Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381

MAY 1 6 1995

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

| | | |
|---|---|---|
| In the Matter of the Application of | ) | Docket Nos. 50-390 |
| Tennessee Valley Authority | ) | |

WATTS BAR NUCLEAR PLANT (WBN) - RESPONSE TO NRC QUESTIONS ON TECHNICAL SPECIFICATIONS (TS)

The purpose of this letter is to provide a response to the questions and requested actions contained in NRC letter dated January 18, 1995, which transmitted the Updated Proof and Review Version of the Watts Bar Unit 1 TS. This submittal completes the actions requested by the NRC to support issuance of the WBN Unit 1 "Final Draft" TS. In addition, TVA is requesting that additional changes identified by TVA be included in the "Final Draft." These additional changes were identified after the January 18, 1995, issue of the "Updated Proof and Review Version" of the TS.

Enclosure 1 contains the disposition of the 26 Technical Specification Open Items identified in NRC's January 18, 1995 letter. Enclosure 2 contains the revised "Road Map" requested in that letter. Enclosure 3 contains additional TS and Technical Requirements changes which were identified following the issuance of the "Updated Proof and Review Version." Enclosure 4 contains the clean replacement pages needed for inclusion in the NRC issuance of the "Final Draft."



D030

MAY 1 6 1995

Should you have any questions, please contact John Vorees at (615) 365-8819.

Sincerely,

Raul R. Baron
Nuclear Assurance
and Licensing Manager (Acting)

Enclosures
cc (Enclosures):

NRC Resident Inspector
Watts Bar Nuclear Plant
Rt. 2, Box 700
Spring City, Tennessee 37381

Mr. P. S. Tam, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

50-390 TVA WATTS BAR 1

RESPONSE TO NRC QUESTIONS ON TECHNICAL SPECIFICATIONS

REC'D W/LTR DTD 05/16/95....9505230219

# - NOTICE -

THE ATTACHED FILES ARE OFFICIAL RECORDS OF THE INFORMATION & RECORDS MANAGEMENT BRANCH. THEY HAVE BEEN CHARGED TO YOU FOR A LIMITED TIME PERIOD AND MUST BE RETURNED TO THE RECORDS & ARCHIVES SERVICES SECTION, T5 C3. PLEASE DO NOT SEND DOCUMENTS CHARGED OUT THROUGH THE MAIL. REMOVAL OF ANY PAGE(S) FROM DOCUMENT FOR REPRODUCTION MUST BE REFERRED TO FILE PERSONNEL.

# - NOTICE -

ENCLOSURE 1

DISPOSITION OF NRC TECHNICAL SPECIFICATION OPEN ITEMS

TAC M76742

Disposition of NRC Technical Specification Open Item

TAC M76742-1

Open item - Pages 3.0-1 to 3.0-2, LCO 3.0.4; Page 3.0-5, SR 3.0.4; and various other pages and TS - TVA needs to implement generic change package BWR-26 which modifies LCO 3.0.4 and SR 3.0.4. TVA also needs to provide a matrix showing which TS are affected by the change and make the appropriate changes to the Actions to those TS.

Disposition

TVA has incorporated generic change BWR-26, which modifies LCO 3.0.4 and SR 3.0.4, into the WBN unit 1 TS. In addition, an evaluation of all TSs and TRs was completed to determine any relaxations gained as a result of the change to 3.0.4. The attached pages contain the incorporation of BWR-26 including any changes as a result of the evaluation.

# 3.0 LCO APPLICABILITY

LCO 3.0.4 (continued)

operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

Exceptions to this Specification are stated in the individual Specifications. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.

LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

---

LCO 3.0.5

Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.

---

LCO 3.0.6

When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Specification 5.7.2.18, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

(continued)

## 3.0 SR APPLICABILITY

| | |
|---|---|
| SR 3.0.3 (continued) | When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered. |
| SR 3.0.4 | Entry into a MODE or other specified condition in the Applicability of an LCO shall not be made unless the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.<br><br>SR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4. |

## 3.1 REACTIVITY CONTROL SYSTEMS

### 3.1.1 SHUTDOWN MARGIN (SDM) – $T_{avg}$ > 200°F

LCO 3.1.1 SDM shall be ≥ 1.6% Δk/k.

