.7.15.g;

---NOTE--

The allowed special arrangements in Region 2 as shown in Figure 3.7.15-2 shall not be placed adjacent to Region 1.

5.6.1.c.5 e. Fuel placed in the cask pit storage rack shall comply with the storage patterns of Figure 3.7.15-5 and the minimum burnup requirements of Table 3.7.15-1, except as specified in LCO 3.7.15.g;

5.6.1.c.6 f. The same directional orientation for Metamic inserts is required for contiguous groups of 2x2 arrays where Metamic inserts are required;

5.6.1.c.7 g. Fresh or spent fuel in any allowed configuration may be replaced with non fuel hardware, and fresh fuel in any allowed configuration may be replaced with a fuel rod storage basket containing fuel rod(s).

---NOTE--

Storage of Metamic inserts or control rods, without any fissile material, is acceptable in locations designated as completely water-filled cells.

A01

INSERT 2

Table 3.7.15-1 (page 1 of 1)
Minimum Burnup Coefficients

Fuel Type	**Cooling Time (Years)**	**Coefficients**		
		A	**B**	**C**
1	0	-33.4237	25.6742	-1.6478
2	0	-25.3198	14.3200	-0.4042
3	0	-23.4150	16.2050	-0.5500
4	0	-33.2205	24.8136	-1.5199
	2.5	-31.4959	23.4776	-1.4358
	5	-30.4454	22.7456	-1.4147
	10	-28.4361	21.2259	-1.2946
	15	-27.2971	20.3746	-1.2333
	20	-26.1673	19.4753	-1.1403
5	0	-24.8402	23.5991	-1.2082
	2.5	-22.9981	21.6295	-1.0249
	5	-21.8161	20.5067	-0.9440
	10	-20.0864	19.0127	-0.8545
	15	-19.4795	18.3741	-0.8318
	20	-18.8225	17.7194	-0.7985
6	0	-32.4963	25.3143	-1.5534
	2.5	-30.6688	23.6229	-1.4025
	5	-29.2169	22.5424	-1.3274
	10	-27.2539	21.0241	-1.2054
	15	-25.7327	19.8655	-1.1091
	20	-25.2717	19.5222	-1.1163
7	0	-24.6989	24.1660	-1.2578
	2.5	-23.0399	22.3047	-1.0965
	5	-21.2473	20.6553	-0.9403
	10	-20.1775	19.5506	-0.9015
	15	-19.4037	18.6626	-0.8490
	20	-18.3326	17.7040	-0.7526
8	0	-43.4750	11.6250	0.0000

NOTES:

1. To qualify in a “fuel type”, the burnup of a fuel assembly must exceed the minimum burnup “BU” calculated by inserting the “coefficients” for the associated “fuel type” and “cooling time” into the following polynomial function:

   $BU = A + B*E + C*E^2$, where:

   BU = Minimum Burnup (GWD/MTU)

   E = Maximum Initial Planar Average Enrichment (weight percent U-235)

   A, B, C = Coefficients for each fuel type

2. Interpolation between values of cooling time is not permitted.

①

INSERT 3

Allowable Storage Patterns
(See Notes 1 and 2)

Pattern “A”
See Note 3

F	WH
WH	F

Pattern “B”
See Note 4

1	1
CEA 1	1

Pattern “C”
See Note 5

2	2
WH	2

Notes:

1. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2. Completely water-filled cells within any pattern are acceptable.

3. Allowable pattern is fresh or burned fuel checkerboarded with completely water-filled cells. Diagram is for illustration only, where F represents Fuel and WH represents a completely water-filled cell.

4. Allowable pattern is placement of fuel assemblies that meet the requirements of type 1 in each 2x2 array location with at least one full-length full-strength CEA placed in any cell. Minimum burnup for fuel assembly type 1 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

5. Allowable pattern is placement of fuel assemblies that meet the requirements of type 2 in three of the 2x2 array locations in combination with one completely water-filled cell. Minimum burnup for fuel assembly type 2 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

Figure 3.7.15-1 (page 1 of 1)
Allowable Region 1 Storage Patterns and Fuel Arrangements

①

INSERT 4

ALLOWED SPECIAL ARRANGEMENTS (See Notes 1 and 2)
Fresh Fuel Assemblies in Region 2 Racks

See Note SR1

▨		▨		▨		▨
	▨	F	▨	F	▨	
▨		▨		▨		▨
	▨	F	▨	F	▨	
▨		▨		▨		▨

See Note SR2

	M		M		M	
	M	▨	M	▨	M	
	▨	F	▨	F	▨	
	M	▨	M	▨	M	
	▨	F	▨	F	▨	
	M	▨	M	▨	M	
	M		M		M	

See Note SR3

	M	▨	M	▨	M	
	▨	F	▨	F	▨	
	M	▨	M	▨	M	
	▨	F	▨	F	▨	
	M	▨	M	▨	M	

F = Fresh Fuel Assembly

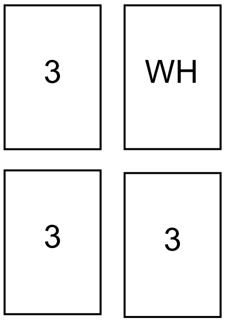
M = Fuel Assembly with Metamic Insert

▨ = Empty Cell

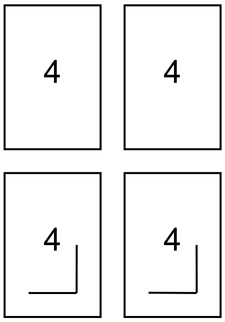
☐ = Fuel Assembly per Notes

ALLOWABLE STORAGE PATTERNS (See Notes 1 and 2)

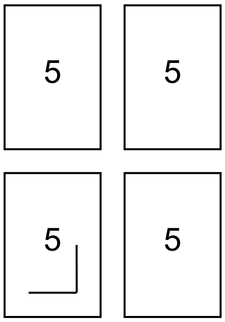
Pattern “D”
See Note 3



Pattern “E”
See Note 4

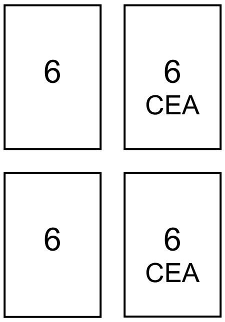


Pattern “F”
See Note 5



Pattern “G”

See Note 6



Pattern “H”

See note 7

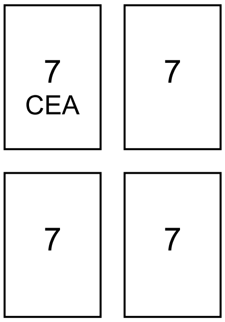


Figure 3.7.15-2 (page 1 of 3)
Allowable Region 2 Storage Patterns and Fuel Arrangements

① **INSERT 4 (continued)**

Notes for Figure 3.7.15-2 (page 1 of 3)

Notes:

1. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2. Completely water-filled cells within any pattern are acceptable.

3. Allowable pattern is fuel assemblies that meet the requirements of type 3 in three of the 2x2 array locations in combination with one completely water-filled cell. Minimum burnup for fuel assembly type 3 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

4. Allowable pattern is fuel assemblies that meet the requirements of type 4 in each of the 2x2 array locations with at least two Metamic inserts placed anywhere in the 2x2 array. Minimum burnup for fuel assembly type 4 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

5. Allowable pattern is fuel assemblies that meet the requirements of type 5 in each of the 2x2 array locations with at least one Metamic insert placed anywhere in the 2x2 array. Minimum burnup for fuel assembly type 5 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

6. Allowable pattern is fuel assemblies that meet the requirements of type 6 in each of the 2x2 array locations with at least two full-length, full strength 5 finger CEAs placed anywhere in the 2x2 array. Minimum burnup for fuel assembly type 6 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

7. Allowable pattern is fuel assemblies that meet the requirements of type 7 in each of the 2x2 array locations with at least one full-length, full strength 5 finger CEA placed anywhere in the 2x2 array. Minimum burnup for fuel assembly type 7 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

SR1. Allowable pattern is up to four fresh or burned fuel assemblies placed in a 3x3 array in combination with Pattern “D” placed outside the 3x3 array. Fresh or burned fuel shall be placed in the corners of the 3x3 array with completely water-filled cells placed face-adjacent on all sides. A fuel assembly that meets the requirements of type 3 shall be placed in the center of the 3x3 array. Minimum burnup for fuel assembly type 3 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

Figure 3.7.15-2 (page 2 of 3)
Allowable Region 2 Storage Patterns and Fuel Arrangements

①

INSERT 4 (continued)

Notes for Figure 3.7.15-2 (continued)

SR2. Allowable pattern is up to four fresh or burned fuel assemblies placed in a 3x3 array in combination with Pattern “E” placed outside the 3x3 array. Fresh or burned fuel shall be placed in the corners of the 3x3 array with completely water-filled cells placed face-adjacent on all sides. A fuel assembly that meets the requirements of type 4 with a Metamic insert shall be placed in the center of the 3x3 array. Minimum burnup for fuel assembly type 4 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

SR3. Allowable pattern is up to four fresh or burned fuel assemblies placed in a 3x3 array in combination with Pattern “F” placed outside the 3x3 array. Fresh or burned fuel shall be placed in the corners of the 3x3 array with completely water-filled cells placed face-adjacent on all sides. A fuel assembly that meets the requirements of type 5 with a Metamic insert shall be placed in the center of the 3x3 array. Minimum burnup for fuel assembly type 5 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment and cooling time. Diagram is for illustration only.

Figure 3.7.15-2 (page 3 of 3)
Allowable Region 2 Storage Patterns and Fuel Arrangements

① INSERT 5

Allowed Region 2 to Region 1 Fuel Alignments
(See Note 1)

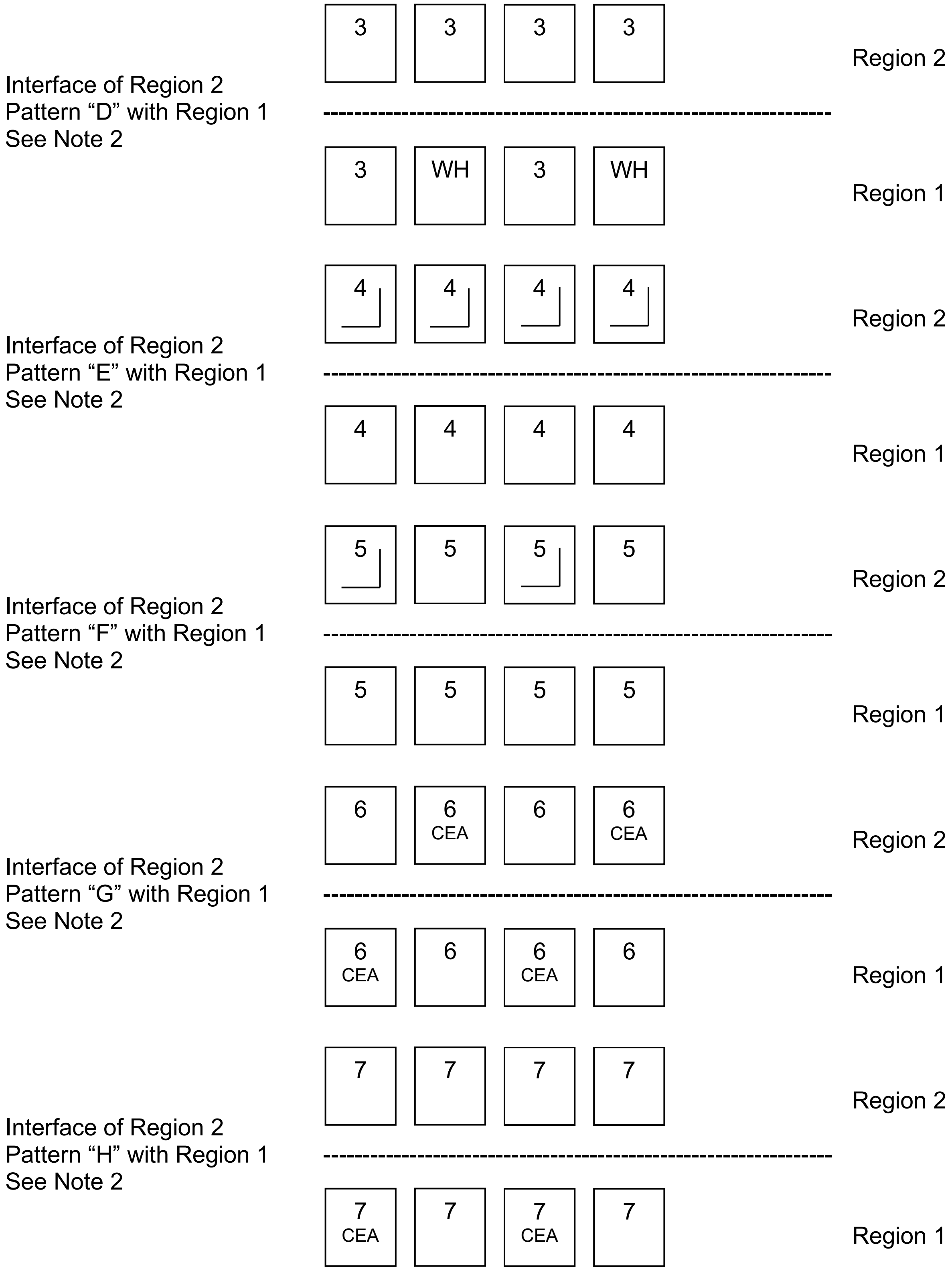


Figure 3.7.15-3 (page 1 of 2)
Interface Requirements between Region 1 and Region 2

① **INSERT 5 (continued)**

Notes:

1. Completely water-filled cells within any pattern are acceptable.

2. Each 2x2 array that spans Region 1 and Region 2 shall match one of the Region 2 allowable storage patterns as defined by LCO 3.7.15.c. Any required Metamic inserts must be placed into the fuel assemblies in Region 2. Locations of completely water-filled cells or CEAs may be in either Region 1 or Region 2. For interface assemblies, the requirements of LCO 3.7.15.b and LCO 3.7.15.c shall be followed within Region 1 and Region 2, respectively. The Diagrams are for illustration only.

