



NUCLEAR ENERGY INSTITUTE

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October 6, 2000

Dr. William D. Beckner, Branch Chief  
Technical Specifications Branch  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:** Forwarding of TSTF 330 Rev. 3

**PROJECT NUMBER:** 689

Dear Dr. Beckner:

Enclosed is Technical Specification Task Force (TSTF) Traveler TSTF-330, Rev.3 "Allowed Outage Time – Ultimate Heat Sink." The revisions are coordinated by Steve Wideman and they have been discussed with Craig Harbuck and Jim Tatum.

Please contact me at (202) 739-8105 or Biff Bradley at (202) 739-8083 if you have any questions or need to meet with industry experts on these recommended changes.

Sincerely,

A handwritten signature in black ink that reads "Biff Bradley" followed by a flourish and the word "for" written below it.

Anthony R. Pietrangelo

Enclosures

c: Patricia Coates  
Stewart L. Magruder, NRR/DRPM  
Technical Specification Task Force



## Industry/TSTF Standard Technical Specification Change Traveler

### Allowed Outage Time - Ultimate heat sink

Classification: 3) Improve Specifications

NUREGs Affected:  1430  1431  1432  1433  1434

#### Description:

If the UHS is inoperable, the plant is required to be placed in the cold shutdown condition. No time is allowed for water temperature to exceed its limit without initiating preparations to shutdown the plant. The proposed change provides a new Condition and Required Action that would allow averaging the UHS water temperature over the previous 24 hour period once per hour.

#### Justification:

##### Background

Within the past several years, there appears to have been an increasing number of licensees that have either requested enforcement discretion or exigent/emergency technical specification changes to deal with exceeding the Ultimate Heat Sink (UHS) limits, specifically temperature. This prompted in December 1998 a proposed traveler (WOG-134, subsequently TSTF-330) to allow an Allowed Outage Time (AOT) for UHS level and temperature not within limits. In April 1999, TSTF-330 was provided to the NRC for review and approval.

In August 1999, Brian Sheron discussed the UHS issue at the BWR Owners Group meeting and noted that NRC management has indicated that an AOT approach to the issue was not a proper fit for the UHS technical specification.

In September 1999, George Hubbard discussed with the Licensing Actions Task Force (LATF) the staff's unhappiness with the number of Notices of Enforcement Discretions filed in the summer of 1999. The LATF took this as an action item and subsequently determined that since this was not really a "process issue" to hand it off to the TSTF.

At the October 1999 TSTF/NRC meeting, the staff indicated that TSTF-330 as proposed was not going to be approved and that maybe changes in the design or design basis was necessary or that current UHS analysis may contain margins that would provide some flexibility to the UHS limits.

In February 2000, the staff proposed draft UHS ACTIONS that entailed some form of verification that cooling capacity was being maintained (see Enclosure 1). This verification of cooling capacity would utilize available margins in current plant analysis to support a second tier temperature/level limit.

At the March 7-8, 2000, TSTF/NRC meeting, the TSTF approach on this issue was to 1) gain a better understanding of the staff's February 2000 proposal and 2) recommend the staff approve the AOT approach as the near term resolution with the summer months approaching. The staff clearly indicated that the AOT approach was not an option because NRC management concern that it was not appropriate to allow an AOT in which there was no specific operator/licensee action that could reasonably be taken to restore from the conditions (i.e., relying on environmental conditions to restore the TS limits). From this meeting the TSTF was to perform an industry survey in an effort to develop a generic approach/resolution.

At the May 9, 2000, TSTF NRC meeting, the results of the survey were presented to the NRC. The results indicated that 26% (22 out of 86) of the units responding have challenged the UHS limits. From the survey results there was limited (one or two units) that have indicated any concern with challenging UHS TS level limits. Therefore, TSTF-330 Rev. 0 was modified to eliminate any proposed changes associated with level and any changes to level would be on a plant specific basis. The results clearly indicated that accounting for single failure assumptions in the plant specific analysis results in additional temperature margin. At this meeting, the NRC discussed the temperature averaging concept that had been approved for the Brunswick plant during their ITS conversion and a strong desire to follow this approach.

