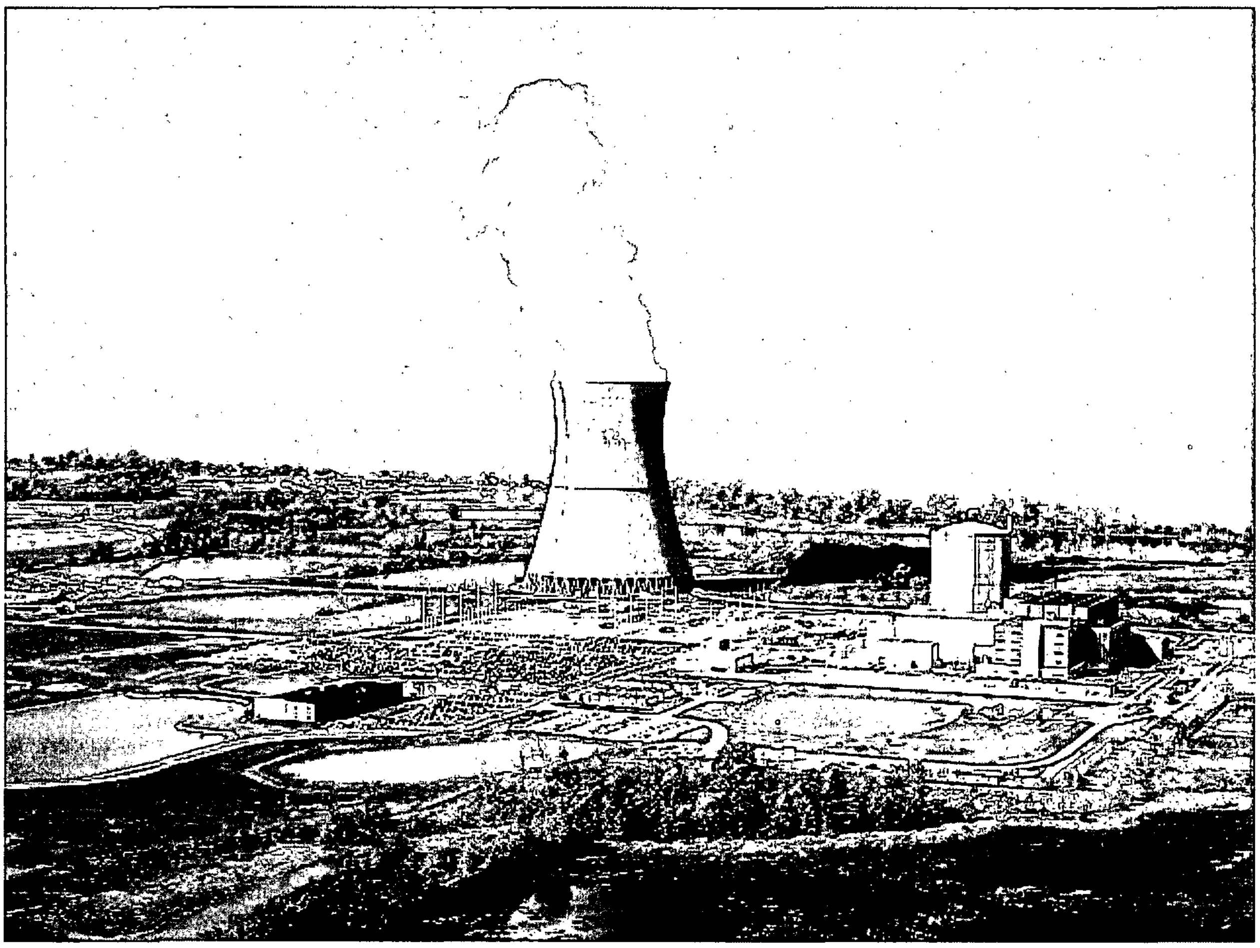
DAVIS-BESSE NUCLEAR POWER STATION
UNIT 1

IMPROVED TECHNICAL SPECIFICATION CONVERSION
LICENSE AMENDMENT REQUEST



VOLUME 14 (Rev. 1)

SECTION 3.9 – REFUELING OPERATIONS

Summary of Changes
ITS Section 3.9

Change Description	Affected Pages
The changes described in the Davis-Besse response to Question 200711271441 have been made. This change deleted the ITS 3.9.2 requirement that the two required source range monitors be on different sides of the core.	Pages 23, 26, 28, 30, 32, 33, and 36
The change described in the Davis-Besse response to Question 200712261030 (in Section 3.3) has been made. This changes the term "RPS cabinet" to "pre-amplifier," consistent with the ISTS.	Page 35
The changes described in the Davis-Besse response to Question 200801161532 (in Section 3.3) have been made. This change adds back into the ITS the Decay Time Specification and deletes the Containment Penetrations Specification.	Pages 2, 39, 41, 42, 44, 45, 47, 48, 49, 51, 58, 61, 62, 67, 68, 77, 78, 85, 86, 92, 93, 114, 116, 117, 118,119, 121, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, and 142
Added titles for UFSAR Appendix 3D references in the Bases (*editorial change for consistency with the* resolution to a question on a different section).	Pages 17, 35, 67, and 92

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ATTACHMENT 1

VOLUME 14

DAVIS-BESSE IMPROVED TECHNICAL SPECIFICATIONS CONVERSION

ITS SECTION 3.9 REFUELING OPERATIONS

Revision 1

LIST OF ATTACHMENTS

ATTACHMENT 1

ITS 3.9.1, BORON CONCENTRATION

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

ITS

A01

ITS 3.9.1

3/4.9 REFUELING OPERATIONS

BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.1 — 3.9.1 The boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure a K_{eff} of 0.95 or less, which includes a 1% Δk/k conservative allowance for uncertainties. — A02

within the limits of the COLR — LA01

APPLICABILITY: MODE 6.

Add proposed Applicability Note — L01

ACTION:

ACTION A — With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes and initiate and continue boration of ≥ 12 gpm of 7875 ppm boric acid solution or its equivalent until K_{eff} is reduced to ≤ 0.95. The provisions of Specification 3.0.3 are not applicable. — L02, L03, A03

SURVEILLANCE REQUIREMENTS

4.9.1.1 The above condition shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any safety or regulating rod in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

— L04

SR 3.9.1.1 — 4.9.1.2 The boron concentration of the reactor pressure vessel and the refueling canal shall be determined by chemical analysis at least once each 72 hours. — LA02

DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.9.1 provides requirements on the boron concentration of all filled portions of the Reactor Coolant System (RCS) and the refueling canal. ITS 3.9.1 provides requirements on the boron concentration of the RCS and the refueling canal. This changes the CTS by deleting the term "all filled portions" when referring to the RCS.

This change is acceptable because the technical requirements have not changed. The term RCS, in the context of this Specification, is referring to the water volume. Furthermore, the ITS Bases states that the boron concentration is the soluble boron concentration "in the coolant" in each of these volumes, which further clarifies that the term "RCS" is referring to the water volume. Thus, use of the term "all filled portions" is redundant. This change is designated as administrative because the technical requirements of the specification have not changed.

A03 CTS 3.9.1 Action contains the statement, "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.1 does not contain an equivalent statement. This changes the CTS by deleting the Specification 3.0.3 exception.

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

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 5 – Removal of Cycle-Specific Parameter Limits from the Technical Specification to the Core Operating Limits Report)* CTS 3.9.1 states that the boron concentration in MODE 6 shall be sufficient to ensure a k_{eff} of 0.95 or less,

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DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

which includes a 1% Δk/k conservative allowance for uncertainties. ITS LCO 3.9.1 states that the boron concentration shall be within the limit specified in the COLR. This changes the CTS by relocating the MODE 6 boron concentration limit, which must be confirmed on a cycle-specific basis, to the CORE OPERATING LIMITS REPORT (COLR).

The removal of these cycle-specific parameter limits from the Technical Specifications and their relocation into the COLR is acceptable because these limits are developed or utilized under NRC-approved methodologies. The NRC documented in Generic Letter 88-16, "Removal of Cycle-Specific Parameter Limits from Technical Specification," that 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 requirements and Surveillances that verify that the cycle-specific parameter limits are being met. ITS 3.9.1 continued to require that boron concentration limit is met. ITS SR 3.9.1.1 requires periodic verification that boron concentration is within the limits provided in the COLR. The method of determining or utilizing the boron concentration limits has not changed. Also, this change is acceptable because the removed information will be adequately controlled in the COLR under the requirements provided in ITS 5.6.3, "CORE OPERATING LIMITS REPORT." ITS 5.6.3 ensures that the applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling System limits, and nuclear limits such as the SDM, transient analysis limits, and accident analysis limits) of the safety analyses are met. This change is designated as a less restrictive removal of detail change because information relating to cycle-specific parameter limits is being removed from the Technical Specifications.

LA02 *(Type 3 – Removing Procedural Details for Meeting TS Requirements or Reporting Requirements)* CTS 4.9.1.2 requires that the boron concentration of the reactor pressure vessel and the refueling canal be determined "by chemical analysis" at least once per 72 hours. ITS SR 3.9.1.1 requires a similar verification, but does not specify that the boron concentration be determined "by chemical analysis." This changes the CTS by moving the details of how the boron concentration is determined to the Bases.

The removal of these details for performing Surveillance Requirements from the Technical Specifications is acceptable because this type of information is not necessary to be included in the Technical Specifications to provide adequate protection of public health and safety. The ITS still retains the requirement that the boron concentration be verified within its limits. In addition, 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.

DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

LESS RESTRICTIVE CHANGES

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

The purpose of CTS 3.9.1 is to ensure the boron concentration of the water surrounding the reactor fuel is sufficient to maintain the required SHUTDOWN MARGIN. This change is acceptable because the requirements continue to ensure that process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. If the refueling canal is not connected to the RCS (such as when the reactor vessel head is on the reactor vessel), the boron concentration to this volume cannot affect the SHUTDOWN MARGIN. In addition, prior to connecting the refueling canal to the RCS, a boron concentration verification will be performed (as required by SR 3.0.4) to ensure the newly connected portions cannot decrease the boron concentration below the limit. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

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

The purpose of CTS 3.9.1 is to ensure the boron concentration of the water surrounding the reactor fuel is sufficient to maintain the required SHUTDOWN MARGIN. Thus, when the limit is not met, the CTS 3.9.1 Action suspends CORE ALTERATIONS to preclude an event that could result in not meeting the SHUTDOWN MARGIN limit. CORE ALTERATION is defined in CTS 1.12, in part, as "the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel." There are two evolutions encompassed under the term CORE ALTERATION that could affect the SHUTDOWN MARGIN: addition of fuel to the reactor vessel and withdrawal of control rods. However, ITS 3.9.1 Required Action A.1 requires immediate suspension of positive reactivity changes. This would include both the addition of fuel to the reactor vessel and the withdrawal of control rods. Furthermore, another accident considered in MODE 6 that could affect SHUTDOWN MARGIN is a boron dilution event. A boron dilution accident is initiated by a dilution source which results in the boron concentration dropping below that required to maintain the SHUTDOWN MARGIN. A boron dilution accident is mitigated by stopping the dilution. Suspension of CORE ALTERATIONS has no effect on the mitigation of a boron dilution accident. Therefore, since the only CORE ALTERATIONS that could affect the SHUTDOWN MARGIN are suspended by ITS 3.9.1 Required Action A.1, deletion of the requirement to suspend CORE ALTERATIONS is acceptable. This

DISCUSSION OF CHANGES
ITS 3.9.1, BORON CONCENTRATION

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

L03 *(Category 4 – Relaxation of Required Action)* CTS 3.9.1 Action states that when the boron concentration requirement is not met, initiate and continue boration of $\geq$ 12 gpm of 7875 ppm boric acid solution or its equivalent until k_{eff} is reduced to $\leq$ 0.95. ITS 3.9.1 Required Action A.2 requires initiation of action to restore boron concentration to within limit, but does not include the boric acid concentration or flow rate requirements of the borated water being added. This changes the CTS by eliminating the specific requirements for the boric acid solution concentration and flow rate to be used to restore compliance with the LCO.

The purpose of CTS 3.9.1 Action is to restore the required SHUTDOWN MARGIN in a timely manner. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to restore to within the required limit. Specifying the boric acid solution concentration and flow rate requirements in the Action is not necessary, since the ITS requires that action to restore the boron concentration be initiated immediately. This prompt action will result in the boron concentration being restored as quickly, or more quickly, than the CTS requirement. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L04 *(Category 5 – Deletion of Surveillance Requirement)* CTS 4.9.1.1 requires the LCO reactivity condition to be determined prior to removing or unbolting the reactor vessel head, and prior to withdrawal of any safety or regulating rod in excess of 3 feet from its fully inserted position within the reactor pressure vessel. ITS 3.9.1 does not contain this Surveillance Requirement. This changes the CTS by deleting this specific Surveillance Requirement.