Figure 3.7.15-3 (page 2 of 2)
Interface Requirements between Region 1 and Region 2

①

INSERT 6

Allowable Storage Patterns
(See Notes 1 and 2)

Pattern "A"
See Note 3

F	WH
WH	F

Pattern "B"
See Note 4

8	8
WH	8

Notes:

1. The storage arrangements of fuel within a rack module may contain more than one pattern. Each cell is a part of up to four 2x2 arrays, and each cell must simultaneously meet the requirements of all those arrays of which it is a part.

2. Completely water-filled cells within any pattern are acceptable.

3. Allowable pattern is fresh or burned fuel checkerboarded with completely water-filled cells. Diagram is for illustration only, where F represents Fuel and WH represents a completely water-filled cell.

4. Allowable pattern is placement of fuel assemblies that meet the requirements of type 8 in three of the 2x2 array locations in combination with one completely water-filled cell in any location. Minimum burnup for fuel assembly type 8 is defined in Table 3.7.15-1 as a function of maximum initial planar average enrichment. Diagram is for illustration only.

Figure 3.7.15-4 (page 1 of 1)
Allowable Cask Pit Storage Rack Patterns

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.15, SPENT FUEL POOL STORAGE

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. Changes are made to reflect the Specification Number and Title.

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

B 3.7 PLANT SYSTEMS

B 3.7.~~18~~ 15 Spent Fuel Pool Storage ③

BASES

BACKGROUND

INSERT 1 ~~The spent fuel storage facility is designed to store either new (nonirradiated) nuclear fuel assemblies, or burned (irradiated) fuel assemblies in a vertical configuration underwater. The storage pool is sized to store [735] fuel assemblies, which includes storage for [15] failed fuel containers. The spent fuel storage cells are installed in parallel rows with center to center spacing of [12 31/32] inches in one direction, and [13 3/16] inches in the other orthogonal direction. This spacing and "flux trap" construction, whereby the fuel assemblies are inserted into neutron absorbing stainless steel cans, is sufficient to maintain a k_{eff} of ≤ 0.95 for spent fuel of original enrichment of up to [3.3]%. However, as higher initial enrichment fuel assemblies are stored in the spent fuel pool, they must be stored in a checkerboard pattern taking into account fuel burnup to maintain a k_{eff} of 0.95 or less.~~ ① ②

APPLICABLE SAFETY ANALYSES

~~The spent fuel storage facility is designed for noncriticality by use of adequate spacing, and "flux trap" construction whereby the fuel assemblies are inserted into neutron absorbing stainless steel cans.~~ ① INSERT 2

The spent fuel pool storage satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The restrictions on the placement of fuel assemblies within the spent fuel pool, according to criteria for Region 1, Region 2, and cask pit specified ~~[Figure 3.7.18-1],~~ in the ~~accompanying~~ LCO, ensures that the k_{eff} of the spent fuel pool will always remain < 0.95 ~~assuming the pool to be flooded with unborated water~~. The restrictions are consistent with the criticality safety analysis performed for the spent fuel pool ~~according to [Figure 3.7.18-1], in the accompanying LCO~~. ~~Fuel assemblies not meeting the criteria of [Figure 3.7.18-1] shall be stored in accordance with Specification 4.3.1.1.~~ ② ① ①

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in ~~[Region 2]~~ Region 1, Region 2, or cask pit storage rack of the spent fuel pool. ②

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the configuration of fuel assemblies stored in ~~[Region 2] the spent fuel pool~~ Region 1, Region 2, or the cask pit storage rack is not in accordance with criteria for Region 1, Region 2, and cask pit specified in the LCO ~~Figure [3.7.18-1]~~, immediate action must be taken to make the necessary fuel assembly movement(s) to bring the configuration into compliance ~~with Figure [3.7.18-1]~~. ② ②

①

INSERT 1

The spent fuel storage pool is designed for the underwater storage of 1491 spent fuel assemblies plus 225 fuel assemblies in the cask pit storage rack, when installed. The total storage capability is 1716 assemblies with the cask pit rack installed.

The spent fuel storage pool high density spent fuel storage racks are divided into three separate and distinct regions. Region 1, with a maximum storage capacity of 366 fuel assemblies, is designed to accommodate new fuel with a maximum U-235 enrichment up to 4.95 weight percent or spent fuel regardless of the discharge fuel burnup. Region 2, with a maximum storage capacity of 1125 fuel assemblies, is designed to accommodate high burnup fuel. The cask pit rack, with a maximum storage capacity of 225 fuel assemblies, is a Region 2 design capable of storing spent fuel regardless of the discharge fuel burnup.

Criticality is precluded by the spacing and geometrically safe configurations of new and spent fuel assemblies a maximum initial planar average U-235 enrichment up to 4.6 wt% to ensure a subcritical array of keff ≤ 0.95 is maintained, assuming 500 ppm of soluble boron is present in the fuel pool water.

①

INSERT 2

The misplacement of a fresh (unburned) fuel assembly with a minimum soluble poison of 500 ppm in the spent fuel storage pool could result in exceeding the regulatory limit of keff ≤ 0.95. This could possibly occur if a fresh fuel assembly of the highest permissible enrichment (4.6 wt%) were to be inadvertently misloaded into a Region 2 storage cell intended to be empty, or into a cell intended to hold a low reactivity fuel assembly. The reactivity consequences of these situations determined that the misloading of a fresh assembly into a cell intended to remain empty is the bounding condition. A boron concentration of 1500 ppm is required to ensure a keff ≤ 0.95 is maintained in the event of a misloaded fuel assembly.

BASES

ACTIONS (continued)

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, in either case, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~18~~ 15 .1 ③

This SR verifies by administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with ~~Figure~~ criteria for Region 1, Region 2, and cask pit specified ~~[3.7.18-1~~] in the ~~accompanying~~ LCO. ② ~~For fuel assemblies in the unacceptable range of [Figure 3.7.18-1], performance of this SR will ensure compliance with Specification 4.3.1.1.~~ ②

REFERENCES

None.

B 3.7 PLANT SYSTEMS

B 3.7.~~18~~ 15 Spent Fuel Pool Storage ③

BASES

BACKGROUND

INSERT 1

~~The spent fuel storage facility is designed to store either new (nonirradiated) nuclear fuel assemblies, or burned (irradiated) fuel assemblies in a vertical configuration underwater. The storage pool is sized to store [735] fuel assemblies, which includes storage for [15] failed fuel containers. The spent fuel storage cells are installed in parallel rows with center to center spacing of [12 31/32] inches in one direction, and [13 3/16] inches in the other orthogonal direction. This spacing and "flux trap" construction, whereby the fuel assemblies are inserted into neutron absorbing stainless steel cans, is sufficient to maintain a k_{eff} of ≤ 0.95 for spent fuel of original enrichment of up to [3.3]%. However, as higher initial enrichment fuel assemblies are stored in the spent fuel pool, they must be stored in a checkerboard pattern taking into account fuel burnup to maintain a k_{eff} of 0.95 or less.~~ ① ②

APPLICABLE SAFETY ANALYSES

INSERT 2

~~The spent fuel storage facility is designed for noncriticality by use of adequate spacing, and "flux trap" construction whereby the fuel assemblies are inserted into neutron absorbing stainless steel cans.~~ ①

The spent fuel pool storage satisfies Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

The restrictions on the placement of fuel assemblies within the spent fuel pool, according to criteria for Region 1, Region 2, and cask pit specified ~~[Figure 3.7.18-1],~~ in the ~~accompanying~~ LCO, ensures that the k_{eff} of the spent fuel pool will always remain < 0.95 ~~assuming the pool to be flooded with unborated water~~. The restrictions are consistent with the criticality safety analysis performed for the spent fuel pool ~~according to [Figure 3.7.18-1], in the accompanying LCO~~. ~~Fuel assemblies not meeting the criteria of [Figure 3.7.18-1] shall be stored in accordance with Specification 4.3.1.1.~~ ② ① ①

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in ~~[Region 2]~~ Region 1, Region 2, or cask pit storage rack of the spent fuel pool. ②

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the configuration of fuel assemblies stored in ~~[Region 2] the spent fuel pool~~ Region 1, Region 2, or the cask pit storage rack is not in accordance with criteria for Region 1, Region 2, and cask pit specified in the LCO ~~Figure [3.7.18-1]~~, immediate action must be taken to make the necessary fuel assembly movement(s) to bring the configuration into compliance ~~with Figure [3.7.18-1]~~. ② ②

①

INSERT 1

The spent fuel storage pool is designed for the underwater storage of 1706 spent fuel assemblies plus 143 fuel assemblies in the cask pit storage rack, when installed. The total storage capability is 1849 assemblies with the cask pit rack installed.

The spent fuel storage pool high density spent fuel storage racks are divided into three separate and distinct regions. Region 1, with a maximum storage capacity of 342 fuel assemblies, is designed to accommodate new fuel with a maximum U-235 enrichment up to 4.95 weight percent or spent fuel regardless of the discharge fuel burnup. Region 2, with a maximum storage capacity of 1364 fuel assemblies, is designed to accommodate high burnup fuel. The cask pit rack, with a maximum storage capacity of 143 fuel assemblies, is a Region 1 design capable of storing either new fuel or spent fuel regardless of the discharge fuel burnup.

Criticality is precluded by the spacing and geometrically safe configurations of new and spent fuel assemblies with a maximum initial planar average U-235 enrichment up to 4.6 wt% to ensure a subcritical array of keff ≤ 0.95 is maintained, assuming 500 ppm of soluble boron is present in the fuel pool water.

①

INSERT 2

The misplacement of a fresh (unburned) fuel assembly with a minimum soluble poison of 500 ppm in the spent fuel storage pool could result in exceeding the regulatory limit of keff ≤ 0.95. This could possibly occur if a fresh fuel assembly of the highest permissible enrichment were to be inadvertently misloaded into a Region 2 storage cell intended to be empty, or into a cell intended to hold a low reactivity fuel assembly. The reactivity consequences of these situations determined that the misloading of a fresh assembly into a cell intended to remain empty is the bounding condition. A boron concentration of 1500 ppm is required to ensure a keff ≤ 0.95 is maintained in the event of a misloaded fuel assembly.

BASES

ACTIONS (continued)

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, in either case, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~18~~15.1 ③

This SR verifies by administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with ~~Figure [3.7.18-1]~~ criteria for Region 1, Region 2, and cask pit specified in the ~~accompanying~~ LCO. ~~For fuel assemblies in the unacceptable range of [Figure 3.7.18-1], performance of this SR will ensure compliance with Specification 4.3.1.1~~. ② ②

REFERENCES

None.

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.15, BASES, SPENT FUEL POOL STORAGE

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 are made to reflect the Specification Number and Title.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.15, SPENT FUEL POOL STORAGE

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

ATTACHMENT 16

3.7.16, SECONDARY SPECIFIC ACTIVITY

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

ITS

A01

ITS 3.7.16

PLANT SYSTEMS

SECONDARY SPECIFIC

ACTIVITY

LIMITING CONDITION FOR OPERATION

LCO 3.7.16 ~~3.7.1.4~~ The specific activity of the secondary coolant system shall be ≤ 0.10 µCi/gram DOSE EQUIVALENT I-131.

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

ACTION:

ACTION A With the specific activity of the secondary coolant system > 0.10 µCi/gram DOSE EQUIVALENT I-131, be in ~~at least~~ ~~HOT STANDBY~~ MODE 3 within 6 hours and ~~in~~ ~~COLD SHUTDOWN~~ MODE 5 within ~~the following~~ ~~30~~ 36 hours.

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1 ~~4.7.1.4~~ Verify ~~T~~the specific activity of the secondary coolant ~~system shall be determined to be~~ is within ~~the~~ limit ~~by performing sampling and analysis as described in Table 4.7-2~~ in accordance with the Surveillance Frequency Control Program.