10/3/2000

From the different UHS designs and analysis there appears to be no one common approach that will accommodate all units. Therefore, an averaging approach is being proposed as a solution for resolving the UHS temperature issue but plants may provide an alternative to this approach if properly justified. Additionally, the averaging approach may not resolve the need for enforcement discretion in all cases.

#### Justification

The existing UHS requirements introduce the possibility of additional plant shutdown transients. Potential plant shutdown transients could be reduced by the additional Required Action to average UHS water temperature on a more frequent basis. A plant shutdown would be required if the averaged UHS water temperature limit were exceeded or if the maximum temperature limit were exceeded. With the water temperature of the UHS exceeding the SR limit but less than a maximum allowed value (specified in the Required Action), the design basis assumptions associated with initial UHS temperatures are bounded provided the temperature of the UHS averaged over the previous 24 hour period is less than the SR limit. With the water temperature of the UHS greater than the SR limit, long term cooling capability to dissipate the heat of an accident safely may be affected. Therefore, to ensure long term cooling capability when UHS water temperature is above the SR limit, more frequent monitoring and averaging of the temperature over the previous 24 hour period is required.

Licensees who wish to adopt this change to the Standard Technical Specifications must confirm that the following conditions, which form the basis for acceptance of the UHS temperature averaging approach, are satisfied.

- a. The UHS is not relied upon for immediate heat removal (such as to prevent containment overpressurization), but is relied upon for longer-term cooling such that the temperature averaging approach continues to satisfy the accident analysis assumptions for heat removal over time.
- b. When the UHS is at the proposed maximum allowed value of [ ] F, equipment that is relied upon for accident mitigation, anticipated operational occurrences, or for safe shutdown, will not be adversely affected and are not placed in alarm condition or limited in any way at this higher temperature.
- c. Plant-specific assumptions, such as those that were credited in addressing station blackout and Generic Letter 96-06, have been adjusted (as necessary) to be consistent with the maximum allowed UHS temperature of [ ] F that is proposed.
- d. Cooling water that is being discharged from the plant (either during normal plant operation, or during accident conditions), does not affect the UHS intake water temperature (typical of an infinite heat sink, but location of the intake and discharge connections, and characteristics of the UHS can have an impact).

The license amendment request must include a discussion of these conditions, and confirm that the conditions are satisfied. Any exceptions must be identified and justified in the amendment request, and factored into the plant-specific UHS limitations that are proposed.

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Industry Contact:	Wideman, Steve	(316) 364-4037	stwidem@wcnoc.com
NRC Contact:	Harbuck, Craig	301-415-3140	cch@nrc.gov

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#### Revision History

**OG Revision 0**

**Revision Status: Closed**

Revision Proposed by: H. B. Robinson

Revision Description:

Original Issue

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10/3/2000

**OG Revision 0****Revision Status: Closed****Owners Group Review Information**

Date Originated by OG: 01-Dec-98

Owners Group Comment  
(No Comments)

Owners Group Resolution: Approved Date: 01-Dec-98

**TSTF Review Information**

TSTF Received Date: 19-Feb-99 Date Distributed for Review 09-Mar-99

OG Review Completed:  BWOG  WOG  CEOG  BWROG

TSTF Comments:

Applicable to all Ogs

TSTF Resolution: Approved Date: 09-Apr-99

**NRC Review Information**

NRC Received Date: 30-Apr-99

NRC Comments:

6/16/99 - In SPLB

8/30/99 - B. Beckner does not believe that this change can be in Rev. 2 due to not having high level agreement. The solution may not be TS.

10/13/99 - BWROG agreed to address this issue. NRC Brian Shearon wanted a fix other than an AOT fix - such as design, procedure, etc.

1/10/00 - BWROG to discuss with NRC. NRC leaning towards other approaches besides AOTs and shutdowns.

2/10/00 - Bill Beckner (NRC) to provide feedback from NRC internal meeting on 2/14/00.