The purpose of CTS 4.9.1.1 is to ensure that the LCO requirements are met prior to entering MODE 6 and that the reactor has sufficient SHUTDOWN MARGIN prior to withdrawing any safety or regulating rods. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the values used to meet the LCO are consistent with the safety analyses. Thus, appropriate values continue to be tested in a manner and at a frequency necessary to give confidence that the assumptions in the safety analyses are protected. ITS 3.9.1 requires the boron concentration be met in MODE 6 or that action be immediately initiated to restore the boron concentration and that all positive reactivity additions be suspended. Therefore, verification that the boron concentration requirement is met must be performed prior to entering MODE 6, as required by LCO 3.0.4 and SR 3.0.4, in order to avoid immediately entering into the ITS ACTION (which prohibits withdrawal of control rods when the boron concentration requirement is not met). This change is designated as less restrictive because Surveillances required in the CTS will not be required in the ITS.

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

CTS

3.9 REFUELING OPERATIONS

3.9.1 Boron Concentration

(RCS) and

3.9.1 LCO 3.9.1 Boron concentrations of the Reactor Coolant System, the refueling canal, ~~and the refueling cavity~~ shall be maintained within the limit specified in the COLR. (1) (2)

APPLICABILITY: MODE 6.

DOC L01
--------------------NOTE--------------------
Only applicable to the refueling canal ~~and refueling cavity~~ when connected to the RCS. (2)

ACTIONS

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

SURVEILLANCE REQUIREMENTS

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

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.1, BORON CONCENTRATION

1. Editorial change made for consistency.

2. The term "refueling cavity" is not used at Davis-Besse. This area is considered part of the refueling canal.

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

B 3.9 REFUELING OPERATIONS

B 3.9.1 Boron Concentration

BASES

BACKGROUND

and

The limit on the boron concentrations of the Reactor Coolant System (RCS), the refueling canal, and the refueling cavity during refueling ensures that the reactor remains subcritical during MODE 6. Refueling boron concentration is the soluble boron concentration in the coolant in each of these volumes having direct access to the reactor core during refueling. 1 4

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

UFSAR, Appendix 3D.1.22

Makeup and Purification

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

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

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a

The pumping action of the DHR System in the RCS, and the natural circulation due to thermal driving heads in the reactor vessel and the refueling cavity, mix the added concentrated boric acid with the water in the refueling canal. The DHR System is in operation during refueling (see LCO 3.9.4, "DHR and Coolant Circulation - High Water Level," and LCO 3.9.5, "DHR and Coolant Circulation - Low Water Level") to provide forced circulation in the RCS and assist in maintaining the boron concentrations in the RCS, the refueling canal, and the refueling cavity above the COLR limit. 1 1

and

BASES

APPLICABLE SAFETY ANALYSES

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

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

During refueling, the water volume in the spent fuel pool, the transfer canal, the refueling canal, the refueling cavity, and the reactor vessel form a single mass. As a result, the soluble boron concentration is relatively the same in each of these volumes. (1)

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

LCO

The LCO requires that a minimum boron concentration be maintained in the RCS, [and] the refueling canal, and the refueling cavity while in MODE 6. The boron concentration limit specified in the COLR ensures a core k_{eff} of ≤ 0.95 is maintained during fuel handling operations. (3)

Violation of the LCO could lead to an inadvertent criticality during MODE 6.

APPLICABILITY

This LCO is applicable in MODE 6 to ensure that the fuel in the reactor vessel will remain subcritical. The required boron concentration ensures a k_{eff} ≤ 0.95. Above MODE 6, LCO 3.1.1, "SHUTDOWN MARGIN (SDM)," and LCO 3.1.2, "Reactivity Balance," ensure that an adequate amount of negative reactivity is available to shut down the reactor and to maintain it subcritical.

The Applicability is modified by a Note. The Note states that the limits on boron concentration are only applicable to the refueling canal and the refueling cavity when those [this] volumes are [is] connected to the RCS. When the refueling canal and the refueling cavity are [is] isolated from the RCS, no potential path for boron dilution exists. (3)

BASES

ACTIONS

A.1 and A.2 (TSTF-471)

Continuation of CORE ALTERATIONS or positive reactivity additions (including actions to reduce boron concentration) is contingent upon maintaining the unit in compliance with the LCO. If the boron [or] concentration of any coolant volume in the RCS, the refueling canal, or the refueling cavity is less than its limit, all operations involving CORE ALTERATIONS or positive reactivity additions must be suspended immediately. (3) (TSTF-471)

Suspension of CORE ALTERATIONS and positive reactivity additions shall not preclude moving a component to a safe position. Operations that individually add limited positive reactivity (e.g., temperature fluctuations from inventory addition or temperature control fluctuations), but when combined with all other operations affecting core reactivity (e.g., intentional boration) result in overall net negative reactivity addition, are not precluded by this action. (TSTF-471)

A.3 ← [2] (TSTF-471)

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

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

Once actions [s] have been initiated, they [it] must be continued until the boron concentration is restored. The restoration time depends on the amount of boron that must be injected to reach the required concentration. (2)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

This SR ensures the coolant boron concentration in the RCS, and connected portions of the refueling canal and the refueling cavity, is within the COLR limits. The boron concentration of the coolant in each required volume is determined periodically by chemical analysis. Prior to re-connecting portions of the refueling canal or the refueling cavity to the RCS, this SR must be met per SR 3.0.4. If any dilution activity has occurred while the cavity or canal were disconnected from the RCS, this SR ensures the correct boron concentration prior to communication with the RCS. [was] (3)

[The SR 3.9.1.1] A minimum Frequency of once every 72 hours is therefore a reasonable amount of time to verify the boron concentration of representative samples. The Frequency is based on operating experience, which has shown 72 hours to be adequate. (2)

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26. [UFSAR, Appendix 3D.1.22, Criterion 26 – Reactivity Control System Redundancy and Capability] (1)

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.1 BASES, BORON CONCENTRATION

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

2. Changes made to be consistent with the Specification.

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

4. Editorial change for clarity.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.1, BORON CONCENTRATION

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 2

ITS 3.9.2, NUCLEAR INSTRUMENTATION

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

A01

ITS 3.9.2

ITS

REFUELING OPERATIONS

INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

LCO 3.9.2 — 3.9.2 Two source range neutron flux monitors, one from each side of the reactor core, shall be OPERABLE. — L02

APPLICABILITY: MODE 6.

ACTION:

ACTION A — a. With only one of the required OPERABLE source range neutron flux monitors,

1. Immediately suspend CORE ALTERATIONS, and — L01
2. Immediately suspend operations that would cause introduction of coolant into the RCS with boron concentration less than the RCS boron concentration requirement of LCO 3.9.1.

ACTION A, ACTION B — b. With no OPERABLE source range neutron flux monitor,

1. Perform ACTION a., and — A02
2. Immediately initiate action to restore one source range neutron flux monitor to OPERABLE status, and
3. Once per 12 hours verify that the RCS boron concentration meets the requirement of LCO 3.9.1, using chemical analysis to determine the boron concentration of the reactor pressure vessel and the refueling canal. — Perform SR 3.9.1.1 — A03

SURVEILLANCE REQUIREMENTS

4.9.2 As a minimum, two source range neutron flux monitors, one from each side of the reactor core, shall be demonstrated OPERABLE by performance of:

a. Deleted

b. Deleted

SR 3.9.2.1 — c. A CHANNEL CHECK at least once per 12 hours, and

SR 3.9.2.2 — d. A CHANNEL CALIBRATION prior to entry into MODE 6 if not performed within the last 18 months. Neutron detectors are excluded from CHANNEL CALIBRATION. — A04

DISCUSSION OF CHANGES
ITS 3.9.2, NUCLEAR INSTRUMENTATION

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.9.2 Action b.1 states that when there is no OPERABLE source range neutron flux monitor to perform Action a. ITS 3.9.2 does not contain this specific requirement. This changes the CTS by deleting the specific statement to "perform Action a."

The purpose of CTS 3.9.2 Action b.1 is to clarify that when there is no OPERABLE source range neutron flux monitor, Action a, which provides the actions when there is only one OPERABLE source range neutron flux monitor, must be performed. This statement is not needed in ITS because ITS 3.9.2 ACTION A, applies when there is one inoperable source range neutron flux monitor. Thus, whenever two required source range neutron flux monitors are inoperable, both ITS 3.9.2 ACTION B, which provides the actions for two inoperable source range neutron flux monitors, and ITS 3.9.2 ACTION A must be entered. Therefore, there is no need for the specific statement. This change is designated as administrative because it does not result in technical changes to the CTS.

A03 CTS 3.9.2 Action b.3 states that, when both source range neutron flux monitors are inoperable, to verify that the RCS Boron meets the requirement of LCO 3.9.1, using chemical analysis to determine the boron concentration of the reactor pressure vessel and the refueling canal once per 12 hours. Under similar conditions, ITS 3.9.2 Required Action B.2 requires performance of SR 3.9.1.1 once per 12 hours. This changes the CTS by replacing the prescriptive requirement for verification of boron concentration with a more general requirement.

This change is acceptable because the CTS requirements have not changed. The ITS requirements preserve the intent of the CTS. This change is designated as administrative because it does not result in technical changes to the CTS.

A04 CTS 4.9.2.d requires performance of a CHANNEL CALIBRATION on the source range neutron flux monitors "prior to entry into MODE 6 if not performed within the last" 18 months. ITS 3.9.2.2 only requires performance of the CHANNEL CALIBRATION every 18 months. This changes the CTS by deleting the statement "prior to entry into MODE 6 if not performed within the last."

This change is acceptable because the CTS requirement has not changed. CTS 4.0.4 states that "entry into an OPERATIONAL MODE or other specified applicability shall not be made unless the Surveillance Requirement(s) associated with the Limiting Condition for Operation have been performed within

DISCUSSION OF CHANGES
ITS 3.9.2, NUCLEAR INSTRUMENTATION

the stated surveillance Interval or otherwise specified." This requirement has been maintained in ITS 3.0.4. Therefore, there is no need to restate CTS 4.0.4 (ITS SR 3.0.4). This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.9.2 Action a specifies the compensatory action for when a source range neutron flux monitor is inoperable. One of the compensatory actions (CTS 3.9.2 Action a.1) is to suspend CORE ALTERATIONS. Under similar conditions, ITS 3.9.2 Required Action A.1 requires suspension of positive reactivity additions, except the introduction of coolant into the RCS, instead of suspension of CORE ALTERATIONS. This changes the CTS by changing the requirement to suspend CORE ALTERATIONS to only require suspension of positive reactivity additions, not covered by CTS 3.9.2 Action a.2, when a source range neutron flux monitor is inoperable.

The purpose of source range neutron flux monitors is to monitor core reactivity during refueling operations and provide a signal to the operators if an unexpected reactivity change occurs. Thus, when a source range neutron flux monitor is inoperable, CORE ALTERATIONS are suspended to preclude an unmonitored reactivity change. CORE ALTERATIONS is defined in CTS 1.12, in part, as "the movement of any fuel, sources, or reactivity control components, within the reactor vessel with the vessel head removed and fuel in the vessel." CORE ALTERATIONS only occur when the reactor vessel head is removed – it only applies to MODE 6. There are two evolutions encompassed under the term CORE ALTERATION that could affect the reactivity of the core: addition of fuel to the reactor vessel and withdrawal of control rods. However, ITS 3.9.2 Required Action A.1 requires immediate suspension of positive reactivity changes, except the introduction of coolant into the RCS. This would include both the addition of fuel to the reactor vessel and the withdrawal of control rods. In addition, movement of fuel or control rods that does not add positive reactivity (e.g., removal of a fuel assembly from the core) is not required to be suspended since this evolution does not increase core reactivity, thus it is not a safety concern

DISCUSSION OF CHANGES
ITS 3.9.2, NUCLEAR INSTRUMENTATION

(i.e., it cannot result in an unexpected criticality event). Therefore, since the CORE ALTERATIONS of concern are only those that could affect positive reactivity in the core, and these are suspended by ITS 3.9.2 Required Action A.1, changing the requirement from suspending to "CORE ALTERATIONS" to suspending "positive reactivity additions, except the introduction of coolant into the RCS" is acceptable. This change is designated as less restrictive because less stringent Required Actions are being applied in the ITS than were applied in the CTS.