L01

A01

~~TABLE 4.7-2~~

~~SECONDARY COOLANT SYSTEM SPECIFIC ACTIVITY~~
~~SAMPLE AND ANALYSIS PROGRAM~~

	~~TYPE OF MEASUREMENT AND ANALYSIS~~	~~MINIMUM FREQUENCY~~	
	~~1.~~ ~~Gross Activity Determination~~	~~SFCP~~	L01
SR 3.7.16.1	~~2.~~ ~~Isotopic Analysis~~ for DOSE EQUIVALENT I-131 Concentration	~~a)~~ ~~1 per 31 days,~~ SFCP ~~whenever the gross activity determination indicates iodine concentrations greater than 10% of the allowable limit.~~	LA01 LA02
		~~b)~~ ~~1 per 6 months, whenever the gross activity determination indicates iodine concentrations below 10% of the allowable limit.~~	LA02

A01

PLANT SYSTEMS

SECONDARY SPECIFIC

ACTIVITY

LIMITING CONDITION FOR OPERATION

LCO 3.7.16 ~~3.7.1.4~~ The specific activity of the secondary coolant system shall be less than or equal to 0.10 microcuries/gram DOSE EQUIVALENT I-131.

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

ACTION:

ACTION A With the specific activity of the secondary coolant system greater than 0.10 microcuries/gram DOSE EQUIVALENT I-131, be in ~~at least~~ ~~HOT STANDBY~~ MODE 3 within 6 hours and ~~in~~ ~~COLD SHUTDOWN~~ MODE 5 within ~~the following~~ ~~30~~ 36 hours.

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1 ~~4.7.1.4~~ Verify The specific activity of the secondary coolant ~~system shall be determined to be~~ is within ~~the~~ limit in accordance with the Surveillance Frequency Control Program ~~by performing sampling and analysis as described in Table 4.7-1~~. L01

A01

~~TABLE 4.7-1~~

~~SECONDARY COOLANT SYSTEM SPECIFIC ACTIVITY~~
~~SAMPLE AND ANALYSIS~~

		~~TYPE OF MEASUREMENT AND ANALYSIS~~		~~SAMPLE AND ANALYSIS FREQUENCY~~	
	~~1.~~	~~Gross Activity Determination~~		~~SFCP~~	L01
SR 3.7.16.1	~~2.~~	~~Isotopic Analysis~~ for DOSE EQUIVALENT I-131 Concentration	~~a)~~	~~1 per 31 days,~~ SFCP ~~whenever the gross activity determination indicates iodine concentrations greater than 10% of the allowable limit.~~	LA01 LA02
			~~b)~~	~~1 per 6 months, whenever the gross activity determination indicates iodine concentrations below 10% of the allowable limit.~~	LA02

DISCUSSION OF CHANGES
ITS 3.7.16, SECONDARY SPECIFIC ACTIVITY

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.

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 Table 4.7-2 and Unit 2 CTS Table 4.7-1 Item 2 require an isotopic analysis to determine whether DOSE EQUIVALENT I-131 concentration is within limit. ITS SR 3.7.16.1 requires the verification that specific activity of the secondary coolant is within limit. This changes the CTS by moving the detail that an isotopic analysis must be performed to satisfy the requirements of the Surveillance to the Bases.

The removal of this detail for performing a Surveillance Requirement from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. ITS SR 3.7.16.1 still retains the requirement to verify secondary coolant DOSE EQUIVALENT I-131 is within limit. Also, this change is acceptable because this type of procedural detail will be adequately controlled in the ITS Bases. Changes to the Bases are controlled by the Technical Specification Bases Control Program in Chapter 5. This program provides for the evaluation of changes to ensure the Bases are properly controlled. This change is designated as a less restrictive removal of detail change because procedural details for meeting Technical Specification requirements are being removed from the Technical Specifications.

LA02 (*Type 5 – Removal of SR Frequency to the Surveillance Frequency Control Program*) Unit 1 CTS Table 4.7-2 and Unit 2 CTS Table 4.7-1 Item 2.a require the DOSE EQUIVALENT I-131 sampling frequency to be once per 31 days whenever the gross activity determination indicates iodine concentration greater than 10% of the allowable limit. Unit 1 CTS Table 4.7-2 and Unit 2 CTS Table

4.7-1 Item 2.b allows the sampling frequency for the DOSE EQUIVALENT I-131 to be extended to once per 6 months whenever the gross activity determination indicates iodine concentrations below 10% of the allowable limits. ITS SR 3.7.16.1 requires the DOSE EQUIVALENT I-131 to be verified at a periodic Frequency in accordance with the Surveillance Frequency Control Program (SFCP). This changes the CTS by relocating a Surveillance Frequency to the SFCP.

The purpose of this Surveillance is to assure that the necessary parameter is maintained within limits. The Frequency is proposed to be specified in accordance with the Surveillance Frequency Control Program and is acceptable because the periodic Frequency is placed under licensee control pursuant to the methodology described in NEI 04-10, which is specified in ITS Section 5.5. The SFCP provides the necessary administrative controls to require that surveillances related to testing, calibration and inspection are conducted at a frequency to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met. Florida Power & Light Company has determined that the control of the periodic Frequency in accordance with the SFCP is consistent with the intent of TSTF-425, Revision 3, and with the NRC's model SE dated July 6, 2009 (74 FR 32001). The current sampling Frequencies specified in Items 2a and 2b of Unit 1 CTS Table 4.7-2 and Unit 2 CTS Table 4.7-1 represent periodic frequencies of 31 days versus 61 days based on iodine concentration determined during verification of gross activity. However, the requirement to verify gross activity is being deleted from the CTS (Refer to Discussion of Change (DOC) L01). Therefore, the periodic Frequency relocated to the SFCP for ITS SR 3.7.16.1 is 31 days. The ITS SR 3.7.16.1 frequency in accordance with the SFCP is a periodic frequency and does not meet the scope exclusion criteria identified in Section 1.0, "Introduction," of the TSTF-425 model SE.

PSL Unit 1 and Unit 2 adopted a SFCP in Amendment Nos. 223 (Unit 1) and 173 (Unit 2) (ADAMS Accession No. ML15127A066) as contained in CTS 6.8.4.o (Unit 1) and 6.8.4.q (Unit 2) (ITS 5.5.16). This change is designated as a less restrictive removal of detail change because the Surveillance Frequency is being removed from the Technical Specifications.

LESS RESTRICTIVE CHANGES

L01 *(Category 5 – Deletion of Surveillance Requirement)* Unit 1 CTS Table 4.7-2 and Unit 2 CTS Table 4.7-1 Item 1 require that the gross activity determination in accordance with the Surveillance Frequency Control Program. ITS 3.7.16 does not require any sampling to be performed to determine the gross activity of the secondary coolant. This changes the CTS by deleting the requirement for gross activity determination.

The purpose of Unit 1 CTS Table 4.7-2 and Unit 2 CTS Table 4.7-1 Item 1 is to determine the gross activity in order to determine the sampling Frequency for secondary coolant DOSE EQUIVALENT I-131. Based on the gross activity, the sample Frequency for determining DOSE EQUIVALENT I-131 can be extended to once per 6 months from once per 31 days. 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 analysis. 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 SR 3.7.16.1 continues to require that the DOSE EQUIVALENT I-131 be determined within an acceptable periodic Frequency in accordance with the Surveillance Frequency Control Program. Refer to DOC LA02 for relocation of the DOSE EQUIVALENT I-131 Frequency. The secondary coolant DOSE EQUIVALENT I-131 is used in the accident analyses. The gross activity of the secondary coolant is not used in any accident analysis and is not relevant to the LCO or associated ACTIONS. This change is designated as less restrictive because a Surveillance that is required in the CTS will not be required in the ITS.

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

3.7 PLANT SYSTEMS

3.7. ~~19~~ 16 Secondary Specific Activity

3.7.1.4 LCO 3.7. ~~19~~ 16 The specific activity of the secondary coolant shall be ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131. ② ③

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3.	6 hours
	AND	
	A.2 Be in MODE 5.	36 hours

3.7.1.4 Action

SURVEILLANCE REQUIREMENTS

4.7.1.4
Table 4.7-2
DOC L01
DOC LA02

SURVEILLANCE		FREQUENCY
SR 3.7.~~19~~16.1	Verify the specific activity of the secondary coolant is within limit.	~~[[31] days~~ ② ③ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②

3.7 PLANT SYSTEMS

3.7.~~19~~16 Secondary Specific Activity

3.7.1.4 LCO 3.7.~~19~~16 The specific activity of the secondary coolant shall be ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131. ② ③

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

ACTIONS

3.7.1.4 Action

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3. AND A.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

4.7.1.4
Table 4.7-1
DOC L01
DOC LA02

SURVEILLANCE		FREQUENCY
SR 3.7.~~19~~16.1	Verify the specific activity of the secondary coolant is within limit.	~~[[31] days~~ ② ③ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~ ②

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.16, SECONDARY SPECIFIC ACTIVITY

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. Changes have been made to reflect the change to the Specification number.

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

B 3.7 PLANT SYSTEMS

B 3.7.~~19~~16 Secondary Specific Activity ③

BASES

BACKGROUND

Activity in the secondary coolant results from steam generator tube outleakage from the Reactor Coolant System (RCS). Under steady state conditions, the activity is primarily iodines with relatively short half lives, and thus is indication of current conditions. During transients, I-131 spikes have been observed as well as increased releases of some noble gases. Other fission product isotopes, as well as activated corrosion products in lesser amounts, may also be found in the secondary coolant.

A limit on secondary coolant specific activity during power operation minimizes releases to the environment because of normal operation, anticipated operational occurrences, and accidents.

This limit is lower than the activity value that might be expected from a 1 gpm tube leak (LCO 3.4.13, "RCS Operational LEAKAGE") of primary coolant at the limit of 1.0 μCi/gm (LCO 3.4.16, "RCS Specific Activity"). The steam line failure is assumed to result in the release of the noble gas and iodine activity contained in the steam generator inventory, the feedwater, and reactor coolant LEAKAGE. Most of the isotopes have short half-lives (i.e., < 20 hours).

With the specified activity level, the resultant 2 hour thyroid dose to a person at the exclusion area boundary (EAB) would be about ~~[.13]~~ 0.27 rem ② should the main steam safety valves (MSSVs) open for the 2 hours following a trip from full power.

Operating a unit at the allowable limits could result in a 2 hour EAB exposure of a small fraction of the 10 CFR ~~100~~ 50.67 (Ref. 1) limits. ①

APPLICABLE SAFETY ANALYSES

The accident analysis of the main steam line break (MSLB), as discussed in the UFSAR, Chapter ~~[15]~~ 15.4.6 (Ref. 2), assumes the initial secondary coolant ① specific activity to have a radioactive isotope concentration of ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131. ② This assumption is used in the analysis for determining the radiological consequences of the postulated accident. The accident analysis, based on this and other assumptions, shows that the radiological consequences of an MSLB do not exceed a small fraction of the unit EAB limits (Ref. 1) for whole body and thyroid dose rates.

BASES

APPLICABLE SAFETY ANALYSES (continued)

With the loss of offsite power, the remaining steam generator is available for core decay heat dissipation by venting steam to the atmosphere through MSSVs and atmospheric dump valves (ADVs). The Auxiliary Feedwater System supplies the necessary makeup to the steam generator. Venting continues until the reactor coolant temperature and pressure have decreased sufficiently for the Shutdown Cooling System to complete the cooldown.

In the evaluation of the radiological consequences of this accident, the activity released from the steam generator connected to the failed steam line is assumed to be released directly to the environment. The unaffected steam generator is assumed to discharge steam and any entrained activity through MSSVs and ADVs during the event.

Secondary specific activity limits satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

As indicated in the Applicable Safety Analyses, the specific activity limit in the secondary coolant system of ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131 to limit the radiological consequences of a Design Basis Accident (DBA) to a small fraction of the required limit (Ref. 1). ②

Monitoring the specific activity of the secondary coolant ensures that when secondary specific activity limits are exceeded, appropriate actions are taken in a timely manner to place the unit in an operational MODE that would minimize the radiological consequences of a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, the limits on secondary specific activity apply due to the potential for secondary steam releases to the atmosphere.

In MODES 5 and 6, the steam generators are not being used for heat removal. Both the RCS and steam generators are depressurized, and primary to secondary LEAKAGE is minimal. Therefore, monitoring of secondary specific activity is not required.

BASES

ACTIONS

A.1 and A.2

DOSE EQUIVALENT I-131 exceeding the allowable value in the secondary coolant, is an indication of a problem in the RCS, and contributes to increased post accident doses. If secondary specific activity cannot be restored to within limits in the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~19~~16.1 ③

This SR ensures that the secondary specific activity is within the limits of the accident analysis. A gamma isotope analysis of the secondary coolant, which determines DOSE EQUIVALENT I-131, confirms the validity of the safety analysis assumptions as to the source terms in post accident releases. It also serves to identify and trend any unusual isotopic concentrations that might indicate changes in reactor coolant activity or LEAKAGE. ~~[The [31] day Frequency is based on the detection of increasing trends of the level of DOSE EQUIVALENT I-131, and allows for appropriate action to be taken to maintain levels below the LCO limit.~~ 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
~~--]~~

REFERENCES

1. 10 CFR ~~100.11~~ 50.67. ②

2. UFSAR, Chapter ~~[15]~~ 15.4.6. ②

①

B 3.7 PLANT SYSTEMS

B 3.7.~~19~~16 Secondary Specific Activity ③

BASES

BACKGROUND

Activity in the secondary coolant results from steam generator tube outleakage from the Reactor Coolant System (RCS). Under steady state conditions, the activity is primarily iodines with relatively short half lives, and thus is indication of current conditions. During transients, I-131 spikes have been observed as well as increased releases of some noble gases. Other fission product isotopes, as well as activated corrosion products in lesser amounts, may also be found in the secondary coolant.