3/7/00 - TSTF surveying plants to determine the exact nature of the problem.

Final Resolution: Superseded by Revision

Final Resolution Date: 14-Jun-00

**TSTF Revision 1****Revision Status: Closed**

Revision Proposed by: WOG

Revision Description:

This revision replaces TSTF-330, Rev. 0. Changes to the UHS specification regarding UHS water level made in Rev. 0 are eliminated. A Condition and Required Action are provided that allow averaging the UHS water temperature over the previous 24 hour period once per hour.

**TSTF Review Information**

TSTF Received Date: 14-Jun-00 Date Distributed for Review 14-Jun-00

OG Review Completed:  BWOG  WOG  CEOG  BWROG

TSTF Comments:

(No Comments)

TSTF Resolution: Approved Date: 14-Jun-00

10/3/2000

**TSTF Revision 1****Revision Status: Closed****NRC Review Information**

NRC Received Date: 20-Jun-00

## NRC Comments:

7/6/2000 - NRC requests:

1. adding a suggested explanation to the traveler regarding the conditions that a licensee must confirm in order to adopt the revised action requirements;
2. adding a required action to verify temperature within the upper UHS temperature limit with a one-hour periodic completion time;
3. modify the Condition statement to omit the upper temperature limit, which is now addressed by the added action requirement; and
4. editorial changes to both the action table, the reviewer's note, and the associated Bases.

7/13/00 - NRC comments:

NRC wants plants to continue to monitor the maximum temperature limit even after exceeding the upper limit. NRC would accept the proposal to include B.2 but leave Condition B as written.

Final Resolution: NRC Requests Changes: TSTF Will Revise      Final Resolution Date: 06-Jul-00

**TSTF Revision 2****Revision Status: Closed**

Revision Proposed by: NRC

## Revision Description:

The NRC provided comments to Revision 1 in a letter dated July 6, 2000 from W. D. Beckner, NRC, to J. Davis, NEI. The NRC comments were also discussed at the July 13, 2000 TSTF/NRC meeting. At the July 13, 2000 meeting, the TSTF had just received the NRC comments and the discussion primarily focused on the proposed Required Action B.2 and the deletion of the upper limit from Condition B. At the meeting the TSTF indicated that additional time was necessary to evaluate the proposed changes.

After further review, the TSTF believes that the NRC proposed Required Action B.2 is not necessary and the upper limit should remain in the Condition. During the performance of Required Action B.1, the water temperature of the UHS has to be obtained in order to verify the average temperature. As such, obtaining the water temperature would also determine whether or not the plant would still be in Condition B. As discussed in the proposed Bases, if the UHS water temperature exceeds the maximum temperature, Condition C must be entered immediately.

**TSTF Review Information**

TSTF Received Date: 24-Aug-00      Date Distributed for Review 24-Aug-00

OG Review Completed:  BWOG  WOG  CEOG  BWROG

## TSTF Comments:

(No Comments)

TSTF Resolution: Approved      Date: 14-Sep-00

10/3/2000

**TSTF Revision 2**

**Revision Status: Closed**

**NRC Review Information**

NRC Received Date: 14-Sep-00

NRC Comments:  
(No Comments)

Final Resolution: NRC Requests Changes: TSTF Will Revise      Final Resolution Date: 02-Oct-00

**TSTF Revision 3**

**Revision Status: Active**

**Next Action: NRC**

Revision Proposed by: NRC

**Revision Description:**

Per discussion with Jim Tatum and Craig Harbuck of the NRC on October 3, 2000, the Bases inserts are modified to delete the sentence "Verifying the average water temperature also verifies the maximum allowed UHS temperature is not exceeded." In addition, the third sentence in the Description Section was deleted because the change does not provide a Completion Time of 8 hours to restore the UHS to OPERABLE status.