L02 *(Category 1 – Relaxation of LCO Requirement)* CTS LCO 3.9.2 requires that two source range neutron flux monitors, one from each side of the reactor core, be OPERABLE. ITS LCO 3.9.2 requires two source range neutron flux monitors to be OPERABLE. This changes the CTS by eliminating the requirement that the neutron monitors are on each side of the reactor core.

The purpose of the source range neutron flux monitor is to monitor core reactivity during refueling operations and provide a signal to the operators if an unexpected reactivity change occurs. This change is acceptable because the source range monitors have no safety function and are not assumed to function during any UFSAR design basis accident or transient. However, the source range neutron channels provide on scale monitoring of neutron flux levels during refueling conditions. This on scale monitoring function can be performed by any of the two required monitors, even if they are on the same side of the core. Therefore, the wording "one from each side of the reactor core" is not necessary. This change is less restrictive because the requirement that the two source range neutron flux monitors are on each side of the reactor core is not retained.

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

CTS

3.9 REFUELING OPERATIONS

3.9.2 Nuclear Instrumentation

3.9.2 LCO 3.9.2 Two source range neutron flux monitors shall be OPERABLE.

APPLICABILITY: MODE 6.

ACTIONS

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a, Action b	A. One [required] source range neutron flux monitor inoperable.	A.1 Suspend [CORE ALTERATIONS] positive reactivity additions, except the introduction of coolant into the RCS. AND A.2 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately Immediately	2 TSTF-471 3
Action b	B. Two [required] source range neutron flux monitors inoperable.	B.1 Initiate action to restore one source range neutron flux monitor to OPERABLE status. AND B.2 Perform SR 3.9.1.1.	Immediately Once per 12 hours	2

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE	FREQUENCY
4.9.2.c	SR 3.9.2.1 Perform CHANNEL CHECK.	12 hours

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
4.9.2.d	SR 3.9.2.2	-----NOTE----- Neutron detectors are excluded from CHANNEL CALIBRATION.		
		Perform CHANNEL CALIBRATION.	[18] months	2

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.2, NUCLEAR INSTRUMENTATION

1. Not used.

2. The brackets are removed and the proper plant specific information/value is provided.

3. TSTF-471T changed ISTS 3.9.2 Required Action A.1 from requiring suspension of "CORE ALTERATIONS" to requiring suspension of "positive reactivity additions." However, positive reactivity additions could encompass adding coolant into the Reactor Coolant System (RCS). ISTS 3.9.2 Required Action A.2 allows introduction of coolant into the RCS provided the boron concentration of the added coolant meets the LCO 3.9.1 requirement. Thus, the TSTF essentially precluded all operations of coolant introduction into the RCS unless the boron concentration of the added coolant is greater than or equal to the concentration in the RCS. This was not the intent of the TSTF. Therefore, the amplifying information, "except the introduction of coolant into the RCS" has been included in ITS 3.9.2 Required Action A.1 to allow ISTS 3.9.2 Required Action A.2 control this operation.

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

B 3.9 REFUELING OPERATIONS

B 3.9.2 Nuclear Instrumentation

Reactor Protection System (RPS) and Post Accident Monitoring (PAM) Instrumentation

BASES

BACKGROUND

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

INSERT 1

RPS

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

seven

1E-1 cps to

RPS

INSERT 2

(1)

APPLICABLE SAFETY ANALYSES

Two OPERABLE source range neutron flux monitors are required to provide a signal to alert the operator to unexpected changes in core reactivity, such as by a boron dilution accident or an improperly loaded fuel assembly. The safety analysis of the uncontrolled boron dilution accident is described in Reference 2. The analysis of the uncontrolled boron dilution accident shows that the normally available SDM would not be lost, and there is sufficient time for the operator to take corrective action.

(1)

have no safety function are not assumed to function during any UFSAR design basis accident or transient analysis. However, the source range neutron channels provide on scale monitoring of neutron flux levels during refueling conditions. Therefore, they are being retained in Technical Specifications

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

(1)

LCO

This LCO requires two source range neutron flux monitors OPERABLE to ensure that redundant monitoring capability is available to detect changes in core reactivity.

to be

INSERT 4

(1)

APPLICABILITY

In MODE 6, the source range neutron flux monitors must be OPERABLE to determine changes in core reactivity. There is no other direct means available to check core reactivity levels. In MODES 2, 3, 4, and 5, these same installed source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.9, "Source Range Neutron Flux."

RPS

In MODES 1, 2, and 3, these same installed PAM source range detectors and circuitry are also required to be OPERABLE by LCO 3.3.17, "Post Accident Monitoring (PAM) Instrumentation."

(2)

(1) INSERT 1

two high sensitivity proportional counters (BF_3 chambers).

(1) INSERT 2

The installed PAM monitors are two safety grade electrically and physically independent fission chamber strings. The channel 1 PAM detector (NI5874A) is located near the corresponding channel 1 RPS detector (NI-2) and the channel 2 PAM detector (NI5875A) is located adjacent to the corresponding channel 2 RPS detector (NI-1). The detectors monitor the neutron flux in counts per second. The PAM instrument range covers six decades of neutron flux (1E-1 cps to 1E+5 cps). The detectors also provide continuous visual indication in the control room and an audible indication to alert operators.

(1) INSERT 4

To be OPERABLE, each monitor must provide continuous visual indication in the control room, and one monitor must provide audible indication in the containment and the control room.

BASES

ACTIONS

A.1 and A.2

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

(3) (TSTF-471) positive reactivity additions (4)

B.1

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

(3)

B.2

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

(3) (TSTF-471)

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

BASES

SURVEILLANCE REQUIREMENTS

SR 3.9.2.1

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

The Frequency of 12 hours is consistent with the CHANNEL CHECK Frequency specified similarly for the same instruments in LCO 3.3.9.

SR 3.9.2.2

SR 3.9.2.2 is the performance of a CHANNEL CALIBRATION every [18] months. This SR is modified by a Note stating that neutron detectors are excluded from the CHANNEL CALIBRATION. The CHANNEL CALIBRATION for the source range nuclear is a complete check and re-adjustment of the channels, from the pre-amplifier input to the indicators. The 18 month Frequency is based on the need to perform this Surveillance during the conditions that apply during a plant outage. Operating experience has shown these components usually pass the Surveillance when performed at the [18] month Frequency. (3) (1) (3)

RPS

channel

, and for the PAM source range channels is a complete check of the instrument channel (1)

REFERENCES

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

2. FSAR, Section [/]. (1) (2)

U

15.2.4 and Appendix 4B

UFSAR, Appendices 3D.1.9, Criterion 13 – Instrumentation and Control; 3D.1.16, Criterion 20 – Protection System Functions; 3D.1.17, Criterion 21 – Protection System Reliability and Testability; 3D.1.18, Criterion 22 – Protection System Independence; 3D.1.19, Criterion 23 – Protection System Failure Modes; 3D.1.20, Criterion 24 – Separation of Protection and Control Systems; and 3D.1.25, Criterion 29 – Protection Against Anticipated Operational Occurrences

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.2 BASES, NUCLEAR INSTRUMENTATION

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

2. Not used.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. Typographical error corrected.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.2, NUCLEAR INSTRUMENTATION

There are no specific NSHC discussions for this Specification.

ATTACHMENT 3

ITS 3.9.3, DECAY TIME

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

A01

ITS 3.9.3

ITS

REFUELING OPERATIONS

DECAY TIME

LIMITING CONDITION FOR OPERATION

LCO 3.9.3 — 3.9.3 The reactor shall be subcritical for at least 72 hours.

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

ACTION:

ACTION A — With the reactor subcritical for less than 72 hours, suspend all operations involving movement of irradiated fuel in the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable. A02

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1 — 4.9.3 The reactor shall be determined to have been subcritical for at least 72 hours by verification of the date and time of subcriticality prior to movement of irradiated fuel in the reactor pressure vessel.

DISCUSSION OF CHANGES
ITS 3.9.3, DECAY TIME

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox 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 3.9.3 Action contains the statement, "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.3 does not contain an equivalent statement. This changes the CTS by deleting the Specification 3.0.3 exception.

This change is acceptable because the technical requirements have not changed. ITS LCO 3.0.3 is not applicable in MODE 6, which is essentially the only time movement of irradiated fuel assemblies within the reactor pressure vessel would be applicable. Therefore, the CTS LCO 3.0.3 exception is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

None

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

(1)

CTS

3.9 REFUELING OPERATIONS

3.9.3 Decay Time

3.9.3 LCO 3.9.3 The reactor shall be subcritical for ≥ 72 hours.

APPLICABILITY: During movement of irradiated fuel assemblies within the reactor pressure vessel.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action	A. Reactor not subcritical for ≥ 72 hours.	A.1 Suspend movement of irradiated fuel assemblies within the reactor pressure vessel.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.9.3	SR 3.9.3.1 Verify reactor subcritical for ≥ 72 hours.	Prior to movement of irradiated fuel assemblies within the reactor pressure vessel

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3, DECAY TIME

1. This Specification has been added to ensure the reactor is shutdown at least 72 hours prior to moving irradiated fuel assemblies. Even though this Specification is allowed to be relocated to utility control in accordance with the allowances of NUREG-1430, Davis-Besse has decided to maintain this requirement in the Technical Specifications based on the NRC's desires to maintain control of this time period, as documented in RAIs 200801161530 and 200801161532.

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

B 3.9 REFUELING OPERATIONS

B 3.9.3 Decay Time

BASES

BACKGROUND	The movement of irradiated fuel assemblies within the reactor pressure vessel requires that the reactor be subcritical for ≥ 72 hours. This ensures sufficient time has elapsed to allow the radioactive decay of the short lived fission products.
APPLICABLE SAFETY ANALYSES	Prior to movement of irradiated fuel assemblies within the reactor vessel, the reactor must be subcritical for ≥ 72 hours. This time period is an initial assumption of the fuel handling accident in containment (Ref. 1) postulated by Regulatory Guide 1.25 (Ref. 2). The minimum time period of 72 hours ensure sufficient time has elapsed to allow the radioactive decay of the short lived fission products, which helps ensure that the offsite doses during a fuel handling accident will be within the 10 CFR 100 limits, as provided by the guidance of Reference 3. Decay Time satisfies Criterion 2 of 10 CFR 50.36(d)(2)(ii).
LCO	The reactor is required to be subcritical for ≥ 72 hours to ensure that the radiological consequences of a postulated fuel handling accident inside containment are within acceptable limits as provided by 10 CFR 100.
APPLICABILITY	LCO 3.9.3 is applicable when moving irradiated fuel assemblies within the reactor pressure vessel. The LCO ensures that the possibility of a fuel handling accident in containment that is beyond the assumptions of the safety analysis cannot occur.
ACTIONS	A.1 With the reactor not subcritical for ≥ 72 hours, all operations involving movement of irradiated fuel assemblies within the reactor pressure vessel shall be suspended immediately to ensure that a fuel handling accident in containment cannot occur. The suspension of fuel movement shall not preclude completion of movement of a component to a safe position.
SURVEILLANCE REQUIREMENTS	SR 3.9.3.1 Verification that the reactor has been subcritical for ≥ 72 hours ensures that the design basis decay time assumption for the postulated fuel handling accident analysis in containment is met.

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

The Frequency of prior to movement of irradiated fuel assemblies within the reactor pressure vessel ensures that the 72 hour limit is met prior to commencement of irradiated fuel movement within the reactor pressure vessel.

REFERENCES

1. UFSAR, Section 15.4.7.3.
2. Regulatory Guide 1.25, March 23, 1972.
3. 10 CFR 100.10.

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.3 BASES, DECAY TIME

1. This Specification has been added to ensure the reactor is shutdown at least 72 hours prior to moving irradiated fuel assemblies. Even though this Specification is allowed to be relocated to utility control in accordance with the allowances of NUREG-1430, Davis-Besse has decided to maintain this requirement in the Technical Specifications based on the NRC's desires to maintain control of this time period, as documented in RAIs 200801161530 and 200801161532.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.3, DECAY TIME

There are no specific NSHC discussions for this Specification.

ATTACHMENT 4

ITS 3.9.4, DHR AND COOLANT CIRCULATION – HIGH WATER LEVEL

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

ITS

A01

ITS 3.9.4

REFUELING OPERATIONS

3/4.9.8 DECAY HEAT REMOVAL AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

3.9.4 — 3.9.8.1 At least one decay heat removal loop shall be in operation.* [OPERABLE and] M01

APPLICABILITY: MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel [flange] is ≥ 23 feet. M02

ACTION:

ACTION A — a. With less than one decay heat removal loop in operation, except as provided in b below, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. A02 L01

[Add proposed Required Action A.3] M03

LCO 3.9.4 Note — b. The decay heat removal loop may be removed from operation for up to one hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel (hot) legs. M04

c. The provisions of Specification 3.0.3 are not applicable. A03

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1 — 4.9.8.1 Surveillance at least once per 12 hours shall verify at least one decay heat removal loop to be in operation and circulating reactor coolant through the reactor core:

a. At a flow rate of ≥ 2800 gpm, whenever a reduction in Reactor Coolant System boron concentration is being made. M05

b. At a flow rate such that the core outlet temperature is maintained ≤ 140°F, provided no reduction in Reactor Coolant System boron concentration is being made.