APPLICABILITY: MODE 2 with $k_{eff}$ < 1.0,
MODES 3 and 4.

-----NOTE-----
While this LCO is not met, entry into MODE 4 from MODE 3 is not permitted.

---

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. SDM not within limit. | A.1 Initiate boration to restore SDM to within limit. | 15 minutes |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.1.1.1 Verify SDM is ≥ 1.6% Δk/k. | 24 hours |

## 3.1 REACTIVITY CONTROL SYSTEMS

### 3.1.2 SHUTDOWN MARGIN (SDM) – $T_{avg}$ ≤ 200°F

LCO 3.1.2 The SDM shall be ≥ 1.0% Δk/k.

APPLICABILITY: MODE 5.

------------------------------NOTE------------------------------
While this LCO is not met, entry into MODE 5 from MODE 4 is not permitted.
-------------------------------------------------------------------

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. SDM not within limit. | A.1 Initiate boration to restore SDM to within limit. | 15 minutes |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.1.2.1 Verify SDM is ≥ 1.0% Δk/k. | 24 hours |

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.8 RCS Loops - MODE 5, Loops Not Filled

LCO 3.4.8 Two residual heat removal (RHR) loops shall be OPERABLE and one RHR loop shall be in operation.

-------------------------NOTES-------------------------

1. All RHR pumps may be de-energized for ≤ 15 minutes when switching from one loop to another provided:

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

   b. No operations are permitted that would cause a reduction of the RCS boron concentration; and

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

2. One RHR loop may be inoperable for ≤ 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.

-------------------------------------------------------

APPLICABILITY: MODE 5 with RCS loops not filled.

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

While this LCO is not met, entry into MODE 5, Loops Not Filled is not permitted.

------------------------------------------------------

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One RHR loop inoperable. | A.1 Initiate action to restore RHR loop to OPERABLE status. | Immediately |

(continued)

## 3.4 REACTOR COOLANT SYSTEM (RCS)

### 3.4.12 Cold Overpressure Mitigation System (COMS)

LCO 3.4.12 A COMS System shall be OPERABLE with a maximum of one charging pump and no safety injection pump capable of injecting into the RCS and the accumulators isolated and either a or b below.

a. Two RCS relief valves, as follows:

   1. Two power operated relief valves (PORVs) with lift settings within the limits specified in the PTLR, or

   2. One PORV with a lift setting within the limits specified in the PTLR and the RHR suction relief valve with a setpoint ≥ 436.5 psig and ≤ 463.5 psig.

b. The RCS depressurized and an RCS vent capable of relieving > 475 gpm water flow.

APPLICABILITY: MODES 4 and 5,
MODE 6 when the reactor vessel head is on.

---------------------------NOTES---------------------------

1. While this LCO is not met, entry into the Applicability of the LCO is not permitted.

2. Accumulator isolation is only required when accumulator pressure is greater than or equal to the maximum RCS pressure for the existing RCS cold leg temperature allowed by the P/T limit curves provided in the PTLR.

3. For the purposes of making the required safety injection pumps and charging pumps inoperable, the following time is permitted. Up to 4 hours after entering MODE 4 from MODE 3, or prior to decreasing temperature on any RCS loop to below 325°F, whichever occurs first.

------------------------------------------------------------

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.4.12.1 | Verify no safety injection pumps are capable of injecting into the RCS. | Within 4 hours after entering MODE 4 from MODE 3 prior to the temperature of one or more RCS cold legs decreasing below 325°F.<br><br>AND<br><br>12 hours thereafter |
| SR 3.4.12.2 | Verify a maximum of one charging pump is capable of injecting into the RCS. | Within 4 hours after entering MODE 4 from MODE 3 prior to the temperature of one or more RCS cold legs decreasing below 325°F.<br><br>AND<br><br>12 hours thereafter |
| SR 3.4.12.3 | Verify each accumulator is isolated. | 12 hours |

## 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

### 3.5.2 ECCS – Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

---NOTES---

1. In MODE 3, both safety injection (SI) pump flow paths may be isolated by closing the isolation valves for up to 2 hours to perform pressure isolation valve testing per SR 3.4.14.1.