A limit on secondary coolant specific activity during power operation minimizes releases to the environment because of normal operation, anticipated operational occurrences, and accidents.

This limit is lower than the activity value that might be expected from a 1 gpm tube leak (LCO 3.4.13, "RCS Operational LEAKAGE") of primary coolant at the limit of 1.0 μCi/gm (LCO 3.4.16, "RCS Specific Activity"). The steam line failure is assumed to result in the release of the noble gas and iodine activity contained in the steam generator inventory, the feedwater, and reactor coolant LEAKAGE. Most of the isotopes have short half-lives (i.e., < 20 hours).

With the specified activity level, the resultant 2 hour thyroid dose to a person at the exclusion area boundary (EAB) would be about 0.27 ~~[.13]~~ rem ② should the main steam safety valves (MSSVs) open for the 2 hours following a trip from full power.

Operating a unit at the allowable limits could result in a 2 hour EAB exposure of a small fraction of the 10 CFR 50.67 ~~100~~ (Ref. 1) limits. ①

APPLICABLE SAFETY ANALYSES

The accident analysis of the main steam line break (MSLB), as discussed in the UFSAR, Chapter 15.1.6 ~~[15]~~ (Ref. 2), assumes the initial secondary coolant ① specific activity to have a radioactive isotope concentration of ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131. ② This assumption is used in the analysis for determining the radiological consequences of the postulated accident. The accident analysis, based on this and other assumptions, shows that the radiological consequences of an MSLB do not exceed a small fraction of the unit EAB limits (Ref. 1) for whole body and thyroid dose rates.

BASES

APPLICABLE SAFETY ANALYSES (continued)

With the loss of offsite power, the remaining steam generator is available for core decay heat dissipation by venting steam to the atmosphere through MSSVs and atmospheric dump valves (ADVs). The Auxiliary Feedwater System supplies the necessary makeup to the steam generator. Venting continues until the reactor coolant temperature and pressure have decreased sufficiently for the Shutdown Cooling System to complete the cooldown.

In the evaluation of the radiological consequences of this accident, the activity released from the steam generator connected to the failed steam line is assumed to be released directly to the environment. The unaffected steam generator is assumed to discharge steam and any entrained activity through MSSVs and ADVs during the event.

Secondary specific activity limits satisfy Criterion 2 of 10 CFR 50.36(c)(2)(ii).

LCO

As indicated in the Applicable Safety Analyses, the specific activity limit in the secondary coolant system of ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131 to limit the radiological consequences of a Design Basis Accident (DBA) to a small fraction of the required limit (Ref. 1). ②

Monitoring the specific activity of the secondary coolant ensures that when secondary specific activity limits are exceeded, appropriate actions are taken in a timely manner to place the unit in an operational MODE that would minimize the radiological consequences of a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, the limits on secondary specific activity apply due to the potential for secondary steam releases to the atmosphere.

In MODES 5 and 6, the steam generators are not being used for heat removal. Both the RCS and steam generators are depressurized, and primary to secondary LEAKAGE is minimal. Therefore, monitoring of secondary specific activity is not required.

BASES

ACTIONS

A.1 and A.2

DOSE EQUIVALENT I-131 exceeding the allowable value in the secondary coolant, is an indication of a problem in the RCS, and contributes to increased post accident doses. If secondary specific activity cannot be restored to within limits in the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~19~~16.1 ③

This SR ensures that the secondary specific activity is within the limits of the accident analysis. A gamma isotope analysis of the secondary coolant, which determines DOSE EQUIVALENT I-131, confirms the validity of the safety analysis assumptions as to the source terms in post accident releases. It also serves to identify and trend any unusual isotopic concentrations that might indicate changes in reactor coolant activity or LEAKAGE. ~~[The [31] day Frequency is based on the detection of increasing trends of the level of DOSE EQUIVALENT I-131, and allows for appropriate action to be taken to maintain levels below the LCO limit.~~ 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
~~---]~~

REFERENCES

1. 10 CFR ~~100.11~~ 50.67. ②

2. UFSAR, Chapter ~~[15]~~ 15.1.6. ②

①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.16, BASES, SECONDARY SPECIFIC ACTIVITY

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 reflect the change to the Specification number.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.16, SECONDARY SPECIFIC ACTIVITY

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

ATTACHMENT 17

3.7.17, Fuel Pool Area Ventilation System
Unit 1 Only

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

~~REFUELING OPERATIONS~~ PLANT SYSTEMS

FUEL POOL VENTILATION SYSTEM ~~– FUEL STORAGE~~ AREA

LIMITING CONDITION FOR OPERATION

3.7.17 3.9.12 ~~At least~~ one fuel pool area ventilation ~~system~~ train shall be OPERABLE. A02

APPLICABILITY: ~~Whenever~~ During movement of recently irradiated fuel ~~is~~ in the spent fuel storage pool. L01

ACTION: A02

ACTION A a. With no fuel pool area ventilation ~~system~~ trains OPERABLE, suspend all operations involving movement of recently irradiated fuel within the spent fuel storage pool ~~or crane operation with loads over the recently irradiated spent fuel~~ ~~until at least one fuel pool ventilation system is restored to OPERABLE status.~~ L02 L01

ACTIONS Note b. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

A02

4.9.12 The above required fuel pool area ventilation ~~system~~ train shall be demonstrated OPERABLE:

SR 3.7.17.1 a. In accordance with the Surveillance Frequency Control Program ~~by initiating flow through the HEPA filter and charcoal adsorber train~~ Operate required fuel pool are ventilation train and verifying~~ing~~ that the train operates for at least 15 continuous minutes.

See ITS 5.5 b. In accordance with the Surveillance Frequency Control Program or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following painting, fire or chemical release in any ventilation zone communicating with the system by:

Insert proposed SR 3.7.17.2 A03

~~REFUELING OPERATIONS~~ PLANT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

c. In accordance with the Surveillance Frequency Control Program by:

See ITS 5.5

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber banks is < 4.15 inches Water Gauge while operating the ventilation system at a flow rate of 10,350 cfm ± 10%.

2. Verifying that the air flow distribution is uniform within 20% across HEPA filters and charcoal adsorbers when tested in accordance with ANSI N510-1975.

SR 3.7.17.3

3. Verifying that the ~~ventilation system~~ required fuel pool area ventilation train maintains ~~the spent fuel storage pool area at~~ a negative pressure of ≥ ~~1/8~~ 0.125 inches Water Gauge relative to the outside atmosphere during ~~system~~ train operation.

A02

See ITS 5.5

d. After each complete or partial replacement of a HEPA filter bank by verifying that the HEPA filter banks remove ≥ 99% of the DOP when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 10,350 cfm ± 10%.

e. After each complete or partial replacement of a charcoal adsorber bank by verifying that the charcoal adsorbers remove ≥ 99% of a halogenated hydrocarbon refrigerant test gas when they are tested in-place in accordance with ANSI N510-1975 while operating the ventilation system at a flow rate of 10,350 cfm ± 10%.

~~**INTENTIONALLY DELETED**~~

A01

~~DELETED~~

DISCUSSION OF CHANGES
ITS 3.7.17, FUEL POOL AREA VENTILATION SYSTEM
UNIT 1 ONLY

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 3.9.12 provides requirements for the fuel pool ventilation system. ITS LCO 3.7.17 provides similar requirements and specifically requires one fuel pool area ventilation train to be OPERABLE. CTS 3.9.12 utilizes the terms system and train interchangeably. The Fuel Pool Area Ventilation System is a subsystem of the Fuel Handling Building Ventilation System and consists of two exhaust fans and a common filter system. Therefore, for the purpose of this LCO, each exhaust fan and associated dampers and valves, including the common filter system, is defined as a train. The ACTIONS and Surveillance Requirements are modified to reflect this presentation preference and includes the word “required” where appropriate in accordance with the ISTS Writer’s Guide. This change is a presentation preference and designated as an administrative change. This change is acceptable because it does not result in a technical change to the CTS.

A03 CTS 4.9.12.b.1 through b.4 specify the fuel pool ventilation filter system Surveillances to be performed within the frequency requirements specified in CTS 4.9.12.b. CTS 4.9.12.1.c.1, c.2, d, and e also specify fuel pool ventilation filter system Surveillances to be performed within the frequency requirements specified in CTS 4.9.12.c, d, and e, respectively. ITS SR 3.7.17.2 requires performing required fuel pool area ventilation train filter testing in accordance with the Ventilation Filter Testing Program (VFTP). CTS 4.9.12 does not include a VFTP, but the requirements that make up the VFTP are retained in ITS Section 5.5. This changes the CTS by requiring testing in accordance with the VFTP and moving the specific filter requirements to ITS Section 5.5. This presentation change is acceptable because filter testing requirements are being retained in the VFTP as part of ITS Section 5.5, and ITS SR 3.7.17.2 references the VFTP for performing these tests. This change is designated as administrative because it does not result in technical changes to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 (*Category 2 – Relaxation of Applicability*) CTS 3.9.12 states that the requirements on Fuel Pool Ventilation System – Fuel Storage are applicable "Whenever recently irradiated fuel is in the spent fuel pool." ITS 3.7.17 is applicable "During movement of recently irradiated fuel assemblies in the spent fuel storage pool." This changes the CTS by restricting the Applicability of the Fuel Pool Area Ventilation System Specification to only when there is a potential for a fuel handling accident (FHA) involving recently irradiated fuel, that is, during the movement of recently irradiated fuel assemblies in the spent fuel storage pool. In addition, since the Applicability is now limited to when recently irradiated fuel is being moved, the portion of CTS Action a to restore at least one fuel pool ventilation system to OPERABLE status, after movement of fuel has been suspended, has also been deleted.

The purpose of CTS 3.9.12 is to ensure that the Fuel Pool Area Ventilation System can provide filtration to minimize the consequences of an FHA involving recently irradiated fuel (i.e., an irradiated fuel assembly that has occupied part of a critical reactor core within the previous 72 hours). This change is acceptable because the requirements continue to ensure that the structures, systems, and components are maintained in the specified conditions needed to minimize event consequences. The FHA analysis assumes movement of an irradiated fuel assembly that has not occupied part of a critical reactor core within the previous 72 hours. It is improbable to move irradiated fuel within 72 hours of a plant shutdown (i.e., keff < 0.99) because of the physical time required to perform a controlled plant shutdown, cooldown and depressurize the Reactor Coolant System (RCS), and disassemble the reactor vessel to access irradiated fuel to begin fuel movement. Additionally, filtration of the fuel handling building is not assumed for an FHA in the spent fuel storage pool. The ITS requires one train of the Fuel Pool Area Ventilation System to be OPERABLE to ensure that, in the unlikely event an FHA in the spent fuel storage pool occurs within 72 hours of a unit shutdown, fuel pool area ventilation and filtration are provided to minimize the consequences of this improbable event. This change is designated as less restrictive because the LCO requirements are applicable in fewer conditions than in the CTS.

L02 (*Category 4 – Relaxation of Required Action*) CTS 3.9.12 Action a states, in part, with no fuel pool ventilation system OPERABLE, suspend …crane operation with loads over the recently irradiated spent fuel. ITS 3.7.17 ACTIONS do not include this action. This changes the CTS Actions by removing actions to suspend crane operation with loads over recently irradiated spent fuel.

The purpose of CTS 3.9.12 is to ensure that the Fuel Pool Area Ventilation System can provide filtration to minimize the consequences of an FHA involving recently irradiated fuel (i.e., an irradiated fuel assembly that has occupied part of a critical reactor core within the previous 72 hours). According to UFSAR Section 15.4.3 (Unit 1) 15.7.4.1.2 (Unit 2), an FHA is initiated by the dropping of an irradiated fuel assembly either in the containment or in the fuel building. The FHA analysis assumes movement of an irradiated fuel assembly that has not occupied part of a critical reactor core within the previous 72 hours. It is improbable to move irradiated fuel within 72 hours of a plant shutdown (i.e., keff < 0.99) because of the physical time required to perform a controlled plant shutdown, cooldown and depressurize the RCS, and disassemble the reactor vessel to access irradiated fuel to begin fuel movement and PSL procedurally restricts movement of irradiated fuel until 72 hours after shutdown. However, the ITS requires one train of the Fuel Pool Area Ventilation System to be OPERABLE to ensure that, in the unlikely event an FHA in the spent fuel storage pool occurs within 72 hours of a unit shutdown, fuel pool area ventilation and filtration are provided to minimize the consequences of this improbable event.