Required Action A.1 — * Water of a lower boron concentration than the existing RCS concentration may be added to the RCS, with the flowrate of reactor coolant through the RCS less than 2800 gpm, provided that the boron concentration of the water to be added is equal to or greater than the boron concentration corresponding to the more restrictive reactivity condition specified in Specification 3.9.1. M05

DISCUSSION OF CHANGES
ITS 3.9.4, DHR AND COOLANT CIRCULATION – HIGH WATER LEVEL

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox 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 3.9.8.1 Action a states, in part, that with less than one DHR loop in operation, suspend all operations involving an increase in the reactor decay heat load of the Reactor Coolant System. Under similar conditions, ITS 3.9.4 Required Action A.2 states to suspend loading irradiated fuel assemblies in the core. This changes the CTS by requiring that the loading of irradiated fuel assemblies be suspended instead of requiring that all operations involving an increase in the reactor decay heat load be suspended.

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

A03 CTS 3.9.8.1 Action c states "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.4 does not include this statement. This changes CTS by deleting the Specification 3.0.3 exception.

This change is acceptable because the technical requirements have not changed. CTS 3.9.8.1 and ITS 3.9.4 are only applicable in MODE 6. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS LCO 3.0.3 exception is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 3.9.8.1 requires that at least one decay heat removal loop be in operation. ITS 3.9.4 requires that one DHR loop shall be OPERABLE and in operation. This changes the CTS by requiring the DHR loop to also be OPERABLE, instead of just in operation.

The purpose of CTS 3.9.8.1 is to ensure adequate decay heat removal and coolant circulation are available in MODE 6. However, the CTS LCO could be interpreted as allowing a DHR loop to be placed in operation that was not OPERABLE. The ITS eliminates this possible misinterpretation. This change is acceptable because the DHR loop must be OPERABLE (i.e., capable of performing its decay heat removal and coolant circulation function) instead of just

DISCUSSION OF CHANGES
ITS 3.9.4, DHR AND COOLANT CIRCULATION – HIGH WATER LEVEL

being in operation. This change is designated as more restrictive because the ITS contains more specific requirements on a component.

M02 CTS 3.9.8.1 requires one DHR loop to be in operation in MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is ≥ 23 feet. ITS 3.9.4 requires one DHR loop to be OPERABLE and in operation when water level is ≥ 23 feet above the top of the reactor vessel flange. This changes the CTS by changing the point at which either one or two DHR loops are required to be OPERABLE and one in operation. The change requiring the DHR loop to be OPERABLE is discussed in DOC M01.

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

M03 The CTS 3.9.8.1 Actions do not include an action to immediately initiate action to satisfy the DHR loop requirements in the event the DHR loop requirements are not met. ITS 3.9.4 Required Action A.3 requires that action be immediately initiated to satisfy the DHR loop requirements. This changes the CTS by requiring that action be taken immediately to satisfy the DHR loop requirements.

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

DISCUSSION OF CHANGES
ITS 3.9.4, DHR AND COOLANT CIRCULATION – HIGH WATER LEVEL

M04 CTS 3.9.8.1 Action b states that the DHR loop may be removed from operation for up to 1 hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs. The ITS LCO 3.9.4 Note states that the required DHR loop may be removed from operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction of coolant into the Reactor Coolant System with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, "Boron Concentration." This results in two changes to the CTS. First, the allowance to remove DHR from operation is no longer restricted to CORE ALTERATIONS in the vicinity of the reactor pressure vessel hot legs. Second, the use of the allowance in the ITS is predicated on prohibiting operations that would cause introduction of coolant into the RCS with a boron concentration less than that required to meet the boron concentration of LCO 3.9.1.

This change is acceptable because it applies appropriate controls during periods when DHR is not in operation. The ITS requirement prohibiting operations which would cause a reduction in the RCS boron concentration below that required to maintain the required shutdown margin is necessary to avoid unexpected reactivity changes. This change is designated as more restrictive because it imposes a new condition to be met when an DHR loop is not in operation.

M05 CTS 4.9.8.1 verifies that the DHR loop is in operation and circulating reactor coolant and provides two flow rate requirements. CTS 4.9.8.1.a requires ≥ 2800 gpm when a reduction in boron concentration is in progress and CTS 4.9.8.1.b requires a flow rate sufficient to maintain core outlet temperature ≤ 140°F when a reduction in boron concentration is not in progress. The 2800 gpm flow requirement is also used in CTS 3.9.8.1 footnote *. ITS SR 3.9.4.1 requires the flow rate to be ≥ 2800 gpm under all conditions. This changes the CTS by requiring a higher flow rate when a reduction in boron concentration is not in progress.

The purpose of CTS 4.9.8.1 is to ensure adequate DHR flow necessary to provide sufficient decay heat removal capability and to prevent thermal and boron stratification in the core. This change is acceptable because a higher DHR flow will be required under certain conditions to ensure the above purpose is met. This change is designated as more restrictive because a higher DHR flow is required under certain conditions in the ITS than in the CTS.

<u>RELOCATED SPECIFICATIONS</u>

None

<u>REMOVED DETAIL CHANGES</u>

None

DISCUSSION OF CHANGES
ITS 3.9.4, DHR AND COOLANT CIRCULATION – HIGH WATER LEVEL

LESS RESTRICTIVE CHANGES

L01 *(Category 4 – Relaxation of Required Action)* CTS 3.9.8.1 Action a states, in part, that with less than one DHR loop in operation, close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours. ITS 3.9.4 Required Actions A.4, A.5, and A.6 state that with the DHR loop requirements not met, within 4 hours close and secure the equipment hatch with at least four bolts, close one door in each air lock, and verify each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent, or is capable of being closed by an OPERABLE Containment Purge and Exhaust System. This changes the CTS Actions by allowing penetrations capable of being closed by an OPERABLE Containment Purge and Exhaust System to remain open when the DHR requirements are not met.

The purpose of CTS 3.9.8.1 Action a is to ensure that radioactive material does not escape the containment should the DHR requirements continue to not be met and boiling occurs in the core. Therefore, containment penetrations are closed to seal the containment. This change is acceptable because the Required Actions are used to establish remedial measures that must be taken in response to the degraded conditions in order to minimize risk associated with continued operation while providing time to repair inoperable features. The Required Actions are consistent with safe operation under the specified Condition, considering the OPERABILITY status of the redundant systems of required features, the capacity and capability of remaining features, a reasonable time for repairs or replacement of required features, and the low probability of an accident occurring during the repair period. 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

3.9 REFUELING OPERATIONS

3.9.4 Decay Heat Removal (DHR) and Coolant Circulation - High Water Level

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

Action b

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

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

ACTIONS

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

CTS

ACTIONS (continued)

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

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY	
4.8.9.1	SR 3.9.4.1	Verify one DHR loop is in operation and circulating reactor coolant at a flow rate of ≥ [2800] gpm.	12 hours	2

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.4, DHR AND COOLANT CIRCULATION – HIGH WATER LEVEL

1. Editorial correction to be consistent with the format of the ITS.

2. The brackets are removed and the proper plant specific information/value is provided.

3. ISTS 3.9.4 Required Actions A.6.1 and A.6.2 are connected by an "OR" logical connector, such that either one can be performed to meet the requirements of the ACTION. However, the two Required Actions are applicable to all the penetrations; either Required Action A.6.1 or Required Action A.6.2 must be performed for all the penetrations. Thus, this will not allow one penetration to be isolated by use of a manual valve and another penetration to be capable of being closed by an OPERABLE Containment Purge Supply and Exhaust System. This is not the intent of the requirement. The requirement is based on ISTS LCO 3.9.3, which requires each penetration to be either: a) closed by a manual or automatic isolation valve, blind flange, or equivalent; or b) capable of being closed by an OPERABLE Containment Purge Supply and Exhaust System. For consistency with the actual LCO requirement, ISTS 3.9.4 Required Actions A.6.1 and A.6.2 have been combined into a single Required Action in ITS 3.9.4 Required Action A.6. Furthermore, since ISTS 3.9.3 has not been adopted, the term OPERABLE has been deleted as requested by the NRC and as documented in RAI 200801161532.

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

B 3.9 REFUELING OPERATIONS

B 3.9.4 Decay Heat Removal (DHR) and Coolant Circulation - High Water Level

BASES

BACKGROUND

UFSAR, Appendix 3D.1.30 (Ref. 1)

2

core flood nozzles

coolers

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

coolers

1 2 1 2 1 1 2

APPLICABLE SAFETY ANALYSES

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

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

BASES

LCO

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

a. Removal of decay heat; and (5) (6)

b. Mixing of borated coolant to minimize the possibility of criticality, and . (6)

c. Indication of reactor coolant temperature. (6)

An OPERABLE DHR loop includes a DHR pump, a heat exchanger cooler, valves, piping, instruments, and controls to ensure an OPERABLE flow path and to determine the low end temperature. The flow path starts in one of the RCS hot legs and is returned to the RCS cold legs core flood nozzles. (1) (6) (1)

Additionally, since the DHR System is a manually operated system (i.e., it is not automatically actuated), each DHR loop is considered OPERABLE if it can be manually aligned (remote or local) in to the shutdown cooling decay heat mode for removal of decay heat. Operation of one subsystem can maintain the reactor coolant temperature as required. (2) (8)

The LCO is modified by a Note that allows the required DHR loop to be removed from operation for up to 1 hour in an 8 hour period, provided no operations are permitted that would dilute the RCS boron concentration by introduction of coolant into the RCS with boron concentration less than required to meet the minimum boron concentration of LCO 3.9.1, "Boron Concentration." Boron concentration reduction with coolant at boron concentrations less than required to assure the RCS boron concentration is maintained is prohibited because uniform concentration distribution cannot be ensured without forced circulation. This permits operations such as core mapping or alterations in the vicinity of the reactor vessel hot leg nozzles and RCS to DHR isolation valve testing. During this 1 hour period, decay heat is removed by natural convection to the large mass of water in the refueling cavity canal. (2) (1)

BASES

APPLICABILITY

One DHR loop must be OPERABLE and in operation in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft water level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.6, "Refueling Canal Water Level." Requirements for the DHR System in other MODES are covered by LCOs in Section 3.4, Reactor Coolant System (RCS), and Section 3.5, Emergency Core Cooling Systems (ECCS). DHR loop requirements in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, are located in LCO 3.9.5, "Decay Heat Removal (DHR) and Coolant Circulation - Low Water Level." (7)

ACTIONS

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

A.1

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

A.2

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

BASES

ACTIONS (continued)

A.3

If DHR loop requirements are not met, actions shall be initiated immediately in order to satisfy DHR loop requirements.

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

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

a. The equipment hatch must be closed and secured with [four] bolts ; (3) (5)

b. One door in each air lock must be closed and ; (5)

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere must be either closed by a manual or automatic isolation valve, blind flange, or equivalent, or verified to be capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System. INSERT 1 (4) (1)

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.4.1

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

REFERENCES

U 2 [1]. FSAR, Section [/] 9.3.5

1. UFSAR, Appendix 3D.1.30, Criterion 34 – Residual Heat Removal. (1) (1) (3)

(1) **INSERT 1**

A Containment Purge and Exhaust Isolation System consists of a containment purge and exhaust noble gas monitor, including all automatic actuations resulting from a high radiation signal (i.e., the shutting down of the containment purge and exhaust supply and exhaust fans and closure of the associated inlet and outlet dampers), and one containment purge and exhaust isolation valve in each penetration flow path, which is capable of being manually closed from the control room.

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.4 BASES, DHR AND COOLANT CIRCULATION – HIGH WATER LEVEL

1. Changes are made (additions, deletions, and/or changes) to the ISTS Bases which reflect the plant specific nomenclature, number, reference, system description, analysis, or licensing basis description.
2. Editorial changes made for clarity or to be consistent with the format of the ITS.
3. The brackets have been removed and the proper plant specific information/value has been provided.
4. Changes are made to reflect changes made to the Specification.
5. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.3.
6. Changes have been made to be consistent with the Specification.
7. The wording has been modified since Section 3.5 does not provide requirements for the DHR function.
8. This redundant sentence has been deleted. The operation requirement is already discussed in the first paragraph of the LCO Bases.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.4, DHR AND COOLANT CIRCULATION – HIGH WATER LEVEL

There are no specific NSHC discussions for this Specification.