**TSTF Review Information**

TSTF Received Date: 03-Oct-00      Date Distributed for Review 03-Oct-00

OG Review Completed:  BWO  WOG  CEOG  BWROG

TSTF Comments:  
(No Comments)

TSTF Resolution: Approved      Date: 04-Oct-00

**NRC Review Information**

NRC Received Date: 04-Oct-00

NRC Comments:  
(No Comments)

Final Resolution: NRC Action Pending      Final Resolution Date:

**Incorporation Into the NUREGs**

File to BBS/LAN Date:      TSTF Informed Date:      TSTF Approved Date:

NUREG Rev Incorporated:

**Affected Technical Specifications**

Action 3.7.9.B	Ultimate Heat Sink	NUREG(s)- 1430 1431 1432 Only
	Change Description: Renamed Action C	
Action 3.7.9.B	Ultimate Heat Sink	NUREG(s)- 1430 1431 1432 Only
	Change Description: New Action	

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Action 3.7.9.B Bases	Ultimate Heat Sink Change Description: New Action	NUREG(s)- 1430 1431 1432 Only
Action 3.7.9.B Bases	Ultimate Heat Sink Change Description: Renamed Action C	NUREG(s)- 1430 1431 1432 Only
Action 3.7.2.D	[PSW] System and [UHS] Change Description: Renamed Action E	NUREG(s)- 1433 Only
Action 3.7.2.D	[PSW] System and [UHS] Change Description: New Action	NUREG(s)- 1433 Only
Action 3.7.2.D Bases	[PSW] System and [UHS] Change Description: New	NUREG(s)- 1433 Only
Action 3.7.2.D Bases	[PSW] System and [UHS] Change Description: Renamed Action E	NUREG(s)- 1433 Only
Action 3.7.2.E	[PSW] System and [UHS] Change Description: Renamed Action F	NUREG(s)- 1433 Only
Action 3.7.2.E Bases	[PSW] System and [UHS] Change Description: Renamed Action F	NUREG(s)- 1433 Only
Action 3.7.1.B	[SSW] System and [UHS] Change Description: New	NUREG(s)- 1434 Only
Action 3.7.1.B	[SSW] System and [UHS] Change Description: Renamed Action C	NUREG(s)- 1434 Only
Action 3.7.1.B Bases	[SSW] System and [UHS] Change Description: New	NUREG(s)- 1434 Only
Action 3.7.1.B Bases	[SSW] System and [UHS] Change Description: Renamed Action C	NUREG(s)- 1434 Only
Action 3.7.1.C	[SSW] System and [UHS] Change Description: Renamed Action D	NUREG(s)- 1434 Only
Action 3.7.1.C Bases	[SSW] System and [UHS] Change Description: Renamed Action D	NUREG(s)- 1434 Only

10/3/2000

INSERT A (BWO, WOG, CEOG)

<p>[----- Reviewer's Note ----- The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.</p> <hr/> <p>B. Water temperature of the UHS &gt; [90]°F and ≤ [ ] °F.]</p>	<p>[B.1 Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.]</p>	<p>[Once per hour]</p>
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INSERT B (BWO, WOG, CEOG)

[B.1]

[----- Reviewer's Note -----  
The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.

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[With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action B.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ] °F, Condition C must be entered immediately.]

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more cooling towers with one cooling tower fan inoperable.	A.1 Restore cooling tower fan(s) to OPERABLE status.	7 days
<p><i>Insert A</i> →</p> <p><i>B</i> Required Action and associated Completion Time of Condition A, not met.</p> <p><i>OR</i></p> <p>UHS inoperable [for reasons other than Condition A].</p> <p><i>or B</i></p>	<p><i>B.1</i> Be in MODE 3.</p> <p><u>AND</u></p> <p><i>B.2</i> Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.9.1 Verify water level of UHS is $\geq$ [562] ft [mean sea level].	24 hours

(continued)

TSTF-330/2  
REV 3

BASES (continued)

ACTIONS

A.1

If one or more cooling towers have one fan inoperable (i.e., up to one fan per cooling tower inoperable), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days.

The 7 day Completion Time is reasonable, based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable in one or more cooling towers, the number of available systems, and the time required to complete the Required Action.