Crane travel related requirements were relocated from the CTS in PSL Unit 1 Amendment 190, ("St. Lucie Units 1 and 2 – Issuance of Amendments Regarding the Relocation of Spent Fuel Pool Crane Technical Specification Requirements (TAC NOS. MB5667 and MB5668)," dated April 28, 2004 (ADAMS Accession No. ML 040440111)) to the Updated Final Safety Analysis Report where the operational detail is controlled under 10 CFR 50.59 criteria. As cited in the NRC Safety Evaluation associated with Amendment 190, NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants," regulatory guidelines for control of heavy load lifts provide assurance of safe handling of heavy loads in areas where a load drop could impact stored spent fuel, fuel in the reactor core, or equipment that may be required to achieve safe shutdown or permit continued decay heat removal. Section 5.1.1 of NUREG-0612 provides guidelines for reducing the likelihood of dropping heavy loads and provides criteria for establishing safe load paths; procedures for load-handling operations; training of crane operators; design, testing, inspection, and maintenance of cranes and lifting devices; and analyses of the impact of heavy load drops. The guidelines in Sections 5.1.2 through 5.1.6 address alternatives to either further reduce the probability of a load-handling accident or mitigate the consequences of heavy load drops. These alternatives include using a single-failure-proof crane to improve reliability through increased factors of safety and through redundancy or duality in certain active components. Criteria for design of single-failure-proof cranes are included in NUREG-0554, "Single-Failure-Proof Cranes for Nuclear Power Plants."

This change is acceptable because the possibility of damage to a recently irradiated fuel assembly as a consequence of mishandling components other than a recently irradiated fuel assembly is minimized by thorough training, detailed procedures and equipment design. The PSL crane design precludes the handling of heavy objects, such as shipping casks, over the spent fuel pool storage racks. Administrative controls prevent the movement of heavy loads over the cask pit whenever the cask pit rack is installed in the cask area of the spent fuel storage pool. In addition, the cask handling crane design meets the regulatory guidance for single-failure-proof cranes in NUREG-0554, “Single-Failure-Proof Cranes for Nuclear Power Plants” and NUREG-0612. Administrative controls that control the movement of light loads or prevent movement of light loads over recently 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 load other than a recently irradiated fuel assembly and damaging of recently irradiated fuel assemblies in the spent fuel storage pool is remote. Therefore, the CTS 3.9.12 action related to suspension of crane operation with loads over recently irradiated spent fuel is not necessary to be included in the technical specifications and is removed.

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)

CTS

3.7 PLANT SYSTEMS

3.9.12 3.7.1~~4~~ 7 Fuel ~~Building Air Cleanup~~ Pool Area Ventilation System ~~(FBACS)~~ ①

3.9.12
DOC A02 LCO 3.7.1~~4~~ 7 ~~Two FBACS~~ One fuel pool area ventilation train~~s~~ shall be OPERABLE. ②

~~-----NOTE-----~~
~~The fuel building boundary may be opened intermittently under administrative control.~~
~~----------~~ ③

3.9.12
Applicability
DOC L01 APPLICABILITY: ~~[MODES 1, 2, 3, and 4,]~~
During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the spent fuel ~~building~~ storage pool. ④ ①

ACTIONS

-----NOTE-----
3.9.12
Action b LCO 3.0.3 is not applicable.

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A. One FBACS train inoperable.~~	~~A.1 Restore FBACS train to OPERABLE status.~~	~~7 days~~
~~B. Two FBACS trains inoperable due to inoperable fuel building boundary in MODE 1, 2, 3, or 4.~~	~~B.1 Restore fuel building boundary to OPERABLE status.~~	~~24 hours~~

③

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~C. [Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, 3, or 4.~~ ~~OR~~ ~~Two FBACS trains inoperable in MODE 1, 2, 3, or 4 for reasons other than Condition B.~~	~~C.1 Be in MODE 3.~~ ~~AND~~ ~~C.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours]~~
~~D. Required Action and Associated Completion Time [of Condition A] not met during movement of [recently] irradiated fuel assemblies in the fuel building.~~	~~D.1 Place OPERABLE FBACS train in operation.~~ ~~OR~~ ~~D.2 Suspend movement of [recently] irradiated fuel assemblies in the fuel building.~~	~~Immediately~~ ~~Immediately~~
~~E~~ A. ~~Two FBACS~~ Required fuel pool area ventilation trains inoperable ~~during movement of [recently] irradiated fuel assemblies in the fuel building~~.	~~E~~ A.1 Suspend movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel building~~ spent fuel storage pool.	Immediately

③

3.9.12
Action a
DOC L01
DOC L02

③ ④ ①

CTS

SURVEILLANCE REQUIREMENTS

		SURVEILLANCE	FREQUENCY	
4.9.12.a	SR 3.7.1~~4~~.1 7	Operate ~~each FBACS~~ required fuel pool area ventilation train for ≥ 15 continuous minutes ~~[with heaters operating]~~.	~~[31 days~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	④
DOC A03	SR 3.7.1~~4~~.2 7	Perform required ~~FBACS~~ fuel pool area ventilation train filter testing in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~.	In accordance with the ~~[~~VFTP~~]~~	① ② ④
	~~SR 3.7.14.3~~	~~[Verify each FBACS train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~	① ④
4.9.12.c.3 DOC A02	SR 3.7.1~~4.4~~ 7.3	Verify ~~one FBACS~~ the required fuel pool area ventilation train can maintain a negative pressure ≥ ~~[ ]~~ 0.125 inches water gauge with respect to atmospheric pressure, during ~~the [post accident] mode of~~ train operation ~~at a flow rate ≤ [3000] cfm~~.	~~[[18] months on a STAGGERED TEST BASIS~~ ~~OR~~ In accordance with the Surveillance Frequency Control Program ~~]~~	② ③

CTS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
~~SR 3.7.14.5~~ ~~[Verify each FBACS filter bypass damper can be opened, except for dampers that are locked, sealed, or otherwise secured in the open position.~~	~~[[18] months~~ ~~OR~~ ~~In accordance with the Surveillance Frequency Control Program]]~~

④

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.17, FUEL POOL AREA VENTILATION SYSTEM
UNIT 1 ONLY

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

2. The Fuel Building Ventilation System (ISTS 3.7.14) is renumbered as ITS 3.7.17 and renamed Fuel Pool Area Ventilation System. This results in renumbering the subsequent ISTS Specifications, as applicable, in the ITS. St. Lucie Plant (PSL) Unit 2 design does not utilize the Fuel Building Air Cleanup System (FBACS) for emergency filtration in the event of a fuel handling accident in the fuel handling building. Unit 2 utilizes the fuel pool area ventilation mode of the Shield Building Ventilation System for the emergency filtration function (ITS 3.6.9). Therefore, ISTS 3.7.14 is not included in the PSL Unit 2 ITS.

3. ISTS LCO 3.7.14 requires two FBACS trains to be OPERABLE and provides actions and Surveillances based on requiring both trains. ITS LCO 3.7.17 requires one fuel pool area ventilation train to be OPERABLE consistent with the CTS. The Fuel Pool Area Ventilation System is a subsystem of the Fuel Handling Building Ventilation System and consists of two exhaust fans and a common filter system. Since the Fuel Pool Area Ventilation System design utilizes a common filter and, as a result, does not support the single failure criterion, only one train is required to be OPERABLE. As a result, the ACTIONS applicable to one of two trains inoperable are not included in the ITS and the Surveillances are modified to require testing on the "required" fuel pool area ventilation train. Additionally, the ACTIONS applicable to MODES 1, 2, 3, and 4 are deleted since this Specification is not required in MODES 1, 2, 3, and 4 consistent with the CTS. Because the Specification is only required during movement of recently irradiated fuel assemblies in the spent fuel storage pool, ISTS 3.7.14, Condition E (ITS 3.7.17, Condition A) is modified to eliminate unnecessary reference to "during movement of [recently] irradiated fuel assemblies in the fuel building." Because the Fuel Pool Area Ventilation System filters radioactivity in the spent fuel storage pool area and not the entire fuel handling building; and use of this Specification is unlikely (i.e., movement of recently irradiated fuel in the spent fuel storage pool is improbable), the Note to the LCO is not needed and not included in the ITS.

4. 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 inserted to reflect the current licensing basis.

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

B 3.7 PLANT SYSTEMS

7 Pool Area Ventilation

B 3.7.1~~4~~ Fuel ~~Building Air Cleanup~~ System ~~(FBACS)~~ ② ①

BASES

Fuel Pool Area Ventilation System

BACKGROUND

The ~~FBACS~~ filters airborne radioactive particulates from the area of the fuel pool following a fuel handling accident or loss of coolant accident. The ~~FBACS~~, in conjunction with other normally operating systems, also provides environmental control of temperature and humidity in the fuel pool area.

exhaust fans and a common filter system. The common filter system

Fuel Pool Area Ventilation System

The ~~FBACS~~ consists of two ~~independent, redundant trains. Each train~~ consists of a ~~heater, a~~ prefilter ~~or demister~~, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines)~~,~~ and ~~a fan~~. Ductwork, valves or dampers, and instrumentation also form part of the system~~, as well as demisters, functioning to reduce the relative humidity of the air stream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter bank. The downstream HEPA filter is not credited in the analysis, but serves to collect charcoal fines, and to back up the upstream HEPA filter should it develop a leak.~~ The system initiates filtered ventilation of the fuel ~~handling building~~ following ~~receipt of a high radiation signal~~. ①

pool area

manual actuation from the control room

Fuel Pool Area Ventilation System is a subsystem of the Fuel Handling Building Ventilation System

Insert 1

The ~~FBACS is a standby system~~, part of which may also be operated during normal unit operations. Upon ~~receipt of the actuating signal~~, ~~normal air discharges from the fuel handling building, the fuel handling building is isolated, and the stream of ventilation air discharges through the system filter trains~~. The prefilters ~~or demisters~~ remove any large particles in the air~~, and any entrained water droplets present,~~ to prevent excessive loading of the HEPA filters and charcoal adsorber~~s~~.

Fuel Pool Area Ventilation System

U 6 and 12.2.2.5

The ~~FBACS~~ is discussed in the FSAR, Sections ~~[6.5.1], [~~9.4.~~5]~~, ~~and [15.7.4]~~ (Refs. 1, 2, and ~~3, respectively~~)~~, because it may be used for normal, as well as post accident, atmospheric cleanup functions~~. ③ ①

used

APPLICABLE SAFETY ANALYSES

(FHA) 72 hours

The ~~FBACS~~ is ~~designed~~ to mitigate the consequences of a fuel handling accident ~~[~~involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[X] days~~)~~]~~ in which ~~[~~all~~]~~ rods in the fuel assembly are assumed to be damaged. The analysis of the ~~fuel handling accident~~ is given in Reference 3. ~~The~~ ③ ①

FHA

Insert 1 ①

manual initiation, the fuel pool area air is exhausted through air inlets around the periphery of the spent fuel storage pool, through the common system filter, and discharged by two 100% capacity exhaust fans to the atmosphere via the fuel handling building vent stack.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Insert 2

~~Design Basis Accident analysis of the fuel handling accident assumes that only one train of the FBACS is functional, due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the remaining one train of this filtration system. The amount of fission products available for release from the fuel handling building is determined for a fuel handling accident. These assumptions and the analysis follow the guidance provided in Regulatory Guide 1.25 (Ref. 4).~~ ①

Fuel Pool Area Ventilation System

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

LCO

One train of the Fuel Pool Area Ventilation System is

minimize

~~Two independent and redundant trains of the FBACS are~~ required to be OPERABLE to ~~ensure that at least one is available, assuming a single failure that disables the other train coincident with a loss of offsite power. Total system failure could result in the~~ atmospheric release from the fuel building ~~exceeding the 10 CFR 100 limits (Ref. 5)~~ in the ~~event of a fuel handling accident~~.

unlikely event of an FHA occurring within 72 hours of a unit shutdown

required fuel pool area ventilation train

spent fuel pool area

The ~~FBACS~~ is considered OPERABLE when the individual components necessary to control exposure in the ~~fuel handling building~~ are OPERABLE~~ in both trains~~. ~~An FBACS~~ train is considered OPERABLE when~~ its associated~~:

A fuel pool area ventilation

The exhaust

a. ~~F~~an is OPERABLE,

b. HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration functions, and

c. ~~Heater, demister,~~ ~~d~~uctwork, valves, and dampers are OPERABLE, and air circulation can be maintained. ①

~~The LCO is modified by a Note allowing the fuel building boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering and exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for fuel building isolation is indicated.~~ ②

Insert 2 ①

The FHA analysis assumes movement of an irradiated fuel assembly that has not occupied part of a critical reactor core within the previous 72 hours. Additionally, filtration of the fuel handling building is not assumed for an FHA in the spent fuel storage pool. The Technical Requirements Manual includes a decay time requirement that no fuel movement will commence until 72 hours after shutdown. This ensures that the FHA assumptions, including no filtration of the fuel handling building, are preserved. In the event an FHA in the spent fuel storage pool occurs within 72 hours of a unit shutdown, the Fuel Pool Area Ventilation System will provide filtration to minimize the consequences of this improbable event.