ATTACHMENT 5

ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

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

A01

ITS

REFUELING OPERATIONS

LOW WATER LEVEL

LIMITING CONDITION FOR OPERATION

LA01 M01

LCO 3.9.5 — 3.9.8.2 Two independent DHR loops shall be OPERABLE.* [and one loop shall be in operation] A02 [Add proposed LCO NOTE 1] M01 [Add proposed LCO NOTE 2] L01

APPLICABILITY: MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is less than 23 feet. [flange] M02

ACTION:

ACTIONS A and B — a. With less than the required DHR loops OPERABLE, immediately initiate corrective action to return the required loops to OPERABLE status as soon as possible. [Add proposed Required Action A.2] [Add proposed Required Actions B.1, B.3, B.4, and B.5 for two inoperable loops] M03 A03

b. The provisions of Specification 3.0.3 are not applicable. A04

[Add proposed ACTION B for loop not in operation] M01

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1 — 4.9.8.2 At least one DHR loop shall be determined to be in operation per Specification 4.9.8.1. The inactive loop shall be determined to be OPERABLE per Specification 4.0.5. L02

[Add proposed SR 3.9.5.2] M04

* The normal or emergency power source may be inoperable for each DHR loop. A02

A01

ITS 3.9.5

ITS

REFUELING OPERATIONS

3/4.9.8 DECAY HEAT REMOVAL AND COOLANT CIRCULATION

ALL WATER LEVELS

LIMITING CONDITION FOR OPERATION

3.9.8.1 At least one decay heat removal loop shall be in operation.*

APPLICABILITY: MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is ≥ 23 feet.

ACTION:

a. With less than one decay heat removal loop in operation, except as provided in b below, suspend all operations involving an increase in the reactor decay heat load or a reduction in boron concentration of the Reactor Coolant System. Close all containment penetrations providing direct access from the containment atmosphere to the outside atmosphere within 4 hours.

b. The decay heat removal loop may be removed from operation for up to one hour per 8 hour period during the performance of CORE ALTERATIONS in the vicinity of the reactor pressure vessel (hot) legs.

c. The provisions of Specification 3.0.3 are not applicable.

See ITS 3.9.4

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1 4.9.8.1 Surveillance at least once per 12 hours shall verify at least one decay heat removal loop to be in operation and circulating reactor coolant through the reactor core:

a. At a flow rate of ≥ 2800 gpm, whenever a reduction in Reactor Coolant System boron concentration is being made.*

b. At a flow rate such that the core outlet temperature is maintained ≤ 140°F, provided no reduction in Reactor Coolant System boron concentration is being made.*

L03

* Water of a lower boron concentration than the existing RCS concentration may be added to the RCS, with the flowrate of reactor coolant through the RCS less than 2800 gpm, provided that the boron concentration of the water to be added is equal to or greater than the boron concentration corresponding to the more restrictive reactivity condition specified in Specification 3.9.1.

DISCUSSION OF CHANGES
ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox 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 3.9.8.2 is modified by footnote *, which states that the normal or emergency power source may be inoperable for each DHR loop. ITS 3.9.5 does not include this statement. This changes the CTS by deleting an allowance already provided in a different portion of the ITS.

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

A03 CTS 3.9.8.2 Action a states that with less than the required DHR loops OPERABLE, immediately initiate corrective action to return the required DHR loops to OPERABLE status as soon as possible. ITS 3.9.5 ACTION A includes the same requirement, but also includes an allowance (Required Action A.2) to immediately initiate action to establish $\geq$ 23 feet of water above the top of the reactor vessel flange. This changes the CTS by providing the option to exit the Applicability of the LCO.

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

A04 CTS 3.9.8.2 Action b states, "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.5 does not include this statement. This changes CTS by deleting the Specification 3.0.3 exception.

This change is acceptable because the technical requirements have not changed. CTS 3.9.8.2 and ITS 3.9.5 are only applicable in MODE 6. ITS LCO 3.0.3 is not applicable in MODE 6. Therefore, the CTS LCO 3.0.3 exception is not needed. This change is designated as administrative because it does not result in a technical change to the CTS.

MORE RESTRICTIVE CHANGES

M01 CTS 4.9.8.2 requires that at least one DHR loop be determined to be in operation per Specification 4.9.8.1, the DHR loop flow rate verification. However, CTS

DISCUSSION OF CHANGES
ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

LCO 3.9.8.2 does not require a DHR loop to be in operation; it just requires two DHR loops to be OPERABLE, and no Actions are provided if a DHR loop is not in operation. ITS 3.9.5 requires one of the DHR loops to be in operation, as modified by the LCO 3.9.5 Note 1 allowance. In addition, ITS 3.9.5 ACTION B provides the actions when the required DHR loop is not in operation. This changes the CTS by providing requirements for one DHR loop to be in operation and appropriate actions when the DHR loop is not in operation.

The purpose of CTS 3.9.8.2 is to ensure adequate DHR is OPERABLE for heat removal and coolant circulation. This change is acceptable because it provides the necessary requirements to ensure the above purpose is met. ITS LCO 3.9.5 requires one DHR loop to be in operation, as modified by the LCO 3.9.5 Note 1 allowance. LCO 3.9.5 Note 1 allows all DHR pumps to be removed from operation for < 15 minutes when switching from one train to the other provided the core outlet temperature is maintained > 10°F below saturation temperature, no operations are permitted that would cause introduction of coolant into the RCS with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1, "Boron Concentration," and no draining operations to further reduce RCS water volume are permitted. ITS 3.9.5 ACTION B provides the actions when the required DHR loop is not in operation. This ACTION requires immediate suspension of operations that would cause introduction of coolant into the RCS with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1 (ITS 3.9.5 Required Action B.1), immediate initiation of action to restore one DHR loop to operation (ITS 3.9.5 Required Action B.2), and requires within 4 hours, the equipment hatch to be closed with four bolts (ITS 3.9.5 Required Action B.3), one door in each air lock to be closed (ITS 3.9.5 Required Action B.4), and a verification that each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent, or is capable of being closed by a Containment Purge and Exhaust Isolation System (ITS 3.9.5 Required Action B.5). These actions assist in minimizing the consequences of a DHR loop not being in operation. This change is designated as more restrictive because an LCO requirement is being added to the ITS that is not required by the CTS.

M02 CTS 3.9.8.2 requires two DHR loops to be in OPERABLE in MODE 6 when the water level above the top of the irradiated fuel assemblies seated within the reactor pressure vessel is < 23 feet. ITS 3.9.5 requires two DHR loops to be OPERABLE and one in operation when water level is < 23 feet above the top of the reactor vessel flange. This changes the CTS by changing the point at which either one or two DHR loops are required to be OPERABLE and one in operation. The change requiring the DHR loop to be in operation is discussed in DOC M01.

The purpose of CTS 3.9.8.2 is to ensure adequate DHR is OPERABLE for heat removal and coolant circulation. CTS 3.9.8.1 and CTS 3.9.8.2 provide the requirements when water level is ≥ 23 feet and < 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel, respectively. When water level is ≥ 23 feet above the top of the irradiated fuel assemblies seated within the reactor pressure vessel, only one DHR loop is required to be in

DISCUSSION OF CHANGES
ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

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

M03 CTS 3.9.8.2 Action a states that with less than the required DHR loops OPERABLE, immediately initiate corrective action to return the required DHR loops to OPERABLE status as soon as possible. ITS 3.9.5 ACTION B includes the same requirement, but also includes additional requirements when both DHR loops are inoperable. This changes the CTS by requiring additional actions when both DHR loops are inoperable.

The purpose of CTS 3.9.8.2 is to ensure adequate DHR is OPERABLE for heat removal and coolant circulation. This change is acceptable because it provides the necessary requirements to ensure the above purpose is met. ITS 3.9.5 ACTION B provides the actions when both DHR loops are inoperable. This ACTION requires immediate suspension of operations that would cause introduction of coolant into the RCS with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1 (ITS 3.9.5 Required Action B.1), immediate initiation of action to restore one DHR loop to operation (ITS 3.9.5 Required Action B.2), and requires within 4 hours, the equipment hatch to be closed with four bolts (ITS 3.9.5 Required Action B.3), one door in each air lock to be closed (ITS 3.9.5 Required Action B.4), and a verification that each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent, or is capable of being closed by a Containment Purge and Exhaust Isolation System (ITS 3.9.5 Required Action B.5). These actions assist in minimizing the consequences of both DHR loops being inoperable. This change is designated as more restrictive because Required Actions are being added to the ITS that are not required by the CTS.

M04 The CTS 3.9.8.2 requires two independent DHR loops to be OPERABLE. ITS SR 3.9.5.2 requires verification every 7 days of correct breaker alignment and that indicated power is available to the required DHR pump not in operation. A Note states that the Surveillance Requirement is not required to be performed until 24 hours after a required DHR pump is not in operation. This changes the CTS by adding a Surveillance Requirement.

The purpose of ITS 3.9.5 is to require one DHR loop to be in operation and one DHR loop to be held in readiness should it be needed. This change is

DISCUSSION OF CHANGES
ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

acceptable because it verifies that the DHR loop that is in standby will be ready should it be needed. This change is designated as more restrictive because it adds a new Surveillance Requirement to the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

LA01 *(Type 1 – Removing Details of System Design and System Description, Including Design Limits)* CTS 3.9.8.2 states that two "independent" DHR loops shall be OPERABLE. ITS 3.9.5 requires two DHR 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 DHR 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 DHR 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.

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirements)* ITS 3.9.5 is modified by LCO Note 2, which allows one required DHR loop to be inoperable for up to 2 hours for Surveillance testing, provided that the other loop is OPERABLE and in operation. CTS 3.9.8.2 does not contain this allowance. This changes the CTS by allowing the LCO to not be met under certain situations.

The purpose of CTS 3.9.8.2 is to ensure sufficient decay heat removal is available in the specified MODES and conditions. This change is acceptable because the LCO requirements continue to ensure that the structures, systems, and components are maintained consistent with the safety analyses and licensing basis. ITS 3.9.5 continues to require one DHR loop to be OPERABLE and in operation when using this Note allowance, which will ensure sufficient decay heat removal capability exists. ITS 3.9.5 Note 2 allows normal operational evolutions, i.e., Surveillance testing, to be performed while in the Applicability of the Specification. These Surveillances are necessary to demonstrate DHR System OPERABILITY or OPERABILITY of other systems. Furthermore, the ITS Bases states that prior to making one of the DHR loops inoperable and utilizing this Note allowance, consideration should be given to the existing plant

DISCUSSION OF CHANGES
ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

configuration. This consideration should include time to core boiling, potential for RCS draindown, and RCS makeup capability. These considerations will further minimize the probability and consequences of a loss of the remaining DHR loop while using this Note allowance. 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 5 – Deletion of Surveillance Requirement)* CTS 4.9.8.2 requires verification that the inactive DHR loop is OPERABLE per Specification 4.0.5. ITS 3.9.5 does not contain this Surveillance. This changes the CTS by deleting this specific Surveillance.

The purpose of CTS Specification 4.0.5 is to require inservice testing in accordance with 10 CFR 50.55a. The purpose of inservice testing of DHR is to detect gross degradation caused by impeller structural damage or other hydraulic component problems. This change is acceptable because the deleted Surveillance Requirement is not necessary to verify that the equipment used to meet the LCO can perform its required functions. Thus, appropriate equipment continues to be tested in a manner and at a Frequency necessary to give confidence that the equipment can perform its assumed function. This Technical Specification will no longer tie DHR loop OPERABILITY to the Inservice Testing Program. This change is acceptable because it is not necessary to perform inservice testing of a DHR loop to determine if it is OPERABLE, as the system is routinely operated and the DHR loops are instrumented so that degradation can be observed. Significant degradation of the DHR System would be indicated by the DHR System flow and temperature instrumentation in the Control Room. This change is designated as less restrictive because Surveillances which are required in the CTS will not be required in the ITS.

L03 *(Category 6 – Relaxation Of Surveillance Requirement Acceptance Criteria)* CTS 4.9.8.1 verifies that the DHR loop is in operation and circulating reactor coolant and provides two flow rate requirements. CTS 4.9.8.1.a requires $\geq$ 2800 gpm when a reduction in boron concentration is in progress and CTS 4.9.8.1.b requires a flow rate sufficient to maintain core outlet temperature $\leq$ 140°F when a reduction in boron concentration is not in progress. ITS SR 3.9.5.1 requires a similar Surveillance, but does not include a specific flow rate requirement. This changes the CTS by deleting the DHR loop flow rate requirement.