2. The provisions of Specifications LCO 3.0.4 and SR 3.0.4 are not applicable for entry into MODE 3 for the safety injection pumps and charging pumps declared inoperable pursuant to Specification 3.4.12 for up to four hours or until the temperature of all the RCS cold legs exceeds 375°F, whichever occurs first.

---

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. One or more trains inoperable.<br><br>AND<br><br>At least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available. | A.1 Restore train(s) to OPERABLE status. | 72 hours |
| B. Required Action and associated Completion Time not met. | B.1 Be in MODE 3.<br><br>AND<br><br>B.2 Be in MODE 4. | 6 hours<br><br><br><br>12 hours |

# 3.9 REFUELING OPERATIONS

## 3.9.1 Boron Concentration

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.

APPLICABILITY: MODE 6.

-----------------------------NOTE-----------------------------
With the RCS boron concentration specified in the COLR for MODE 6 not met, entry into MODE 6 is not permitted.
--------------------------------------------------------------

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. Boron concentration not within limit. | A.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2 Suspend positive reactivity additions. | Immediately |
| | AND | |
| | A.3 Initiate action to restore boron concentration to within limit. | Immediately |

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|---|

## 3.9 REFUELING OPERATIONS

### 3.9.2 Unborated Water Source Isolation Valves

LCO 3.9.2 Each valve used to isolate unborated water sources shall be secured in the closed position.

APPLICABILITY: MODE 6.

------------------------------NOTE------------------------------
While this LCO is not met, entry into MODE 6 is not permitted.
----------------------------------------------------------------

ACTIONS

------------------------------NOTE------------------------------
Separate Condition entry is allowed for each unborated water source isolation valve.
----------------------------------------------------------------

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. ---------NOTE--------- Required Action A.3 must be completed whenever Condition A is entered. --------------------- One or more valves not secured in closed position. | A.1 Suspend CORE ALTERATIONS. | Immediately |
| | AND | |
| | A.2 Initiate action to secure valve in closed position. | Immediately |
| | AND | |
| | A.3 Perform SR 3.9.1.1. | 4 hours |

## 3.9 REFUELING OPERATIONS

### 3.9.6 Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level

LCO 3.9.6 Two RHR loops shall be OPERABLE, and one RHR loop shall be in operation.

---------------------------NOTE---------------------------
Prior to initial criticality, only one RHR loop needs to be OPERABLE and in operation and the required RHR loop may be removed from operation for ≤ 1 hour per 8-hour period provided no operations are permitted that would cause dilution of the Reactor Coolant System boron concentration.
----------------------------------------------------------

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

---------------------------NOTE---------------------------
While this LCO is not met, entry into MODE 6 with water level < 23 ft above the top of the reactor vessel flange is not permitted.
----------------------------------------------------------

ACTIONS

| CONDITION | REQUIRED ACTION | | COMPLETION TIME |
|---|---|---|---|
| A. Less than the required number of RHR loops OPERABLE. | A.1 | Initiate action to restore required RHR loops 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 |

BASES

LCO 3.0.4 (continued)

practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

The provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

Exceptions to LCO 3.0.4 are stated in the individual Specifications. Exceptions may apply to all the ACTIONS or to a specific Required Action of a Specification.

LCO 3.0.4 is only applicable when entering MODE 4 from MODE 5, MODE 3 from MODE 4, MODE 2 from MODE 3, or MODE 1 from MODE 2. Furthermore, LCO 3.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, 3, or 4. The requirements of LCO 3.0.4 do not apply in MODES 5 and 6, or in other specified conditions of the Applicability (unless in MODE 1, 2, 3, or 4) because the ACTIONS of individual Specifications sufficiently define the remedial measures to be taken.

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by SR 3.0.1. Therefore, changing MODES or other specified conditions while in an ACTIONS Condition, in compliance with LCO 3.0.4 or where an exception to LCO 3.0.4 is stated, is not a violation of SR 3.0.1 or SR 3.0.4 for those Surveillances that do not have to be performed due to the associated inoperable equipment. However, SRs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected LCO.

(continued)

BASES

SR 3.0.4 (continued)

safe operation of the unit. However, in certain circumstances failing to meet an SR will not result in SR 3.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated SR(s) are not required to be performed per SR 3.0.1, which states that surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, SR 3.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the Surveillances(s) within the specified Frequency does not result in an SR 3.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the LCO is not met in this instance, LCO 3.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes.