Insert B

B.1 and B.2 If the Required Actions and Completion Times of Conditions [A or B] are not met, or

~~[If the cooling tower fan cannot be restored to OPERABLE status within the associated Completion Time, or if the UHS is inoperable [for reasons other than Condition A], the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.]~~

or B

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

This SR verifies that adequate long term (30 days) cooling can be maintained. The level specified also ensures NPSH is available for operating the SWS pumps. The 24 hour Frequency is based on operating experience related to the trending of the parameter variations during the applicable MODES. This SR verifies that the UHS water level is  $\geq [ ]$  ft [mean sea level].

SR 3.7.9.2

This SR verifies that the SWS can cool the CCW System to at least its maximum design temperature within the maximum

(continued)

**INSERT A (BWO, WOG, CEOG)**

<p>----- Reviewer's Note -----  <b>The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.</b>          -----          B. Water temperature of the UHS &gt; [90]°F and ≤ [ ] °F.]</p>	<p>[B.1 Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.]</p>	<p>[Once per hour]</p>
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**INSERT B (BWO, WOG, CEOG)**

[B.1]

----- Reviewer's Note -----  
**The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.**  
 -----]

[With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action B.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ] °F, Condition C must be entered immediately.]

TSTF-330,  
REV 3

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more cooling towers with one cooling tower fan inoperable.	A.1 Restore cooling tower fan(s) to OPERABLE status.	7 days
<p><i>Insert A</i> →</p> <p><i>ⓐ</i> Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>UHS inoperable [for reasons other than Condition A].</p> <p><i>or B</i> →</p>	<p><i>ⓐ.1</i> Be in MODE 3.</p> <p><u>AND</u></p> <p><i>ⓐ.2</i> Be in MODE 5.</p>	<p>6 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.9.1 Verify water level of UHS is $\geq$ [562] ft [mean sea level].	24 hours

(continued)

TSTF-330  
REV 3

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is a normally operating system that is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODES 5 and 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

ACTIONS

A.1

If one or more cooling towers have one fan inoperable (i.e., up to one fan per cooling tower inoperable), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days.

The 7 day Completion Time is reasonable, based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable, the number of available systems, and the time required to complete the action.

*If the Required Actions or Completion Times of B.1 and B.2 Conditions [A or B] are not met, or*

Insert B

If [the cooling tower fan cannot be restored to OPERABLE status within the associated Completion Time, or if] the UHS is inoperable [for reasons other than Condition A], the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

This SR verifies adequate long term (30 days) cooling can be maintained. The level specified also ensures sufficient NPSH is available for operating the SWS pumps. The 24 hour Frequency is based on operating experience related to the

(continued)

INSERT A (BWO, WOG, CEOG)

<p>[----- Reviewer's Note----- The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.</p> <hr/> <p>B. Water temperature of the UHS &gt; [90]°F and ≤ [ ] °F.]</p>	<p>[B.1 Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.]</p>	<p>[Once per hour]</p>
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INSERT B (BWO, WOG, CEOG)

[B.1]

[----- Reviewer's Note -----  
The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.

---

[With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action B.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ] °F, Condition C must be entered immediately.]

TSTF-330, 2  
REV 3

3.7 PLANT SYSTEMS

3.7.9 Ultimate Heat Sink (UHS)

LCO 3.7.9 The UHS shall be OPERABLE.

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

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more cooling towers with one cooling tower fan inoperable.	A.1 Restore cooling tower fan(s) to OPERABLE status.	7 days
<p><i>Insert A</i></p> <p><i>B</i> Required Action and associated Completion Time of Condition A not met. <i>C</i></p> <p><i>OR</i></p> <p>UHS inoperable [for reasons other than Condition A]. <i>or B</i></p>	<p><i>B.1</i> Be in MODE 3. <i>C</i></p> <p><u>AND</u></p> <p><i>B.2</i> Be in MODE 5. <i>C</i></p>	<p>6 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.9.1 Verify water level of UHS is $\geq$ [562] ft [mean sea level].	[24] hours

(continued)

TSTF-330, Rev 3

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODE 5 or 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

ACTIONS

A.1

If one or more cooling towers have one fan inoperable (i.e., up to one fan per cooling tower inoperable), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days.