BASES

APPLICABILITY

~~In MODES 1, 2, 3, and 4, the FBACS is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA (refer to LCO 3.7.13, "Emergency Core Cooling System (ECCS) Pump Room Exhaust Air Cleanup System (PREACS)") for units that use this system as part of their ECCS PREACS.~~ ②

spent fuel storage pool, one fuel pool area ventilation train

FHAs that involve

During movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel building, the FBACS~~ is required to be OPERABLE ~~to mitigate the consequences of a fuel handling accident [involving handling recently irradiated fuel~~. Due to radioactive decay, ~~FBACS~~ is only required to mitigate ~~fuel handling accidents involving~~ handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous ~~[X] days~~)~~]~~. ③ ② ① ③

72 hours

the Fuel Pool Area Ventilation System

Insert 3

~~In MODES 5 and 6, the FBACS is not required to be OPERABLE, since the ECCS is not required to be OPERABLE~~. ①

ACTIONS

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

~~A.1~~

~~If one FBACS train is inoperable, action must be taken to restore OPERABLE status within 7 days. During this time period, the remaining OPERABLE train is adequate to perform the FBACS function. The 7 day Completion Time is reasonable, based on the risk from an event occurring requiring the inoperable FBACS train, and ability of the remaining FBACS train to provide the required protection.~~

~~B.1~~

~~-----------------------------REVIEWER'S NOTE-----------------------------~~
~~Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.~~
~~---~~ ②

①

Insert 3

When movement of irradiated fuel assemblies within the spent fuel storage pool is not being conducted, the potential for an FHA within the fuel pool area does not exist. Additionally, due to radioactive decay, an FHA that involves handling non-recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core longer than 72 hours) will result in doses that are well within the guideline values specified in 10 CFR 50.67 even without fuel pool area ventilation filtration capability. Therefore, under these conditions the Fuel Pool Area Ventilation System is not required to be OPERABLE.

BASES

ACTIONS (continued)

~~If the fuel building boundary is inoperable in MODE 1, 2, 3, or 4, the FBACS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE fuel building boundary within 24 hours. During the period that the fuel building boundary is inoperable, appropriate compensatory measures [consistent with the intent, as applicable, of GDC 19, 60, 61, 63, 64 and 10 CFR Part 100] should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibility repair, and test most problems with the fuel building boundary.~~

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

~~In MODE 1, 2, 3, or 4, when Required Action A.1 or B.1 cannot be completed within the Completion Time, or when both FBACS trains are inoperable for reasons other than an inoperable fuel building boundary (i.e., Condition B), the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.]~~

②

~~D.1 and D.2~~

~~When Required Action A.1 cannot be completed within the required Completion Time during movement of [recently] irradiated fuel assemblies in the fuel building, the OPERABLE FBACS train must be started immediately or fuel movement suspended. This action ensures that the remaining train is OPERABLE, that no undetected failures preventing system operation will occur, and that any active failure will be readily detected.~~

~~If the system is not placed in operation, this action requires suspension of [recently] irradiated fuel movement, which precludes a fuel handling accident. This does not preclude the movement of fuel to a safe position.~~

BASES

ACTIONS (continued) ② ③

A ~~E~~.1

When ~~two trains of the FBACS are~~ one required fuel pool area ventilation train is inoperable during movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel building~~ spent fuel storage pool, action must be taken to place the unit in a condition in which the LCO does not apply. This LCO involves immediately suspending movement of ~~[~~recently~~]~~ irradiated fuel assemblies in the ~~fuel building~~ spent fuel storage pool. This does not preclude the movement of fuel to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.7.1~~4~~ 7.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing ~~each~~ the required train ~~once every month~~ periodically provides an adequate check on this system. Operation ~~[with the heaters on]~~ for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that ~~[heater failure,]~~ blockage, fan or motor failure, or excessive vibration can be detected for corrective action. ① ③

~~[The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.~~

~~OR~~

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

~~-----------------------------------REVIEWER'S NOTE-----------------------------------~~

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

~~--]~~

SR 3.7.1~~4~~ 7.2 ① ②

This SR verifies the performance of ~~FBACS~~ Fuel Pool Area Ventilation System filter testing in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~. The ~~[~~VFTP~~]~~ includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the ~~[~~VFTP~~]~~. ③

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~[SR 3.7.14.3~~

~~This SR verifies that each FBACS train starts and operates on an actual or simulated actuation signal. The SR excludes automatic dampers and valves that are locked, sealed, or otherwise secured in the actuated position. The SR does not apply to dampers or valves that are locked, sealed, or otherwise secured in the actuated position since the affected dampers or valves were verified to be in the actuated position prior to being locked, sealed, or otherwise secured. Placing an automatic valve or damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the valve or damper to be repositioned to the non-actuated position to support the accident analysis. Restoration of an automatic valve or damper to the non-actuated position requires verification that the SR has been met within its required Frequency. [The [18] month Frequency is consistent with that specified in Reference 6.]~~ ③

~~OR~~

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

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

SR 3.7.1~~4.4~~ 7.3 ②

This SR verifies the integrity of the fuel ~~building enclosure~~ pool area. The ability ~~of the fuel building~~ to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the ~~FBACS~~ Fuel Pool Area Ventilation System. During ~~the post accident mode of~~ system operation, the ~~FBACS~~ Fuel Pool Area Ventilation System is designed to maintain a slight negative pressure in the fuel ~~building~~ pool area, with respect to adjacent areas, to prevent unfiltered LEAKAGE. ① ~~The FBACS is designed to maintain this negative pressure at a flow rate of ≤ [3000] cfm to the fuel building. [The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 7).~~ ③

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~This test is conducted with the tests for filter penetration; thus, an [18] month Frequency, on a STAGGERED TEST BASIS is consistent with other filtration SRs.~~

~~OR~~

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

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

~~[SR 3.7.14.5~~

~~Operating the FBACS filter bypass damper is necessary to ensure that the system functions properly. The OPERABILITY of the FBACS filter bypass damper is verified if it can be opened. The SR excludes automatic dampers that are locked, sealed, or otherwise secured in the open position. The SR does not apply to dampers that are locked, sealed, or otherwise secured in the open position since the affected dampers were verified to be in the open position prior to being locked, sealed, or otherwise secured. Placing an automatic damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the damper to be closed to support the accident analysis. Restoration of an automatic damper to the closed position requires verification that the SR has been met within its required Frequency. [The 18 month Frequency is consistent with that specified in Reference 6.~~

~~OR~~

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

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

③

BASES

REFERENCES

U

1. FSAR, Section ~~[6.5.1]~~ 9.4.6.
2. FSAR, Section ~~[9.4.5]~~ 12.2.2.5.
3. FSAR, Section ~~[~~15.~~7.4]~~ 4.3.

③

4. ~~Regulatory Guide 1.25.~~
5. ~~10 CFR 100.~~
6. ~~Regulatory Guide 1.52, Rev. [2].~~
7. ~~NUREG-0800, Section 6.5.1, July 1981.~~

①

JUSTIFICATION FOR DEVIATIONS
ITS 3.7.17 BASES, FUEL POOL AREA VENTILATION SYSTEM
UNIT 1 ONLY

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

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

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

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.7.17, FUEL POOL AREA VENTILATION SYSTEM
UNIT 1 ONLY

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

ATTACHMENT 18

Relocated/Deleted Current Technical Specifications

Unit 1 CTS 3/4.7.10, Snubbers
Unit 2 CTS 3/4.7.9, Snubbers

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

~~PLANT SYSTEMS~~

~~3/4.7.10 SNUBBERS~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.7.10 All safety related snubbers shall be OPERABLE.~~

~~**APPLICABILITY:** MODES 1, 2, 3 and 4. (MODES 5 and 6 for snubbers located on systems required OPERABLE in those MODES).~~

~~**ACTION:**~~

~~With one or more safety related snubbers inoperable, within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status or declare the supported system inoperable and follow the appropriate ACTION statement for that system.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.7.10 Each snubber shall be demonstrated OPERABLE by performance of the Snubber Testing Program.~~

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (Continued)~~

~~**DELETED**~~

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (Continued)~~

~~DELETED~~

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (Continued)~~

~~DELETED~~

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (Continued)~~

~~DELETED~~

.

LA01

~~PLANT SYSTEMS~~

~~3/4.7.9 SNUBBERS~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.7.9 All safety-related snubbers shall be OPERABLE.~~

~~**APPLICABILITY:** MODES 1, 2, 3 and 4. MODES 5 and 6 for snubbers located on systems required OPERABLE in those MODES.~~

~~**ACTION:**~~

~~With one or more safety related snubbers inoperable, within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status and perform an engineering evaluation per Specification 4.7.9. on the supported component or declare the supported system inoperable and follow the appropriate ACTION statement for that system.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.7.9 Each snubber shall be demonstrated OPERABLE by performance of the Snubber Testing Program.~~

~~a. Exemption From Visual Inspection or Functional Tests~~

~~Permanent or other exemptions from the surveillance program for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and, if applicable, snubber life destructive testing was performed to qualify the snubber for the applicable design conditions at either the completion of their fabrication or at a subsequent date.~~

LA01

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LA01

~~TABLE 3.7-3a~~

~~DELETED~~

LA01

~~TABLE 3.7-3b~~

~~DELETED~~

DISCUSSION OF CHANGES
UNIT 1 CTS 3/4.7.10, SNUBBERS
UNIT 2 CTS 3/4.7.9, SNUBBERS

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

LA01 (*Type 4 - Removal of LCO, SR, or other TS requirement to the TRM, UFSAR, ODCM, QAPM, IST Program, or ISI Program*) Unit 1 CTS 3.7.10 and Unit 2 CTS 3.7.9 provide requirements for all safety-related snubbers. This specification, with the exception of the Action to restore an inoperable snubber within 72 hours, is not included in the ITS. This changes the CTS by moving the explicit snubber requirements from the Technical Specifications to the Technical Requirements Manual (TRM).

The removal of these details from the Technical Specification is acceptable because this type of information is not necessary to provide adequate protection of public health and safety. The purpose of the snubber requirements is to ensure that the structural integrity of the Reactor Coolant System and other safety related systems is maintained during and following a seismic or other event initiating dynamic loads.

This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. Specifically, ITS LCO 3.0.8 continues to require, in part, action to assess and manage risk during the period one or more required snubbers are unable to perform their associated support function(s). ITS LCO 3.0.8 also places limits on the delay period when one or more required snubbers are unable to perform their associated support function(s) based on the affect the degraded snubber has on the support system (e.g., affects one train or multiple trains). Refer to Section 3.0 Discussion of Changes related to the addition of ITS LCO 3.0.8. The requirement to perform snubber inspections is specified in 10 CFR 50.55a and the requirement to perform snubber inspections and testing is specified in ASME Section XI, as modified by approved relief requests. Therefore, both PSL commitments and NRC regulations or generic guidance contain the necessary programmatic requirements for the inspection and testing of safety related snubbers without repeating them in the ITS. ASME code requirements associated with snubber inspections and testing will continue to be controlled pursuant 10 CFR 50.55a Also, this change is acceptable because the removed information will be adequately controlled in the TRM. The TRM is incorporated by reference into the UFSAR, and any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as a less restrictive removal of detail change because a requirement is being removed from the Technical Specifications.