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

The provisions of SR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

The precise requirements for performance of SRs are specified such that exceptions to SR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated LCO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the LCO Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not

(continued)

BASES

SR 3.0.4 (continued)

required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of SRs' annotation is found in Section 1.4, Frequency.

SR 3.0.4 is only applicable when entering MODE 4 from MODE 5, MODE 3 from MODE 4, MODE 2 from MODE 3, or MODE 1 from MODE 2. Furthermore, SR 3.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, 3, or 4. The requirements of SR 3.0.4 do not apply in MODES 5 and 6, or in other specified conditions of the Applicability (unless in MODE 1, 2, 3, or 4) because the ACTIONS of individual Specifications sufficiently define the remedial measures to be taken.

BASES

APPLICABLE SAFETY ANALYSES (continued)

rod also produces a time dependent redistribution of core power.

SDM satisfies Criterion 2 of the NRC Policy Statement. Even though it is not directly observed from the control room, SDM is considered an initial condition process variable because it is periodically monitored to ensure that the unit is operating within the bounds of accident analysis assumptions.

LCO

SDM is a core design condition that can be ensured during operation through control rod positioning (control and shutdown banks) and through the soluble boron concentration.

The MSLB (Ref. 2) and the boron dilution (Ref. 3) accidents are the most limiting analyses that establish the SDM value of the LCO. For MSLB accidents, if the LCO is violated, there is a potential to exceed the DNBR limit and to exceed 10 CFR 100, "Reactor Site Criteria," limits (Ref. 4). For the boron dilution accident, if the LCO is violated, the minimum required time assumed for operator action to terminate dilution may no longer be applicable.

APPLICABILITY

In MODE 2 with $k_{eff}$ < 1.0 and in MODES 3 and 4, the SDM requirements are applicable to provide sufficient negative reactivity to meet the assumptions of the safety analyses discussed above. In MODE 5, SDM is addressed by LCO 3.1.2, "SHUTDOWN MARGIN (SDM) – $T_{avg}$ ≤ 200°F." In MODE 6, the shutdown reactivity requirements are given in LCO 3.9.1, "Boron Concentration." In MODES 1 and 2, SDM is ensured by complying with LCO 3.1.6 and LCO 3.1.7.

ACTIONS

A Note to the ACTIONS precludes use of LCO 3.0.4 to permit decreasing temperature while not meeting the SDM.

A.1

If the SDM requirements are not met, boration must be initiated promptly. A Completion Time of 15 minutes is adequate for an operator to correctly align and start the required systems and components. It is assumed that

(continued)

BASES (continued)

LCO

SDM is a core design condition that can be ensured during operation through control rod positioning (control and shutdown banks) and through the soluble boron concentration.

APPLICABILITY

In MODE 5, the SDM requirements are applicable to provide sufficient negative reactivity to meet the assumptions of the safety analyses discussed above. In MODE 2 with $K_{eff}$ < 1.0 and MODES 3 and 4, the SDM requirements are given in LCO 3.1.1, "SHUTDOWN MARGIN (SDM) – $T_{avg}$ > 200°F." In MODE 6, the shutdown reactivity requirements are given in LCO 3.9.1, "Boron Concentration." In MODE 1 and MODE 2 with $K_{eff} \geq 1.0$, SDM is ensured by complying with LCO 3.1.6 and LCO 3.1.7.

ACTIONS

A Note to the ACTIONS precludes use of LCO 3.0.4 to permit decreasing temperature while not meeting the SDM.

A.1

If the SDM requirements are not met, boration must be initiated promptly. A Completion Time of 15 minutes is adequate for an operator to correctly align and start the required systems and components. It is assumed that boration will be continued until the SDM requirements are met.

In the determination of the required combination of boration flow rate and boron concentration, there is no unique requirement that must be satisfied. Since it is imperative to raise the boron concentration of the RCS as soon as possible, the boron concentration should be a concentrated solution, such as that normally found in the boric acid storage tank or the refueling water storage tank. The operator should borate with the best source available for the plant conditions.