The purpose of CTS 4.9.8.1 is to ensure that the DHR loop is in operation. This change is acceptable because the ITS continues to require a DHR loop to be in operation, and this requirement is verified every 12 hours in ITS SR 3.9.5.1. During MODE 6 conditions, the reactor is cooled down and the decay heat load varies with time. Therefore, stating a flow rate that must be met at all times is overly conservative with regard to removing the actual decay heat load that is present. Davis-Besse normally maintains temperature $\leq$ 140°F during MODE 6 operations. As stated in the ISTS Bases, the flow rate is determined by the flow rate necessary to provide efficient decay heat removal capability and prevent thermal and boron stratification in the core. Thus, this will ensure that adequate flow is maintained without a specific flow rate requirement being in the ITS. This

DISCUSSION OF CHANGES
ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

change is designated as less restrictive because a Surveillance Requirement acceptance criterion included in the CTS is not included in the ITS.

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

CTS

3.9 REFUELING OPERATIONS

3.9.5 Decay Heat Removal (DHR) and Coolant Circulation - Low Water Level

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

-----NOTES-----

DOCs M01 and L01

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

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

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
Action a	A. Less than required number of DHR loops OPERABLE.	A.1	Initiate action to restore DHR loop to OPERABLE status.	Immediately
		<u>OR</u>		
		A.2	Initiate action to establish ≥ 23 ft of water above the top of reactor vessel flange.	Immediately

CTS

ACTIONS (continued)

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME	
Action a, DOC M01	B. No DHR loop OPERABLE or in operation.	B.1 Suspend operations that would cause introduction of coolant into the RCS with boron concentration less than required to meet the boron concentration of LCO 3.9.1.	Immediately	
		AND		
		B.2 Initiate action to restore one DHR loop to OPERABLE status and to operation.	Immediately	
		AND		
		B.3 Close equipment hatch and secure with [four] bolts.	4 hours	3
		AND		
		B.4 Close one door in each air lock.	4 hours	
		AND		
		B.5[.1] [Close] Verify each penetration providing direct access from the containment atmosphere to the outside atmosphere is either closed with a manual or automatic isolation valve, blind flange, or equivalent[.] , or (from next page)	4 hours	4
		[OR]		

CTS

ACTIONS (continued)

move to previous page

CTS	CONDITION	REQUIRED ACTION	COMPLETION TIME
Action a, DOC M01		B.5.2 Verify each penetration is capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System.	4 hours

4

SURVEILLANCE REQUIREMENTS

CTS	SURVEILLANCE		FREQUENCY
4.9.8.1, 4.9.8.2	SR 3.9.5.1	Verify one DHR loop is in operation.	12 hours
DOC M04	SR 3.9.5.2	Verify correct breaker alignment and indicated power available to the required DHR pump that is not in operation.	7 days

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

5

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JUSTIFICATION FOR DEVIATIONS
ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

1. These punctuation corrections have been made consistent with the Writer's Guide for the Improved Standard Technical Specifications, TSTF-GG-05-01, Section 5.1.

2. Editorial change to be consistent with the format of the ITS.

3. The brackets have been removed and the proper plant specific information/value has been provided.

4. ISTS 3.9.5 Required Actions A.5.1 and A.5.2 are connected by an "OR" logical connector, such that either one can be performed to meet the requirements of the ACTION. However, the two Required Actions are applicable to all the penetrations; either Required Action A.5.1 or Required Action A.5.2 must be performed for all the penetrations. Thus, this will not allow one penetration to be isolated by use of a manual valve and another penetration to be capable of being closed by an OPERABLE Containment Purge Supply and Exhaust System. This is not the intent of the requirement. The requirement is based on ISTS LCO 3.9.3, which requires each penetration to be either: a) closed by a manual or automatic isolation valve, blind flange, or equivalent; or b) capable of being closed by an OPERABLE Containment Purge Supply and Exhaust System. For consistency with the actual LCO requirement, ISTS 3.9.5 Required Actions A.5.1 and A.5.2 have been combined into a single Required Action in ITS 3.9.5 Required Action A.5. Furthermore, since ISTS 3.9.3 has not been adopted, the term OPERABLE has been deleted as requested by the NRC and as documented in RAI 200801161532.

5. TSTF-265 was previously approved and incorporated in NUREG-1430, Rev. 2, in similar SRs (e.g., ISTS SRs 3.4.5.2, 3.4.6.2, 3.4.7.3, and 3.4.8.2). Consistent with TSTF-265, a Note is added to ISTS SR 3.9.5.2 that permits the performance of the SR to verify correct breaker alignment and power availability to be delayed until 24 hours after a required pump is not in operation. This provision is required because when pumps are swapped under the current requirements, the Surveillance is immediately not met on the pump taken out of operation. This change avoids entering an Action for a routine operational occurrence. The change is acceptable because adequate assurance exists that the pump is aligned to the correct breaker with power available because, prior to being removed from operation, the applicable pump had been in operation. Allowing 24 hours to perform the breaker alignment verification is acceptable because the pump was in operation, which demonstrated OPERABILITY, and because 24 hours is currently allowed by invoking SR 3.0.3. This is a new Surveillance Requirement not required in CTS 3.9.8.2.

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

B 3.9 REFUELING OPERATIONS

B 3.9.5 Decay Heat Removal (DHR) and Coolant Circulation - Low Water Level

BASES

BACKGROUND

UFSAR, Appendix 3D.1.30 (Ref. 1)

2

coolers

core flood nozzles

coolers

The purposes of the DHR System in MODE 6 are to remove decay heat and sensible heat from the Reactor Coolant System (RCS), as required by [GDC 34], to provide mixing of borated coolant, to provide sufficient coolant circulation to minimize the effects of a boron dilution accident, and to prevent boron stratification (Ref. [1]). Heat is removed from the RCS by circulating reactor coolant through the DHR [heat exchanger(s)], where the heat is transferred to the Component Cooling Water System [via the DHR heat exchanger]. The coolant is then returned to the RCS via the [RCS cold leg(s)]. Operation of the DHR System for normal cooldown/decay heat removal is manually accomplished from the control room. The heat removal rate is adjusted by control of the flow of reactor coolant through the DHR [heat exchanger(s) and bypassing the heat exchanger(s)]. Mixing of the reactor coolant is maintained by this continuous circulation of reactor coolant through the DHR System. 1 1 1 2 1 1 2

APPLICABLE SAFETY ANALYSES

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

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

LCO

independent

In MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, two DHR loops must be OPERABLE. Additionally, one DHR loop must be in operation to provide: 1

a. Removal of decay heat[,] ; and 3 4

b. Mixing of borated coolant to minimize the possibility of criticality [and] . 4

[c. Indication of reactor coolant temperature.] 4

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BASES

LCO (continued)

This LCO is modified by two Notes. Note 1 permits the DHR pumps to be removed from operation for ≤ 15 minutes when switching from one train to another. The circumstances for stopping both DHR pumps are to be limited to situations when the outage time is short [and the core outlet temperature is maintained > 10 degrees F below saturation temperature]. The Note prohibits boron dilution or draining operations by introduction of coolant into the RCS with boron concentrations less than required to meet the minimum boron concentration of LCO 3.9.1, "Boron Concentration," when DHR forced flow is stopped. 5 4 2

Note 2 allows one DHR loop to be inoperable for a period of 2 hours provided the other loop is OPERABLE and in operation. Prior to declaring the loop inoperable, consideration should be given to the existing plant configuration. This consideration should include INSERT 1 ~~that the core time to boil is short, there is no draining operation to further reduce RCS water level and that the capability exists to inject borated water into the reactor vessel.~~ This permits surveillance tests to be performed on the inoperable loop during a time when these tests are safe and possible. 6

An OPERABLE DHR loop consists of a DHR pump, a ~~heat exchanger~~ cooler, valves, piping, instruments, and controls to ensure an OPERABLE flow path ~~and to determine the low end temperature~~. The flow path starts in one of the RCS hot legs and is returned to the ~~RCS cold legs~~ core flood nozzles. 1 1

INSERT 2 ~~Both DHR pumps may be aligned to the Refueling Water Storage Tank to support filling or draining the refueling cavity or for performance of required testing.~~ 10

APPLICABILITY

Two DHR loops are required to be OPERABLE, and one in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to provide decay heat removal. Requirements for the DHR System in other MODES are covered by LCOs in Section 3.4, "Reactor Coolant System (RCS)." ~~, and Section 3.5, Emergency Core Cooling Systems (ECCS).~~ DHR loop requirements in MODE 6, with the water level ≥ 23 ft above the top of the reactor vessel flange, are located in LCO 3.9.4, "Decay Heat Removal (DHR) and Coolant Circulation - High Water Level." 2 2 7

ACTIONS

A.1 and A.2

With fewer than the required loops OPERABLE, action shall be immediately initiated and continued until the DHR loop is restored to OPERABLE status or until ≥ 23 ft of water level is established above the reactor vessel flange. When the water level is established at ≥ 23 ft above the reactor vessel flange, the Applicability will change to that of

(6) **INSERT 1**

time to core boiling, potential for RCS draindown, and RCS makeup capability.

(10) **INSERT 2**

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

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BASES

ACTIONS (continued)

LCO 3.9.4, and only one DHR loop is required to be OPERABLE and in operation. An immediate Completion Time is necessary for an operator to initiate corrective actions to restore the required forced circulation or water level.

B.1

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

B.2

If no DHR loop is in operation or no DHR loop is OPERABLE, actions shall be initiated immediately , and continued without interruption to restore one DHR loop to OPERABLE status and operation. Since the unit is in Conditions A and B concurrently, the restoration of two OPERABLE DHR loops and one operating DHR loop should be accomplished expeditiously. (8)

If no DHR loop is OPERABLE or in operation, alternate actions shall have been initiated immediately under Condition A to establish ≥ 23 ft of water above the top of the reactor vessel flange. Furthermore, when the LCO cannot be fulfilled, alternate decay heat removal methods, as specified in the unit's Abnormal and Emergency Operating Procedures, should be implemented. This includes decay heat removal using the charging or safety injection pumps through the Chemical and Volume Control System [insert: high pressure injection, makeup, or other injection sources,] with consideration for the boron concentration. The method used to remove decay heat should be the most prudent as well as the safest choice, based upon unit conditions. The choice could be different if the reactor vessel head is in place rather than removed. (1)

B.3, B.4, B.5.1, and B.5.2 (9)

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

a. The equipment hatch must be closed and secured with [four] bolts ; (5) (3)

BASES

ACTIONS (continued)

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

c. Each penetration providing direct access from the containment atmosphere to the outside atmosphere must be either closed by a manual or automatic isolation valve, blind flange, or equivalent, or verified to be capable of being closed by an OPERABLE Containment Purge and Exhaust Isolation System. [INSERT 3] (4) (1)

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.5.1

This Surveillance demonstrates that one DHR loop is in operation. The flow rate is determined by the flow rate necessary to provide efficient decay heat removal capability and to prevent thermal and boron stratification in the core.

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

SR 3.9.5.2

Verification that the required pump is OPERABLE ensures that an additional DHR pump can be placed in operation, if needed, to maintain decay heat removal and reactor coolant circulation. Verification is performed by verifying proper breaker alignment and power available to the required pump. The Frequency of 7 days is considered reasonable in view of other administrative controls available and has been shown to be acceptable by operating experience. [INSERT 4] (9)

REFERENCES [U] [2] 1. FSAR, Section [/] [9.3.5] [1. UFSAR, Appendix 3D.1.30, Criterion 34 – Residual Heat Removal.] (1) (1) (2)

(1) **INSERT 3**

A Containment Purge and Exhaust Isolation System consists of a containment purge and exhaust noble gas monitor, including all automatic actuations resulting from a high radiation signal (i.e., the shutting down of the containment purge and exhaust supply and exhaust fans and closure of the associated inlet and outlet dampers), and one containment purge and exhaust isolation valve in each penetration flow path, which is capable of being manually closed from the control room.

(9) **INSERT 4**

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

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.5 BASES, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

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

2. Editorial changes made for clarity or to be consistent with the format of the ITS.

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

4. Changes have been made to be consistent with the Specification.

5. The brackets have been removed and the proper plant specific information/value has been provided.

6. The current wording implies specific restrictions not contained in LCO Note 2. Therefore, the words have been modified to provide guidance on what should be considered in determining whether or not to use the Note allowance.

7. The wording has been modified since Section 3.5 does not provide requirements for the DHR function.

8. Change made to reflect the Specification. ITS 1.3 does not state that Actions with an "immediate" Completion Time must be performed without interruption.