The 7 day Completion Time is reasonable based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable (in one or more cooling towers), the number of available systems, and the time required to reasonably complete the Required Action.

Insert B

① A.1 and ② B.2

If the Required Actions and Completion Times of Conditions [A or B] are not met, or

~~[If the cooling tower fan cannot be restored to OPERABLE status within the associated Completion Time, or] if the UHS is inoperable for reasons other than Condition A, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours.~~

[or B]

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

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

This SR verifies that adequate long term (30 day) cooling can be maintained. The specified level also ensures that sufficient NPSH is available to operate the SWS pumps. The [24] hour Frequency is based on operating experience related to trending of the parameter variations during the

(continued)

INSERT C (BWR/4)

<p>[----- Reviewer's Note -----  The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.  -----  D. Water temperature of the UHS &gt; [90]°F and ≤ [ ]°F.]</p>	<p>[D.1 Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.]</p>	<p>[Once per hour]</p>
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INSERT D (BWR/4)D.1

[----- Reviewer's Note -----  
The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.  
-----]

[With water temperature of the UHS > [90]°F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action D.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ]°F, Condition F must be entered immediately.]

NO CHANGES THIS PAGE

[PSW] System and [UHS]  
3.7.2

INFORMATION ONLY

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3.7 PLANT SYSTEMS

3.7.2 [Plant Service Water (PSW)] System and [Ultimate Heat Sink (UHS)]

LCO 3.7.2 Two [PSW] subsystems and [UHS] shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One [PSW] pump inoperable.	A.1 Restore [PSW] pump to OPERABLE status.	30 days
B. One [PSW] pump in each subsystem inoperable.	B.1 Restore one [PSW] pump to OPERABLE status.	7 days
C. One or more cooling towers with one cooling tower fan inoperable.	C.1 Restore cooling tower fan(s) to OPERABLE status.	7 days

(continued)

INSERT C

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><b>E</b> One [PSW] subsystem inoperable for reasons other than Condition[s] A [and C].</p>	<p><b>E</b> <b>3.1</b></p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources—Operating," for diesel generator made inoperable by [PSW].</li> <li>2. Enter applicable Conditions and Required Actions of LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown," for [RHR shutdown cooling] made inoperable by [PSW].</li> </ol> <p>-----</p> <p>Restore the [PSW] subsystem to OPERABLE status.</p>	<p>72 hours</p>

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>F7. Required Action and associated Completion Time of Condition A, B, <del>A, B</del> not met. [or D] AND F.2</p> <p>OR</p> <p>Both [PSW] subsystems inoperable for reasons other than Condition[s] B [and C].</p> <p>OR</p> <p>[UHS] inoperable for reasons other than Condition [or D].</p>	<p>F.1 Be in MODE 3.</p> <p>F.2 Be in MODE 4.</p>	<p>12 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.2.1 Verify the water level of each [PSW] cooling tower basin is <math>\geq</math> [ ] ft.</p>	<p>24 hours [ ]</p>
<p>SR 3.7.2.2 Verify the water level [in each PSW pump well of the intake structure] is <math>\geq</math> [60.1] ft [mean sea level].</p>	<p>24 hours [ ]</p>
<p>SR 3.7.2.3 Verify the average water temperature of [UHS] is <math>\leq</math> [ ]°F.</p>	<p>24 hours [ ]</p>

(continued)

BASES

ACTIONS

INSERT  
D

C.1 (continued)  
the time required to reasonably complete the Required Action.

E 1

With one [PSW] subsystem inoperable for reasons other than Condition A and [Condition C] (e.g., inoperable flow path or both pumps inoperable in a loop), the [PSW] subsystem must be restored to OPERABLE status within 72 hours. With the unit in this condition, the remaining OPERABLE [PSW] subsystem is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE [PSW] subsystem could result in loss of [PSW] function.