In determining the boration flow rate the time in core life must be considered. For instance, the most difficult time in core life to increase the RCS boron concentration is at the beginning of cycle, when the boron concentration may approach or exceed 2000 ppm. Assuming that a value of 1% $\Delta k/k$ must be recovered and a boration flow rate of

(continued)

BASES

LCO (continued)

Note 1 permits all RHR pumps to be de-energized for ≤ 15 minutes when switching from one loop to another. The circumstances for stopping both RHR pumps are to be limited to situations when the outage time is short and core outlet temperature is maintained > 10°F below saturation temperature. The Note prohibits boron dilution or draining operations when RHR forced flow is stopped.

Note 2 allows one RHR loop to be inoperable for a period of ≤ 2 hours, provided that the other loop is OPERABLE and in operation. This permits periodic surveillance tests to be performed on the inoperable loop during the only time when these tests are safe and possible.

An OPERABLE RHR loop is comprised of an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RHR pumps are OPERABLE if they are capable of being powered and are able to provide flow if required.

APPLICABILITY

In MODE 5 with loops not filled, this LCO requires core heat removal and coolant circulation by the RHR System.

Operation in other MODES is covered by:

LCO 3.4.4, "RCS Loops – MODES 1 and 2";
LCO 3.4.5, "RCS Loops – MODE 3";
LCO 3.4.6, "RCS Loops – MODE 4";
LCO 3.4.7, "RCS Loops – MODE 5, Loops Filled";
LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation – High Water Level" (MODE 6); and
LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation – Low Water Level" (MODE 6).

ACTIONS

A Note to the ACTIONS precludes use of LCO 3.0.4 to permit entry into MODE 5, Loops Not Filled without meeting the LCO.

A.1

If only one RHR loop is OPERABLE and in operation, redundancy for RHR is lost. Action must be initiated to restore a second loop to OPERABLE status. The immediate

(continued)

BASES

APPLICABILITY (continued)

The Applicability is modified by three Notes. The provisions of LCO 3.0.4 do not preclude entry into the Applicability of this LCO with the LCO not met. Therefore, Note 1 has been added to preclude entry into this LCO while the LCO is not met. Note 2 states that accumulator isolation is only required when the accumulator pressure is more than or at the maximum RCS pressure for the existing temperature, as allowed by the P/T limit curves. This Note permits the accumulator discharge isolation valve Surveillance to be performed only under these pressure and temperature conditions. Note 3 provides time to make the required pumps inoperable since the COMS arming temperature is the same as MODE 3 to MODE 4 transition temperature.

ACTIONS

A.1 and B.1

With two or more charging pumps or any safety injection pumps capable of injecting into the RCS, RCS overpressurization is possible.

To immediately initiate action to restore restricted coolant input capability to the RCS reflects the urgency of removing the RCS from this condition.

Required Action B.1 is modified by a Note that permits two charging pumps capable of RCS injection for ≤ 15 minutes to allow for pump swaps.

<u>C.1, D.1, and D.2</u>

An unisolated accumulator requires isolation within 1 hour. This is only required when the accumulator pressure is at or more than the maximum RCS pressure for the existing temperature allowed by the P/T limit curves.

If isolation is needed and cannot be accomplished in 1 hour, Required Action D.1 and Required Action D.2 provide two options, either of which must be performed in the next 12 hours. By increasing the RCS temperature to > 350°F, an accumulator pressure specified in WAT-D-9448 (Ref. 9) cannot exceed the COMS limits if the accumulators are fully injected. Depressurizing the accumulators below the COMS limit from the PTLR also gives this protection.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.4.12.1, SR 3.4.12.2, and SR 3.4.12.3 (continued)

through the pump control switch being placed in pull to lock and at least one valve in the discharge flow path being closed.

The Frequency of 12 hours is sufficient, considering other indications and alarms available to the operator in the control room, to verify the required status of the equipment. The additional Frequency for SR 3.4.12.1 and SR 3.4.12.2 is necessary to allow time during the transition from MODE 3 to MODE 4 to make the pumps inoperable.

SR 3.4.12.4

The RCS vent capable of relieving > 475 gpm water flow is proven OPERABLE by verifying its open condition either:

a. Once every 12 hours for a vent path that cannot be locked.

b. Once every 31 days for a vent path that is locked, sealed, or secured in position. A removed safety or PORV fits this category.