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

10. Changes made to be consistent with similar words in ITS 3.9.4 Bases. The proposed words clearly define that the standby DHR loop is not required to be in the DHR mode to be considered OPERABLE since the DHR System is a manually operated and controlled system.

Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS 3.9.5, DHR AND COOLANT CIRCULATION – LOW WATER LEVEL

There are no specific NSHC discussions for this Specification.

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ATTACHMENT 6

ITS 3.9.6, REFUELING CANAL WATER LEVEL

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

ITS

A01

ITS 3.9.6

REFUELING OPERATIONS

WATER LEVEL - REACTOR VESSEL

LIMITING CONDITION FOR OPERATION

LCO 3.9.6

3.9.10 As a minimum, 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated within the reactor pressure vessel. (flange) M01

APPLICABILITY: During movement of (irradiated) fuel assemblies or control rods within the reactor pressure vessel while in MODE 6. (containment) L01, L02, A02, M02

ACTION:

ACTION A

With the requirements of the above specification not satisfied, suspend all operation involving movement of (irradiated) fuel assemblies or control rods within the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable. (containment) L01, L02, A03, M02

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

4.9.10 The water level shall be determined to be at least its minimum required depth within 2 hours prior to the start of and at least once per 24 hours during movement of fuel assemblies or control rods within the reactor pressure vessel. L03, L02

DAVIS-BESSE, UNIT 1 3/4 9-10

DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING CANAL WATER LEVEL

ADMINISTRATIVE CHANGES

A01 In the conversion of the Davis-Besse 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-1430, Rev. 3.1, "Standard Technical Specifications-Babcock and Wilcox Plants" (ISTS).

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

A02 CTS 3.9.10 is applicable during movement of fuel assemblies or control rods within the reactor pressure vessel while in MODE 6. ITS 3.9.6 is applicable during movement of irradiated fuel assemblies within containment. This changes the CTS by eliminating the "MODE 6" portion of the Applicability. The change to "irradiated fuel assemblies" from "fuel assemblies" is discussed in DOC L01. The change from within "the reactor pressure vessel" to within "containment" is discussed in DOC M02. The change eliminating control rods is discussed in DOC L02.

This change is acceptable because the technical requirements have not changed. Fuel movement in the containment only occurs in MODE 6. Therefore, specifying MODE 6 during movement of fuel is unnecessary. This change is designated as administrative because the technical requirements of the CTS have not changed.

A03 CTS 3.9.10 Action states "The provisions of Specification 3.0.3 are not applicable." ITS 3.9.6 does not include this statement. This changes CTS by deleting the Specification 3.0.3 exception.

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

MORE RESTRICTIVE CHANGES

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

Refueling canal water level is required to ensure the consequences of a design basis refuel accident remain within the bounds of the radiological dose calculations. Since the fuel handling accident could occur anywhere in the refueling canal, the water level in the reactor vessel and refueling canal must be at least 23 feet above the top of the reactor vessel flange. Therefore, the increased water level requirement is acceptable. This change is also being made for consistency with the requirements of NUREG-1430, Rev. 3.1. This

DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING CANAL WATER LEVEL

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

M02 CTS 3.9.10 is applicable during movement of fuel assemblies or control rods within the "reactor pressure vessel" while in MODE 6. The CTS 3.9.10 Action states that with the reactor vessel water level not within limit, suspend movement of fuel assemblies or control rods within the "reactor pressure vessel." The ITS 3.9.6 Applicability is during movement of irradiated fuel assemblies within "containment." ITS 3.9.6 Required Action A.1 requires the suspension of movement of irradiated fuel assemblies within "containment". This changes the CTS by expanding the suspension of movement of fuel assemblies from within the "reactor pressure vessel" to within the "containment." The change to "irradiated fuel assemblies" from "fuel assemblies" is discussed in DOC L01. The change eliminating MODE 6 is discussed in DOC A02. The change eliminating control rods is discussed in DOC L02.

The purpose of CTS 3.9.10 is to ensure the water level is greater than or equal to that assumed in the fuel handling accident analysis. This change is acceptable because a fuel handling accident could occur not just within the reactor pressure vessel, but also within the containment. For example, an irradiated fuel assembly could be dropped in the refueling canal or onto the reactor vessel flange, not over the reactor vessel. While this location is not the drop location assumed in the fuel handling accident, it is consistent with the reason for the water level change discussed is DOC M01. This change is designated as more restrictive because it will prohibit operations that are not prohibited in the CTS.

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 2 – Relaxation of Applicability)* CTS 3.9.10 states that at least 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated within the reactor pressure vessel during movement of fuel assemblies or control rods within the reactor pressure vessel while in MODE 6. The CTS 3.9.10 Action requires suspension of movement of fuel assemblies or control rods within the pressure vessel if the water level requirement is not met. ITS 3.9.6 states the refueling canal water level shall be maintained $\geq$ 23 feet above the top of the reactor vessel flange during movement of irradiated fuel assemblies within containment. ITS 3.9.6 Required Action A.1 requires the suspension of movement of irradiated fuel assemblies within containment. This changes the CTS by restricting the Applicability and ACTIONS from movement of any "fuel assemblies" within the reactor pressure vessel to movement of "irradiated fuel

DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING CANAL WATER LEVEL

assemblies" within containment. The change eliminating MODE 6 is discussed in DOC A02. The change from within "the reactor pressure vessel" to within "containment" is discussed in DOC M02. The change eliminating control rods is discussed in DOC L02.

The purpose of CTS 3.9.10 is to ensure the water level is greater than or equal to that assumed in the fuel handling accident analysis. This change is acceptable because the requirements continue to ensure that the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The fuel handling accident analysis is based on damaging a single irradiated fuel assembly. An unirradiated fuel assembly does not contain the radioactive materials generated by fission and does not result in significant offsite doses if damaged. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L02 *(Category 2 – Relaxation of Applicability)* CTS 3.9.10 states that at least 23 feet of water shall be maintained over the top of irradiated fuel assemblies seated within the reactor pressure vessel during movement of fuel assemblies or control rods within the reactor pressure vessel while in MODE 6. The CTS 3.9.10 Action requires suspension of movement of fuel assemblies or control rods within the pressure vessel if the water level requirement is not met. CTS 4.9.10 requires a determination of the water level during the movement of fuel assemblies or control rods. ITS 3.9.6 states the refueling canal water level shall be maintained $\geq$ 23 feet above the top of the reactor vessel flange during movement of irradiated fuel assemblies within containment. This changes the CTS by deleting the requirement that the LCO, ACTIONS, and Surveillance are applicable during control rod movement. The change to "irradiated fuel assemblies" from "fuel assemblies" is discussed in DOC L01. The change eliminating MODE 6 is discussed in DOC A02. The change from within "the reactor pressure vessel" to within "containment" is discussed in DOC M02.

The purpose of CTS 3.9.10 is to ensure the water level is greater than or equal to that assumed in the fuel handling accident analysis. This change is acceptable because the requirements continue to ensure that the process variables are maintained in the MODES and other specified conditions assumed in the safety analyses and licensing basis. The fuel handling accident is based on damaging a single irradiated fuel assembly. Movement of control rods is not assumed to result in a fuel handling accident. This change is designated as less restrictive because the LCO requirements are applicable in fewer operating conditions than in the CTS.

L03 *(Category 7 – Relaxation Of Surveillance Frequency, Non-24 Month Type Change)* CTS 4.9.10 requires the refueling cavity water level to be determined to be within limit "within 2 hours prior to the start of" and at least once per 24 hours thereafter during movement of fuel assemblies or control rods within the reactor pressure vessel. ITS SR 3.9.6.1 requires verification that the refueling canal water level is within limit every 24 hours. This changes the CTS by reducing the Frequency for verifying water level from 2 hours before entering the Applicability of the LCO to 24 hours before entering the Applicability of the LCO.

DISCUSSION OF CHANGES
ITS 3.9.6, REFUELING CANAL WATER LEVEL

The purpose of CTS 4.9.10 is to ensure that the water level is greater than or equal to that assumed in the fuel handling accident analysis. This change is acceptable because the new Surveillance Frequency provides an acceptable level of equipment reliability. The Frequency of 24 hours is sufficient during the movement of fuel assemblies, therefore it is sufficient before fuel assemblies are moved. ITS SR 3.0.1 requires the SR to be met during the MODES or other specified conditions in the Applicability. Therefore, the water level must be met when fuel assemblies are moved or fuel assembly movement must be suspended immediately (thereby exiting the Applicability of the Specification). Furthermore, ITS SR 3.0.4 requires the Surveillance to be met within the specified Frequency prior to entering the Applicability of the LCO. Thus, ITS SR 3.9.6.1 will be performed within 24 hours prior to movement of irradiated fuel assemblies within containment. Therefore, changing the Frequency from 2 hours before moving fuel assemblies to within 24 hours before moving fuel assemblies has no effect on plant safety. This change is designated as less restrictive because Surveillances will be performed less frequently under the ITS than under the CTS.

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

3.9 REFUELING OPERATIONS

3.9.6 Refueling Canal Water Level

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

APPLICABILITY: During movement of irradiated fuel assemblies within containment.

ACTIONS

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

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
4.9.10	SR 3.9.6.1 Verify refueling canal water level is ≥ 23 ft above the top of reactor vessel flange.	24 hours

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.6, REFUELING CANAL WATER LEVEL

1. Changed to be consistent with the LCO statement.

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

B 3.9 REFUELING OPERATIONS

B 3.9.6 Refueling Canal Water Level

BASES

BACKGROUND

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

APPLICABLE SAFETY ANALYSES

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

The fuel handling accident analysis inside containment is described in Reference 2. With a minimum water level of 23 ft, and a minimum decay time of [X] hours prior to fuel handling, the analysis and test programs demonstrate that the iodine release due to a postulated fuel handling accident is adequately captured by the water, and offsite doses are maintained within allowable limits (Ref. 3). 72 (2)

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

LCO

A minimum refueling cavity water level of 23 ft above the reactor vessel flange is required to ensure that the radiological consequences of a postulated fuel handling accident inside containment are within acceptable limits as provided by 10 CFR 100. canal (1)

BASES

APPLICABILITY

LCO 3.9.6 is applicable when moving irradiated fuel assemblies within the containment. The LCO minimizes the possibility of a fuel handling accident in containment that is beyond the assumptions of the safety analysis. If irradiated fuel is not present in containment, there can be no significant radioactivity release as a result of a postulated fuel handling accident. Requirements for fuel handling accidents in the spent fuel pool are covered by LCO 3.7.14, "Fuel [Storage] Spent Pool Water Level." (3)

ACTIONS

A.1

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

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

SURVEILLANCE REQUIREMENTS

SR 3.9.6.1

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

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

REFERENCES

1. Regulatory Guide 1.25, March 23, 1972.
2. U FSAR, Section [ ] 15.4.7 ,. (1) (2)
3. 10 CFR 100.10.

JUSTIFICATION FOR DEVIATIONS
ITS 3.9.6 BASES, REFUELING CANAL WATER LEVEL

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

2. The brackets have been removed and the proper plant specific information/value has been provided.

3. Change made to reflect changes made to the Specification.

Specific No Significant Hazards Considerations (NSHCs)

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

There are no specific NSHC discussions for this Specification.

ATTACHMENT 7

RELOCATED/DELETED CURRENT TECHNICAL SPECIFICATIONS

CTS 3/4.9.4, CONTAINMENT PENETRATIONS

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

L01

REFUELING OPERATIONS

CONTAINMENT PENETRATIONS

LIMITING CONDITION FOR OPERATION

3.9.4 The containment penetrations shall be in the following status:

a. The equipment hatch cover closed and held in place by a minimum of four bolts, except the equipment hatch may be open provided the requirements of Specification 3.9.12 are satisfied,

b. A minimum of one door in each air lock closed, but both doors of the containment personnel air lock may be open provided that at least one personnel air lock door is capable of being closed and a designated individual is available immediately outside the personnel air lock to close the door, and

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

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

2. Be capable of being closed from the control room by an OPERABLE containment purge and exhaust valve upon receipt of a high radiation signal from the containment purge and exhaust system noble gas monitor.

INSERT 1 — A01

APPLICABILITY: During CORE ALTERATIONS or movement of irradiated fuel within the containment.

ACTION:

a. With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or movement of irradiated fuel in the containment.

b. With the requirements of Specification 3.9.4.c not satisfied for the containment purge and exhaust system, close at least one of the isolation valves for each of the purge and exhaust penetrations providing direct access from the containment atmosphere to the outside atmosphere within one hour.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.4 Each of the above required containment penetrations shall be determined to be either in its required condition or capable of being closed by an OPERABLE containment purge and exhaust valve, within 100 hours prior to the start of and at least once per 7 days during CORE ALTERATIONS or movement of irradiated fuel in the containment, by:

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

b. Verifying that with the containment purge and exhaust system in operation, and the containment purge and exhaust system noble gas monitor capable of providing a high radiation signal to the control room, that after initiation of the high radiation signal, the containment purge and exhaust isolation valves can be closed from the control room.