The 72 hour Completion Time is based on the redundant [PSW] System capabilities afforded by the OPERABLE subsystem, the low probability of an accident occurring during this time period, and is consistent with the allowed Completion Time for restoring an inoperable DG.

Required Action <sup>E</sup> 1 is modified by two Notes indicating that the applicable Conditions of LCO 3.8.1, "AC Sources—Operating," LCO 3.4.8, "Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown," be entered and Required Actions taken if the inoperable [PSW] subsystem results in an inoperable DG or RHR shutdown cooling subsystem, respectively. This is in accordance with LCO 3.0.6 and ensures the proper actions are taken for these components.

F F  
F.1 and F.2

or D

If the [PSW] subsystem cannot be restored to OPERABLE status within the associated Completion Time, or both [PSW] subsystems are inoperable for reasons other than Condition B and [Condition C], [or the [UHS] is determined inoperable for reasons other than Condition C] the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full

(continued)

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BASES

ACTIONS

F F  
2.1 and 2.2

(continued)

power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE  
REQUIREMENTS

SR 3.7.2.1

This SR ensures adequate long term (30 days) cooling can be maintained. With the [UHS] water source below the minimum level, the affected [PSW] subsystem must be declared inoperable. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.

SR 3.7.2.2

This SR verifies the water level [in each pump well of the intake structure] to be sufficient for the proper operation of the [PSW] pumps (net positive suction head and pump vortexing are considered in determining this limit). The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.

SR 3.7.2.3

Verification of the [UHS] temperature ensures that the heat removal capability of the [PSW] System is within the assumptions of the DBA analysis. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.

SR 3.7.2.4

Operating each cooling tower fan for  $\geq 15$  minutes ensures that all fans are OPERABLE and that all associated controls are functioning properly. It also ensures that fan or motor failure, or excessive vibration, can be detected for corrective action. The 31 day Frequency is based on operating experience, the known reliability of the fan units, the redundancy available, and the low probability of

(continued)

INSERT E (BWR/6)

<p><b>[----- Reviewer's Note ----- The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.</b></p> <hr/> <p>B. Water temperature of the UHS &gt; [90]°F and ≤ [ ] °F.]</p>	<p>[B.1 Verify water temperature of the UHS is ≤ [90]°F averaged over the previous 24 hour period.]</p>	<p>[Once per hour]</p>
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INSERT F (BWR/6)B.1

**[----- Reviewer's Note -----  
The [ ] °F is the maximum allowed UHS temperature value and is based on temperature limitations of the equipment that is relied upon for accident mitigation and safe shutdown of the unit.**

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[With water temperature of the UHS > [90]°F and ≤ [ ] °F, the design basis assumption associated with initial UHS temperature are bounded provided the temperature of the UHS averaged over the previous 24 hour period is ≤ [90]°F. With the water temperature of the UHS > [90]°F, long term cooling capability of the ECCS loads and DGs may be affected. Therefore, to ensure long term cooling capability is provided to the ECCS loads when water temperature of the UHS is > [90]°F, Required Action B.1 is provided to more frequently monitor the water temperature of the UHS and verify the temperature is ≤ [90]°F when averaged over the previous 24 hour period. The once per hour Completion Time takes into consideration UHS temperature variations and the increased monitoring frequency needed to ensure design basis assumptions and equipment limitations are not exceeded in this condition. If the water temperature of the UHS exceeds [90]°F when averaged over the previous 24 hour period or the water temperature of the UHS exceeds [ ] °F, Condition D must be entered immediately.]

*NO CHANGES THIS PAGE*  
*INFORMATION ONLY*

[SSW] System and [UHS]  
3.7.1

*TSTF 330 REV3*

3.7 PLANT SYSTEMS

3.7.1 [Standby Service Water (SSW)] System and [Ultimate Heat Sink (UHS)]

LCO 3.7.1 Division 1 and 2 [SSW] subsystems and [UHS] shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more cooling towers with one cooling tower fan inoperable.	A.1 Restore cooling tower fan(s) to OPERABLE status.	7 days

(continued)