DISCUSSION OF CHANGES
UNIT 1 CTS 3/4.7.10, SNUBBERS
UNIT 2 CTS 3/4.7.9, SNUBBERS

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
UNIT 1 CTS 3/4.7.10, SNUBBERS
UNIT 2 CTS 3/4.7.9, SNUBBERS

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

Unit 1 CTS 3/4.7.9.1, Sealed Source Contamination
Unit 2 CTS 3/4.7.10, Sealed Source Contamination

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

A01

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A01

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R01

~~PLANT SYSTEMS~~

~~3/4.7.9 SEALED SOURCE CONTAMINATION~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.7.9.1 Each sealed source containing radioactive material either in excess of 100 microcuries of beta and/or gamma emitting material or 5 microcuries of alpha emitting material shall be free of ≥ 0.005 microcuries of removable contamination.~~

~~**APPLICABILITY:** At all times.~~

~~**ACTION:**~~

~~a. Each sealed source with removable contamination in excess of the above limit shall be immediately withdrawn from use and:~~

~~1. Either decontaminated and repaired, or~~

~~2. Disposed of in accordance with Commission Regulations.~~

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

~~SURVEILLANCE REQUIREMENTS~~

~~4.7.9.1.1 Test Requirements – Each sealed source shall be tested for leakage and/or contamination by:~~

~~a. The licensee, or~~

~~b. Other persons specifically authorized by the Commission or an Agreement State.~~

~~The test method shall have a detection sensitivity of at least 0.005 microcuries per test sample.~~

~~4.7.9.1.2 Test Frequencies – Each category of sealed sources shall be tested at the frequencies described below.~~

~~a. Sources in use (excluding startup sources previously subjected to core flux) – In accordance with the Surveillance Frequency Control Program for all sealed sources containing radioactive material:~~

Ⓡ01

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (Continued)~~

~~1. With a half-life greater than 30 days (excluding Hydrogen 3), and~~

~~2. In any form other than gas.~~

~~b. Stored sources not in use – Each sealed source shall be tested prior to use or transfer to another licensee unless tested within the previous six months. Sealed sources transferred without a certificate indicating the last test date shall be tested prior to being placed into use.~~

~~c. Startup sources – Each sealed startup source shall be tested within 31 days prior to being subjected to core flux and following repair or maintenance to the source.~~

~~4.7.9.1.3 Reports – A Special Report shall be prepared and submitted to the Commission pursuant to Specification 6.9.2 within 90 days if source leakage tests reveal the presence of ≥ 0.005 microcuries of removable contamination.~~

R01

~~PLANT SYSTEMS~~

~~3/4.7.10 SEALED SOURCE CONTAMINATION~~

~~LIMITING CONDITION FOR OPERATION~~

~~3.7.10 Each sealed source containing radioactive material either in excess of 100 microcuries of beta and/or gamma emitting material or 5 microcuries of alpha emitting material shall be free of greater than or equal to 0.005 microcuries of removable contamination.~~

~~**APPLICABILITY:** At all times.~~

~~**ACTION:**~~

- ~~a. With a sealed source having removable contamination in excess of the above limit, immediately withdraw the sealed source from use and either:~~
  - ~~1. Decontaminate and repair the sealed source, or~~
  - ~~2. Dispose of the sealed source in accordance with Commission Regulations.~~
- ~~b. The provisions of Specification 3.0.3 are not applicable.~~

~~SURVEILLANCE REQUIREMENTS~~

~~4.7.10.1 Test Requirements – Each sealed source shall be tested for leakage and/or contamination by:~~

- ~~a. The licensee, or~~
- ~~b. Other persons specifically authorized by the Commission or an Agreement State.~~

~~The test method shall be a detection sensitivity of at least 0.005 microcuries per test sample.~~

~~4.7.10.2 Test Frequencies – Each category of sealed sources (excluding startup sources and fission detectors previously subjected to core flux) shall be tested at the frequencies described below.~~

- ~~a. Sources in use – In accordance with the Surveillance Frequency Control Program for all sealed sources containing radioactive material:~~
  - ~~1. With a half-life greater than 30 days (excluding Hydrogen 3), and~~
  - ~~2. In any form other than gas.~~

R01

~~PLANT SYSTEMS~~

~~SURVEILLANCE REQUIREMENTS (Continued)~~

~~b. Stored sources not in use – Each sealed source and fission detector shall be tested prior to use or transfer to another licensee unless tested within the previous 6 months. Sealed sources and fission detectors transferred without a certification indicating the last test date shall be tested prior to being placed into use.~~

~~c. Startup sources and fission detectors – Each sealed startup source and fission detector shall be tested within 31 days prior to being subjected to core flux or installed in the core and following repair or maintenance to the source or detector.~~

~~4.7.10.3 Reports – A report shall be prepared and submitted to the Commission on an annual basis if sealed source or fission detector leakage tests reveal the presence of greater than or equal to 0.005 microcuries of removable contamination.~~

DISCUSSION OF CHANGES
UNIT 1 CTS 3/4.7.9.1, SEALED SOURCE CONTAMINATION
UNIT 2 CTS 3/4.7.10, SEALED SOURCE CONTAMINATION

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.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R01 The limitations on sealed source contamination are intended to ensure that the total body and individual organ irradiation doses do not exceed allowable limits in the event of ingestion or inhalation. This is done by imposing a maximum limitation of < 0.005 microcuries of removable contamination on each sealed source. This requirement and the associated surveillance requirements bear no relation to the conditions or limitations that are necessary to ensure safe reactor operation.

The ITS does not include this Specification. This changes the CTS by relocating this Specification to the Technical Requirements Manual (TRM). This change is acceptable because the Seal Source Contamination Specification does not meet the 10 CFR 50.36(c)(2)(ii) criteria for inclusion into the ITS.

10 CFR 50.36(c)(2)(ii) Criteria Evaluation:

1. The sealed source contamination limitation is not used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary.

2. The sealed source contamination limitation is not a process variable, design feature, or operating restriction that is an initial condition of a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

3. The sealed source contamination limitation is not part of a primary success path in the mitigation of a DBA or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

4. The sealed source contamination limitation is not discussed in the PSL PRA and is not a structure, system, or component which operating experience or

probabilistic risk assessment has shown to be significant to public health and safety.

Since 10 CFR 50.36(c)(2)(ii) criteria have not been satisfied, the Sealed Source Contamination Specification may be relocated to a licensee controlled document outside the Technical Specifications. Requirements associated with the sealed sources are governed by 10 CFR Part 70. Compliance with applicable portions of 10 CFR Part 70 is required by the operating licenses of PSL Units 1 and 2. Changes to the TRM will be controlled by the provisions of 10 CFR 50.59. This change is designated as relocation because the Specification does not meet the criteria in 10 CFR 50.36(c)(2)(ii) and has been relocated to the TRM.

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
UNIT 1 CTS 3/4.7.9.1, SEALED SOURCE CONTAMINATION
UNIT 2 CTS 3/4.7.10, SEALED SOURCE CONTAMINATION

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

ATTACHMENT 19

ISTS Not Adopted

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

3.7 PLANT SYSTEMS

3.7.10 Essential Chilled Water (ECW)

①

LCO 3.7.10 [Two] ECW trains shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One ECW train inoperable.	A.1 Restore ECW train to OPERABLE status.	7 days [OR In accordance with the Risk Informed Completion Time Program]
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3.	6 hours
	AND	
	B.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	-------------------------------NOTE------------------------------ Isolation of ECW flow to individual components does not render the ECW System inoperable. --- Verify each ECW manual, power operated, and automatic valve in the flow path, that is not locked, sealed, or otherwise secured in position, is in the correct position.	[31 days <u>OR</u> In accordance with the Surveillance Frequency Control Program]
SR 3.7.10.2	Verify the proper actuation of each ECW System component on an actual or simulated actuation signal, except for valves that are locked, sealed, or otherwise secured in the actuated position.	[[18] months <u>OR</u> In accordance with the Surveillance Frequency Control Program]

①

JUSTIFICATION FOR DEVIATIONS
ISTS 3.7.10, ESSENTIAL CHILLED WATER (ECW)

1. This Essential Chilled Water (ECW) Specification is not needed because ECW is not included in the PSL Unit 1 and Unit 2 design and licensing basis.

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

B 3.7 PLANT SYSTEMS

B 3.7.10 Essential Chilled Water (ECW) System ①

BASES

BACKGROUND

The ECW System provides a heat sink for the removal of process and operating heat from selected safety related air handling systems during a Design Basis Accident (DBA) or transient.

The ECW System is a closed loop system consisting of two independent trains. Each 100% capacity train includes a heat exchanger, surge tank, pump, chemical addition tank, piping, valves, controls, and instrumentation. An independent 100% capacity chilled water refrigeration unit cools each train. The ECW System is actuated on a safety injection actuation signal (SIAS) and supplies chilled water to the heating, ventilation, and air conditioning (HVAC) units in Engineered Safety Feature (ESF) equipment areas (e.g., the main control room, electrical equipment room, and safety injection pump area).

The flow path for the ECW System includes the closed loop of piping to all serviced equipment, and branch lines up to the first normally closed isolation valve.

During normal operation, the normal HVAC System performs the cooling function of the ECW System. The normal HVAC System is a nonsafety grade system that automatically shuts down when the ECW System receives a start signal. Additional information about the design and operation of the system, along with a list of components served, can be found in the FSAR, Section [9.2.9] (Ref. 1).

APPLICABLE SAFETY ANALYSES

The design basis of the ECW System is to remove the post accident heat load from ESF spaces following a DBA coincident with a loss of offsite power. Each train provides chilled water to the HVAC units at the design temperature of 42°F and flow rate of 400 gpm.

The maximum heat load in the ESF pump room area occurs during the recirculation phase following a loss of coolant accident. During recirculation, hot fluid from the containment sump is supplied to the high pressure safety injection and containment spray pumps. This heat load to the area atmosphere must be removed by the ECW System to ensure that these pumps remain OPERABLE.

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

BASES

LCO

[Two] ECW trains are required to be OPERABLE to provide the required redundancy to ensure that the system functions to remove post accident heat loads, assuming the worst single failure. ①

An ECW train is considered OPERABLE when:

a. The associated pump and surge tank are OPERABLE and

b. The associated piping, valves, heat exchanger, refrigeration unit, and instrumentation and controls required to perform the safety related function are OPERABLE.

The isolation of the ECW from other components or systems may render those components or systems inoperable, but does not affect the OPERABILITY of the ECW System.

APPLICABILITY

In MODES 1, 2, 3, and 4, the ECW System is required to be OPERABLE when a LOCA or other accident would require ESF operation.

In MODES 5 and 6, potential heat loads are smaller and the probability of accidents requiring the ECW System is low.

ACTIONS

A.1

If one ECW train is inoperable, action must be taken to restore OPERABLE status within 7 days [or in accordance with the Risk Informed Completion Time Program]. In this condition, one OPERABLE ECW train is adequate to perform the cooling function. The 7 day Completion Time is reasonable, based on the low probability of an event occurring during this time, the 100% capacity OPERABLE ECW train, and the redundant availability of the normal HVAC System.

B.1 and B.2

----------------------------------REVIEWER'S NOTE ---------------------------------
Adoption of a MODE 4 end state requires the licensee to make the following commitments:

1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].

2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion

ACTIONS (continued)

①

~~Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.~~

~~If the ECW train cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which overall plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours.~~

~~Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 2). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.~~

~~Required Action B.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.~~

~~The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.~~

SURVEILLANCE REQUIREMENTS

~~SR 3.7.10.1~~

~~Verifying the correct alignment for manual, power operated, and automatic valves in the ECW flow path provides assurance that the proper flow paths exist for ECW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of potentially being mispositioned are in the correct position.~~

BASES

SURVEILLANCE REQUIREMENTS (continued)

①

This SR is modified by a Note indicating that the isolation of ECW flow to components or systems may render those components inoperable but does not affect the OPERABILITY of the ECW System.

[The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

OR

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

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

SR 3.7.10.2

This SR verifies proper automatic operation of the ECW System components that the ECW pumps will start in the event of any accident or transient that generates an SIAS. This SR also ensures that each automatic valve in the flow paths actuates to its correct position on an actual or simulated SIAS. The SR excludes automatic valves that are locked, sealed, or otherwise secured in the actuated position. The SR does not apply to valves that are locked, sealed, or otherwise secured in the actuated position since the affected valves were verified to be in the actuated position prior to being locked, sealed, or otherwise secured. Placing an automatic valve in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the valve to be repositioned to the non-actuated position to support the accident analysis. Restoration of an automatic valve to the non-actuated position requires verification that the SR has been met within its required Frequency. The ECW System cannot be fully actuated as part of the SIAS CHANNEL FUNCTIONAL TEST during normal operation. The actuation logic is tested as part of the SIAS functional test every 92 days, except for the subgroup relays that actuate the system that cannot be

BASES

SURVEILLANCE REQUIREMENTS (continued)

tested during normal unit operation. [The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The [18] month Frequency is based on operating experience and design reliability of the equipment.
OR

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

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

1

REFERENCES

1. FSAR, Section [9.2.9].
2. CE NPSD-1186-A, Technical Justification for the Risk Informed Modification to Selected Required Action End States for CEOG PWRs, October, 2001.

JUSTIFICATION FOR DEVIATIONS
ISTS 3.7.10, BASES, ESSENTIAL CHILLED WATER (ECW)

1. ISTS 3.7.10, “Essential Chilled Water (ECW),” Specification and associated Bases are not included in the PSL ITS because ECW is not included in the PSL Unit 1 and Unit 2 design.

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

3.7 PLANT SYSTEMS

3.7.15 Penetration Room Exhaust Air Cleanup System (PREACS) ①

LCO 3.7.15 Two PREACS trains shall be OPERABLE.