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CTS 3/4.9.4

L01 A01 **INSERT 1**

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

DISCUSSION OF CHANGES
CTS 3/4.9.4, CONTAINMENT PENETRATIONS

ADMINISTRATIVE CHANGES

A01 This change to CTS 3.9.4 is provided in the Davis-Besse ITS consistent with License Amendment Request No. 06-0002, submitted to the USNRC for approval in FENOC letter Serial Number 3301, from Mark B. Bezilla (FENOC) to USNRC, dated February 12, 2007. As such, this change is administrative.

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

None

REMOVED DETAIL CHANGES

None

LESS RESTRICTIVE CHANGES

L01 *(Category 1 – Relaxation of LCO Requirement)* CTS 3.9.4 is applicable during CORE ALTERATIONS and movement of irradiated fuel within the containment. CTS 3.9.4.a allows the equipment hatch to be open provided the requirements of CTS 3.9.12 (the Spent Fuel Pool Area Emergency Ventilation System) are satisfied and CTS 3.9.4.b allows both airlock doors to be opened under certain provisions. CTS 3.9.4.c provides the requirements for containment penetrations and requires either the penetrations to be isolated by a manual or automatic valve, blind flange, or equivalent, or to be capable of being closed by an OPERABLE containment purge and exhaust valve upon receipt of a high radiation signal. Furthermore, as described in DOC A01, a new Note is proposed to be added to the CTS by another License Amendment request. The proposed Note allows penetration flow paths providing direct access from the containment atmosphere to the outside atmosphere to be unisolated under administrative controls. The ITS does not include this Technical Specification. This changes the CTS by eliminating requirements for Containment Penetrations during CORE ALTERATIONS and when moving irradiated fuel assemblies.

The purpose of the requirements in CTS 3.9.4 is to ensure that a release of fission product radioactivity within containment will be restricted to within regulatory limits during CORE ALTERATIONS and movement of irradiated fuel within the containment. The Applicability of CORE ALTERATIONS is not required since the only accident postulated to occur during CORE ALTERATIONS that is postulated to result in fuel cladding integrity damage is a fuel handling accident. Since the only accident postulated to occur during CORE ALTERATIONS that results in a significant radioactive release is the fuel handling accident, and this Applicability is already specified in the Applicability, it

DISCUSSION OF CHANGES
CTS 3/4.9.4, CONTAINMENT PENETRATIONS

is redundant and not necessary. Reducing the Applicability of this Specification to "recently" irradiated fuel assemblies is justified based upon the accident analysis demonstrating that after 72 hours of radioactive decay, offsite doses resulting from a fuel handling accident remain below the Standard Review Plan limits (well within 10 CFR 100). Once the Applicability has been reduced to require this Specification only during "recently" irradiated fuel assemblies, it is not necessary to maintain the Specification at all. CTS 3.9.3 and ITS 3.9.3 specifically prohibit fuel movement prior to 72 hours after a reactor shutdown. Thus, after 72 hours, fuel handling would be allowed without any need for the Containment Penetration Specification. That is, the requirements of this Specification are not needed to meet any of the criteria of 10 CFR 50.36(d)(2)(ii). Containment isolation is not assumed in the fuel handling accident inside containment as documented in UFSAR Section 15.4.7 and Table 15.4.7-4a. The fuel handling accident inside containment assumes no fuel movement prior to 72 hours after shutdown; thus, the Containment Closure Specification, CTS 3/4.9.4 is not needed to be maintained in the ITS since ITS 3.9.3 prohibits fuel movement prior to 72 hours. This change is designated as less restrictive because the redundant CTS LCO requirements for Containment Closure are not being maintained.

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Specific No Significant Hazards Considerations (NSHCs)

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS
CTS 3/4.9.4, CONTAINMENT PENETRATIONS

There are no specific NSHC discussions for this Specification.

CTS 3/4.9.6, FUEL HANDLING BRIDGE OPERABILITY

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

R01

REFUELING OPERATIONS

FUEL HANDLING BRIDGE OPERABILITY

LIMITING CONDITION FOR OPERATION

3.9.6 The control rod hoist and fuel assembly hoist of the fuel handling bridge shall be used for movement of control rods or fuel assemblies and shall be OPERABLE with:

a. The control rod hoist having:

1. A minimum capacity of 3000 pounds, and
2. An overload cutoff limit of ≤ 2650 pounds.

b. The fuel assembly hoist having:

1. A minimum capacity of 3000 pounds, and
2. An overload cutoff limit of ≤ 2700 pounds.

APPLICABILITY: During movement of control rods or fuel assemblies within the reactor pressure vessel.

ACTION:

With the requirements for control rod hoist and/or fuel assembly hoist OPERABILITY not satisfied, suspend use of any inoperable control rod hoist and/or fuel assembly hoist from operations involving the movement of control rods or fuel assemblies within the reactor pressure vessel. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.6.1 Each control rod hoist used for movement of control rods or fuel assemblies within the reactor pressure vessel shall be demonstrated OPERABLE within 100 hours prior to the start of such operations by performing a hoist load test of at least 3000 pounds and demonstrating an automatic load cutoff when the control rod hoist load exceeds 2650 pounds.

4.9.6.2 Each fuel assembly hoist used for movement of control rods or fuel assemblies within the reactor pressure vessel shall be demonstrated OPERABLE within 100 hours prior to the start of such operations by performing a load test of at least 3000 pounds and demonstrating an automatic load cutoff when the fuel assembly hoist load exceeds 2700 pounds.

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DISCUSSION OF CHANGES
CTS 3/4.9.6, FUEL HANDLING BRIDGE OPERABILITY

ADMINISTRATIVE CHANGES

None

MORE RESTRICTIVE CHANGES

None

RELOCATED SPECIFICATIONS

R01 CTS 3.9.6 states that the control rod hoist and fuel assembly hoist of the fuel handling bridge shall be used for movement of control rods or fuel assemblies and shall be OPERABLE with:

a. The control rod hoist having:

1. A minimum capacity of 3000 pounds, and

2. An overload cutoff limits of ≤ 2650 pounds.

b. The fuel assembly hoist having:

1. A maximum capacity of 3000 pounds, and

2. An overload cutoff limit of ≤ 2700 pounds.

OPERABILITY of the fuel handling bridge hoists ensures that the equipment used to handle fuel within the reactor pressure vessel functions as designed and that the equipment has sufficient load capacity for handling fuel assemblies and/or control rod assemblies. Although the interlocks designed to provide the above capabilities can prevent damage to the refueling equipment and fuel assemblies, they are not assumed to function to mitigate the consequences of a design basis accident. This specification does not meet the criteria for retention in the ITS; therefore, it is not included in the ITS. This changes the CTS by relocating this Specification to the Technical Requirements Manual (TRM).

This change is acceptable because CTS 3.9.6 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. Fuel Handling Bridge OPERABILITY is not used for, nor capable of, detecting a significant abnormal degradation of the reactor coolant pressure boundary prior to a design basis accident (DBA).

2. Fuel Handling Bridge OPERABILITY is not a process variable, design feature, or operating restriction that is an initial condition of a DBA or transient.

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DISCUSSION OF CHANGES
CTS 3/4.9.6, FUEL HANDLING BRIDGE OPERABILITY

3. Fuel Handling Bridge OPERABILITY is not part of a primary success path in the mitigation of a DBA or transient.

4. As discussed in B&W Owners Group Technical Report 47-1170689-00 (Appendix A pages A-89 and A-90), Fuel Handling Bridge OPERABILITY was found to be non-significant risk contributor to core damage frequency and offsite releases. Davis-Besse has reviewed this evaluation, considers it applicable to Davis-Besse Nuclear Power Station, and concurs with the assessment.

Since the 10 CFR 50.36(c)(2)(ii) criteria have not been met, the Fuel Handling Bridge Operability LCO and associated Surveillance may be relocated out of the Technical Specifications. The Fuel Handling Bridge Operability will be relocated to the TRM. The TRM is currently incorporated by reference into the UFSAR, thus any changes to the TRM are made under 10 CFR 50.59, which ensures changes are properly evaluated. This change is designated as relocation because the LCO did not meet the criteria in 10 CFR 50.36(c)(2)(ii) 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
CTS 3/4.9.6, FUEL HANDLING BRIDGE OPERABILITY

There are no specific NSHC discussions for this Specification.

ATTACHMENT 8

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) NOT ADOPTED IN THE DAVIS-BESSE ITS

ISTS 3.9.3, CONTAINMENT PENETRATIONS

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

1

3.9 REFUELING OPERATIONS

3.9.3 Containment Penetrations

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

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

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

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

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

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

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

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

ACTIONS

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

1

SURVEILLANCE REQUIREMENTS

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

JUSTIFICATION FOR DEVIATIONS
ISTS 3.9.3, CONTAINMENT PENETRATIONS

1. This ISTS Specification is not being maintained as described in the Discussion of Changes for CTS 3/4.9.4.

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

1

B 3.9 REFUELING OPERATIONS

B 3.9.3 Containment Penetrations

BASES

BACKGROUND

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

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

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

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

1

BASES

BACKGROUND (continued)

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

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

In MODE 6, large air exchangers are necessary to conduct refueling operations. The normal [42] inch purge system is used for this purpose, and all four valves are closed on a reactor building (RB) high radiation signal in accordance with LCO 3.3.15, "Reactor Building (RB) Purge Isolation - High Radiation.

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

APPLICABLE SAFETY ANALYSES

During movement of [recently] irradiated fuel assemblies within containment, the most severe radiological consequences result from a fuel handling accident [involving handling recently irradiated fuel]. The fuel handling accident is a postulated event that involves damage to irradiated fuel (Ref. 2). Fuel handling accidents, analyzed in Ref. 3, include dropping a single irradiated fuel assembly and handling tool or a heavy object onto other irradiated fuel assemblies. The requirements of LCO 3.9.6, "Refueling Canal Water Level," in conjunction with minimum decay time of [100] hours prior to [irradiated] fuel movement [with containment closure capability or a minimum decay time of [X] days without containment closure capability], ensures that the release of fission product radioactivity subsequent to a fuel handling accident results in doses that are within the requirements specified in 10 CFR 100. The acceptance limits for offsite radiation exposure are contained in Ref. 2.

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

1

BASES

LCO

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

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

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

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

(1)

BASES

APPLICABILITY

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

-------------------------------REVIEWER'S NOTE-------------------------------

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

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

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

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

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

(1)

BASES

APPLICABILITY (continued)

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

ACTIONS

A.1

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

SURVEILLANCE REQUIREMENTS

SR 3.9.3.1

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

The Surveillance is performed every 7 days during movement of [recently] irradiated fuel assemblies within the containment. The Surveillance interval is selected to be commensurate with the normal duration of time to complete fuel handling operations. A surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO.

As such, this Surveillance ensures that a postulated fuel handling accident [involving handling recently irradiated fuel] that releases fission product radioactivity within the containment will not result in a release of significant fission product radioactivity to the environment in excess of those recommended by Standard Review Plan Section 15.7.4 (Ref. 3).

1

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.9.3.2

This Surveillance demonstrates that each containment purge and exhaust valve actuates to its isolation position on manual initiation or on an actual or simulated high radiation signal. The 18 month Frequency maintains consistency with other similar ESFAS instrumentation and valve testing requirements. In LCO 3.3.15, "RB Purge Isolation - High Radiation," the isolation instrumentation requires a CHANNEL CHECK every 12 hours and a CHANNEL FUNCTIONAL TEST every 92 days to ensure the channel OPERABILITY during refueling operations. Every 18 months a CHANNEL CALIBRATION is performed. The system actuation response time is demonstrated every 18 months, during refueling, on a STAGGERED TEST BASIS. SR 3.6.3.5 demonstrates that the isolation time of each valve is in accordance with the Inservice Testing Program requirements. These Surveillances performed during MODE 6 will ensure that the valves are capable of closing after a postulated fuel handling accident [involving handling recently irradiated fuel] to limit a release of fission product radioactivity from the containment.

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

REFERENCES

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

2. FSAR, Section [ ].

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

JUSTIFICATION FOR DEVIATIONS
ISTS 3.9.3 BASES, CONTAINMENT PENETRATIONS

1. This ISTS Specification Bases is not being maintained as described in the Discussion of Changes for CTS 3/4.9.4.