TSAF 330 REV B

INSERT E

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p><i>C</i> One [SSW] subsystem inoperable [for reasons other than Condition A].</p>	<p><i>C</i> <i>B.1</i></p> <p>-----NOTES-----</p> <ol style="list-style-type: none"> <li>1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources—Operating," for diesel generator made inoperable by [SSW].</li> <li>2. Enter applicable Conditions and Required Actions of LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown," for [RHR shutdown cooling] made inoperable by [SSW].</li> </ol> <p>-----</p> <p>Restore [SSW] subsystem to OPERABLE status.</p>	<p>72 hours</p>

(continued)

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ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>Required Action and associated Completion Time of Condition A, <u>[B]</u> AND <u>[C]</u> not met. <u>[D]</u></p> <p>OR</p> <p>Both [SSW] subsystems inoperable [for reasons other than Condition A].</p> <p>OR</p> <p>[UHS] inoperable for reasons other than Condition A. <u>[C or B]</u></p>	<p><u>[D]</u> Be in MODE 3.</p> <p><u>[D]</u> Be in MODE 4.</p>	<p>12 hours</p> <p>36 hours</p>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.7.1.1 Verify the water level of each [UHS] cooling tower basin is <math>\geq</math> [7.25] ft.</p>	<p>24 hours</p>
<p>SR 3.7.1.2 Verify the water level [in each SSW pump well of the intake structure] is <math>\geq</math> [ ] ft.</p>	<p>24 hours</p>
<p>SR 3.7.1.3 Verify the average water temperature of [UHS] is <math>\leq</math> [ ] °F.</p>	<p>24 hours</p>

(continued)

TSTF 330 REV 3

BASES (continued)

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APPLICABILITY

In MODES 1, 2, and 3, the [SSW] System and [UHS] are required to be OPERABLE to support OPERABILITY of the equipment serviced by the [SSW] System and [UHS], and are required to be OPERABLE in these MODES.

In MODES 4 and 5, the OPERABILITY requirements of the [SSW] System and [UHS] are determined by the systems they support.

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ACTIONS

A.1

If one or more cooling towers have one fan inoperable (i.e., up to one fan per cooling tower inoperable), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days.

The 7 day Completion Time is reasonable, based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable in one or more cooling towers, the number of available systems, and the time required to complete the Required Action.

INSERT  
F

C B.1

If one [SSW] subsystem is inoperable [for reasons other than Condition A], it must be restored to OPERABLE status within 72 hours. With the unit in this condition, the remaining OPERABLE [SSW] subsystem is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE [SSW] subsystem could result in loss of [SSW] function. The 72 hour Completion Time was developed taking into account the redundant capabilities afforded by the OPERABLE subsystem and the low probability of a DBA occurring during this period.

The Required Action is modified by two Notes indicating that the applicable Conditions of LCO 3.8.1, "AC Sources—Operating," and LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System—Hot Shutdown," be entered and the Required Actions taken if the inoperable [SSW] subsystem results in an inoperable DG or RHR shutdown cooling, respectively. This is in accordance with LCO 3.0.6 and ensures the proper actions are taken for these components.

(continued)

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TSTF 330 REV 3

BASES

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ACTIONS  
(continued)

2.1 and 2.2

or B

If the [SSW] subsystem cannot be restored to OPERABLE status within the associated Completion Time, or both [SSW] subsystems are inoperable [for reasons other than Condition A], or the [[UHS] is determined inoperable for reasons other than Condition A], the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

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SURVEILLANCE  
REQUIREMENTS

SR 3.7.1.1

This SR ensures adequate long term (30 days) cooling can be maintained. With the [UHS] water source below the minimum level, the affected [SSW] subsystem must be declared inoperable. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.

SR 3.7.1.2

This SR verifies the water level [in each [SSW] pump well of the intake structure] to be sufficient for the proper operation of the [SSW] pumps (net positive suction head and pump vortexing are considered in determining this limit). The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.

SR 3.7.1.3

Verification of the [UHS] temperature ensures that the heat removal capability of the [SSW] System is within the assumptions of the DBA analysis. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES.

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