---NOTE---
The penetration room boundary may be opened intermittently under administrative control.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One PREACS train inoperable.	A.1 Restore PREACS train to OPERABLE status.	7 days
B. Two PREACS trains inoperable due to inoperable penetration room boundary.	B.1 Restore penetration room boundary to OPERABLE status.	24 hours
C. ------------ NOTE ----------- Not applicable when second PREACS train intentionally made inoperable. -------------------------------- Two PREACS trains inoperable for reasons other than Condition C.	C.1 Verify at least one train of containment spray is OPERABLE.	1 hour
	<u>AND</u>	
	C.2 Restore at least one ECCS PREACS train to OPERABLE status.	24 hours

ACTIONS (continued)

①

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	D.2 --------------NOTE-------------- LCO 3.0.4.a is not applicable when entering MODE 4. ------------------------------------- Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.15.1	Operate each PREACS train for ≥ 15 continuous minutes [with heater operating].	[31 days <u>OR</u> In accordance with the Surveillance Frequency Control Program]
SR 3.7.15.2	Verify required PREACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with the [VFTP]

SURVEILLANCE REQUIREMENTS (continued)

①

SURVEILLANCE		FREQUENCY
SR 3.7.15.3	[Verify each PREACS train actuates on an actual or simulated actuation signal, except for dampers and valves that are locked, sealed, or otherwise secured in the actuated position.	[[18] months <u>OR</u> In accordance with the Surveillance Frequency Control Program]]
SR 3.7.15.4	[Verify one PREACS train can maintain a negative pressure ≥ [ ] inches water gauge with respect to atmospheric pressure during the [post accident] mode of operation at a flow rate of ≤ [3000] cfm.	[[18] months on a STAGGERED TEST BASIS <u>OR</u> In accordance with the Surveillance Frequency Control Program]]
SR 3.7.15.5	[Verify each PREACS filter bypass damper can be opened, except for dampers that are locked, sealed, or otherwise secured in the open position.	[[18] months <u>OR</u> In accordance with the Surveillance Frequency Control Program]]

JUSTIFICATION FOR DEVIATIONS
ISTS 3.7.15, PENETRATION ROOM EXHAUST AIR CLEANUP SYSTEM (PREACS)

1. This Penetration Room Exhaust Air Cleanup System (PREACS) Specification is not needed because the PREACS is not included in the PSL Unit 1 and Unit 2 design and licensing basis.

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

B 3.7 PLANT SYSTEMS

B 3.7.15 Penetration Room Exhaust Air Cleanup System (PREACS)

①

BASES

BACKGROUND

The PREACS filters air from the penetration area between containment and the Auxiliary Building.

The PREACS consists of two independent and redundant trains. Each train consists of a heater, a prefilter or demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system, as well as demisters functioning to reduce the relative humidity of the air stream. A second bank of HEPA filters, which follows the adsorber section, collects carbon fines and provides backup in case of failure of the main HEPA filter bank. The downstream HEPA filter, although not credited in the accident analysis, collects charcoal fines and serves as a backup should the upstream HEPA filter develop a leak. The system initiates filtered ventilation following receipt of a safety injection actuation signal or containment isolation actuation signal.

The PREACS is a standby system, parts of which may also operate during normal unit operations. During emergency operations, the PREACS dampers are realigned, and fans are started to initiate filtration. Upon receipt of the actuating Engineered Safety Feature Actuation System signal(s), normal air discharges from the penetration room, the penetration room is isolated, and the stream of ventilation air discharges through the system filter trains. The prefilters or demisters remove any large particles in the air, as well as any entrained water droplets, to prevent excessive loading of the HEPA filters and charcoal adsorbers.

The PREACS is discussed in the FSAR, Sections [6.5.1], [9.4.5], and [15.6.5] (Refs. 1, 2, and 3, respectively), as it may be used for normal, as well as post accident, atmospheric cleanup functions. Heaters may be included for moisture removal on systems operating in high humidity conditions. The primary purpose of the heaters is to maintain the relative humidity at an acceptable level, consistent with iodine removal efficiencies, as discussed in the Regulatory Guide 1.52 (Ref. 4).

BASES

APPLICABLE SAFETY ANALYSES

① The design basis of the PREACS is established by the large break loss of coolant accident (LOCA). The system evaluation assumes a passive failure outside containment, such as a valve packing leakage during a Design Basis Accident (DBA). In such a case, the system restricts the radioactive release to within 10 CFR 100 (Ref. 5) limits, or the NRC staff approved licensing basis (e.g., a specified fraction of 10 CFR 100 limits). The analysis of the effects and consequences of a large break LOCA are presented in Reference 3.

There are two types of system failures considered in the accident analysis: a complete loss of function and an excessive LEAKAGE. Either type of failure may result in less efficient removal for any gaseous or particulate material released to the penetration rooms following a LOCA.

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

LCO

Two independent and redundant trains of the PREACS are required to be OPERABLE to ensure that at least one train is available, assuming there is a single failure disabling the other train coincident with a loss of offsite power.

The PREACS is considered OPERABLE when the individual components necessary to control radioactive releases are OPERABLE in both trains. A PREACS train is considered OPERABLE when its associated:

a. Fan is OPERABLE,

b. HEPA filter and charcoal absorber are not excessively restricting flow, and are capable of performing the filtration functions, and

c. Heater, demister, ductwork, valves, and dampers are OPERABLE, and circulation can be maintained.

The LCO is modified by a Note allowing the penetration room boundary to be opened intermittently under administrative controls. For entry and exit through doors, the administrative control of the opening is performed by the person(s) entering or exiting the area. For other openings, these controls consist of stationing a dedicated individual at the opening who is in continuous communication with the control room. This individual will have a method to rapidly close the opening when a need for penetration room isolation is indicated.

APPLICABILITY

In MODES 1, 2, 3, and 4, the PREACS is required to be OPERABLE, consistent with the OPERABILITY requirements of the Emergency Core Cooling System (ECCS).

In MODES 5 and 6, the PREACS is not required to be OPERABLE, since the ECCS is not required to be OPERABLE.

BASES

ACTIONS

A.1

With one PREACS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this time period, the remaining OPERABLE train is adequate to perform the PREACS function. The 7 day Completion Time is appropriate because the risk contribution of the PREACS is less than that for the ECCS (72 hour Completion Time), and because this system is not a direct support system for the ECCS. The 7 day Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the consideration that the remaining train can provide the required capability.

①

B.1

-----------------------------------REVIEWER'S NOTE-----------------------------------
Adoption of Condition B is dependent on a commitment from the licensee to have guidance available describing compensatory measures to be taken in the event of an intentional and unintentional entry into Condition B.

If the penetration room boundary is inoperable, the PREACS trains cannot perform their intended functions. Actions must be taken to restore an OPERABLE penetration room boundary within 24 hours. During the period that the penetration room boundary is inoperable, appropriate compensatory measures [consistent with the intent, as applicable, of GDC 19, 60, 64 and 10 CFR Part 100] should be utilized to protect plant personnel from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. Preplanned measures should be available to address these concerns for intentional and unintentional entry into the condition. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is reasonable based on the low probability of a DBA occurring during this time period, and the use of compensatory measures. The 24 hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the penetration room boundary.

BASES

ACTIONS (continued) ①

C.1 and C.2

With two PREACS trains inoperable for reasons other than an inoperable boundary, action must be taken to restore at least one PREACS train to OPERABLE status within 24 hours. The Condition is modified by a Note stating it is not applicable if the second PREACS train is intentionally declared inoperable. The Condition does not apply to voluntary removal of redundant systems or components from service. The Condition is only applicable if one train is inoperable for any reason and the second train is discovered to be inoperable, or if both trains are discovered to be inoperable at the same time. In addition, at least one train of containment spray must be verified to be OPERABLE within 1 hour. In the event of an accident, containment spray reduces the potential radioactive release from the containment which reduces the consequences of the inoperable PREACS trains. The Completion Time is based on Reference 6 which demonstrated that the 24 hour Completion Time is acceptable based on the infrequent use of the Required Actions and the small incremental effect on plant risk.

D.1 and D.2

----------------------------------REVIEWER'S NOTE ---------------------------------
Adoption of a MODE 4 end state requires the licensee to make the following commitments:

1. [LICENSEE] will follow the guidance established in Section 11 of NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," Nuclear Management and Resource Council, Revision [4F].

2. [LICENSEE] will follow the guidance established in Revision 2 of WCAP-16364-NP, "Implementation Guidance for Risk Informed Modification to Selected Required Action End States at Combustion Engineering NSSS Plants (TSTF-422)," Westinghouse, May 2010.

If the inoperable PREACS train or penetration room boundary cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which plant risk is minimized. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours.

BASES

ACTIONS (continued)

①

Remaining within the Applicability of the LCO is acceptable because the plant risk in MODE 4 is similar to or lower than MODE 5 (Ref. 7). In MODE 4 there are more accident mitigation systems available and there is more redundancy and diversity in core heat removal mechanisms than in MODE 5. However, voluntary entry into MODE 5 may be made as it is also an acceptable low-risk state.

Required Action C.2 is modified by a Note that states that LCO 3.0.4.a is not applicable when entering MODE 4. This Note prohibits the use of LCO 3.0.4.a to enter MODE 4 during startup with the LCO not met. However, there is no restriction on the use of LCO 3.0.4.b, if applicable, because LCO 3.0.4.b requires performance of a risk assessment addressing inoperable systems and components, consideration of the results, determination of the acceptability of entering MODE 4, and establishment of risk management actions, if appropriate. LCO 3.0.4 is not applicable to, and the Note does not preclude, changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.15.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not severe, testing each train once every month provides an adequate check on this system.

Operation [with the heaters on] for ≥ 15 continuous minutes demonstrates OPERABILITY of the system. Periodic operation ensures that [heater failure,] blockage, fan or motor failure, or excessive vibration can be detected for corrective action. [The 31 day Frequency is based on the known reliability of the equipment and the two train redundancy available.

OR

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

SURVEILLANCE REQUIREMENTS (continued)

①

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

SR 3.7.15.2

This SR verifies the performance of PREACS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)]. The [VFTP] includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the [VFTP].

[SR 3.7.15.3

This SR verifies that each PREACS train starts and operates on an actual or simulated actuation signal. The SR excludes automatic dampers and valves that are locked, sealed, or otherwise secured in the actuated position. The SR does not apply to dampers or valves that are locked, sealed, or otherwise secured in the actuated position since the affected dampers or valves were verified to be in the actuated position prior to being locked, sealed, or otherwise secured. Placing an automatic valve or damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the valve or damper to be repositioned to the non-actuated position to support the accident analysis. Restoration of an automatic valve or damper to the non-actuated position requires verification that the SR has been met within its required Frequency. [The [18] month Frequency is consistent with that specified in Reference 4.]

OR

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

BASES

SURVEILLANCE REQUIREMENTS (continued)

1

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

[SR 3.7.15.4

This SR verifies the integrity of the penetration room enclosure. The ability of the penetration room to maintain negative pressure, with respect to potentially uncontaminated adjacent areas, is periodically tested to verify proper function of the PREACS. During the post accident mode of operation, PREACS is designed to maintain a slightly negative pressure at a flow rate of ≤ [3000] cfm in the penetration room with respect to adjacent areas to prevent unfiltered LEAKAGE.

The minimum system flow rate maintains a slight negative pressure in the penetration room area and provides sufficient air velocity to transport particulate contaminants, assuming only one filter train is operating.

The number of filter elements is selected to limit the flow rate through any individual element to about [1000] cfm. This may vary based on filter housing geometry. The maximum limit ensures that flow through, and pressure drop across, each filter element is not excessive.

The number and depth of the adsorber elements ensures that, at the maximum flow rate, the residence time of the air stream in the charcoal bed achieves the desired adsorption rate. At least a [0.125] second residence time is necessary for an assumed [99]% efficiency.

The filters have a certain pressure drop at the design flow rate when clean. The magnitude of the pressure drop indicates acceptable performance, and is based on manufacturer's recommendations for the filter and adsorber elements at the design flow rate. An increase in pressure drop or decrease in flow indicates that the filter is being loaded or is indicative of other problems with the system.

[The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 8). This test is conducted with the tests for filter penetration; thus, an [18] month Frequency on a STAGGERED TEST BASIS consistent with other filtration SRs.

SURVEILLANCE REQUIREMENTS (continued)

①

OR

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

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

[SR 3.7.15.5

Operating the PREACS filter bypass damper is necessary to ensure that the system functions properly. The OPERABILITY of the PREACS filter bypass damper is verified if it can be opened. The SR excludes automatic dampers that are locked, sealed, or otherwise secured in the open position. The SR does not apply to dampers that are locked, sealed, or otherwise secured in the open position since the affected dampers were verified to be in the open position prior to being locked, sealed, or otherwise secured. Placing an automatic damper in a locked, sealed, or otherwise secured position requires an assessment of the OPERABILITY of the system or any supported systems, including whether it is necessary for the damper to be closed to support the accident analysis. Restoration of an automatic damper to the closed position requires verification that the SR has been met within its required Frequency. [An [18] month Frequency is consistent with that specified in Reference 4.

OR

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

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

BASES

REFERENCES

1. FSAR, Section [6.5.1]. ①

2. FSAR, Section [9.4.5].

3. FSAR, Section [15.6.5].

4. Regulatory Guide 1.52 Rev. [2].

5. 10 CFR 100.11.

6. WCAP-16125-NP-A, "Justification for Risk-Informed Modifications to Selected Technical Specifications for Conditions Leading to Exigent Plant Shutdown," Revision 2, August 2010.

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

8. NUREG-0800, Section 6.5.1.

JUSTIFICATION FOR DEVIATIONS
ISTS 3.7.15, BASES, PENETRATION ROOM EXHAUST AIR CLEANUP SYSTEM (PREACS)

1. ISTS 3.7.15, “Penetration Room Exhaust Air Cleanup System (PREACS),” Specification and associated Bases are not included in the PSL ITS because PREACS is not included in the PSL Unit 1 and Unit 2 design.