The passive vent arrangement must only be open to be OPERABLE. This Surveillance is required to be performed if the vent is being used to satisfy the pressure relief requirements of the LCO 3.4.12b.

SR 3.4.12.5

The PORV block valve must be verified open every 72 hours to provide the flow path for each required PORV to perform its function when actuated. The valve must be remotely verified open in the main control room. This Surveillance is performed if the PORV satisfies the LCO.

The block valve is a remotely controlled, motor operated valve. The power to the valve operator is not required removed, and the manual operator is not required locked in the inactive position. Thus, the

(continued)

BASES (continued)

APPLICABILITY

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

This LCO is only applicable in MODE 3 and above. Below MODE 3, the SI signal setpoint is manually bypassed by operator control, and system functional requirements are relaxed as described in LCO 3.5.3, "ECCS - Shutdown."

As indicated in Note 1, the flow path may be isolated for 2 hours in MODE 3, under controlled conditions, to perform pressure isolation valve testing per SR 3.4.14.1. The flow path is readily restorable from the control room. Note 2 provides relief from the restrictions of LCO 3.0.4 and SR 3.0.4 to allow time to restore the required equipment to OPERABLE status.

In MODES 5 and 6, plant conditions are such that the probability of an event requiring ECCS injection is extremely low. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops - MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops - MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level," and LCO 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level."

ACTIONS

A.1

With one or more trains inoperable and at least 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available, the inoperable components must be returned to OPERABLE status within 72 hours. The 72 hour Completion Time is based on an NRC reliability evaluation (Ref. 5) and is a reasonable time for repair of many ECCS components.

An ECCS train is inoperable if it is not capable of delivering design flow to the RCS. Individual components

(continued)

BASES

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 $k_{eff} \leq 0.95$. Above MODE 6, LCO 3.1.1, "SHUTDOWN MARGIN (SDM) $- T_{avg} > 200°F$," and LCO 3.1.2, "SHUTDOWN MARGIN (SDM) $- T_{avg} \leq 200°F$," ensure that an adequate amount of negative reactivity is available to shut down the reactor and maintain it subcritical. A Note to the Applicability precludes use of LCO 3.0.4 to permit entry into MODE 6 while not meeting the boron concentration requirement.

ACTIONS

A.1 and A.2

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 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.

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

A.3

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

In determining the required combination of boration flow rate and concentration, no unique Design Basis Event 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.

(continued)

BASES (continued)

APPLICABILITY

In MODE 6, this LCO is applicable to prevent an inadvertent boron dilution event by ensuring isolation of all sources of unborated water to the RCS.

For all other MODES, the boron dilution accident was analyzed and was found to be capable of being mitigated. A Note to the Applicability precludes use of LCO 3.0.4 to permit entry into MODE 6 while any unborated water source is not isolated.

ACTIONS

The ACTIONS table has been modified by a Note that allows separate Condition entry for each unborated water source isolation valve.

A.1

Continuation of CORE ALTERATIONS is contingent upon maintaining the unit in compliance with this LCO. With any valve used to isolate unborated water sources not secured in the closed position, all operations involving CORE ALTERATIONS must be suspended immediately. The Completion Time of "immediately" for performance of Required Action A.1 shall not preclude completion of movement of a component to a safe position.

Condition A has been modified by a Note to require that Required Action A.3 be completed whenever Condition A is entered.

A.2

Preventing inadvertent dilution of the reactor coolant boron concentration is dependent on maintaining the unborated water isolation valves secured closed. Securing the valves in the closed position ensures that the valves cannot be inadvertently opened. The Completion Time of "immediately" requires an operator to initiate actions to close an open valve and secure the isolation valve in the closed position immediately. Once actions are initiated, they must be continued until the valves are secured in the closed position.

(continued)

BASES

LCO (continued)

Additionally, one loop of RHR must be in operation in order to provide:

a. Removal of decay heat;

b. Mixing of borated coolant to minimize the possibility of criticality; and

c. Indication of reactor coolant temperature.

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

The LCO is modified by a note that allows only one RHR loop to be OPERABLE and in operation prior to the initial criticality of the unit. The note also allows the loop to be removed from service for up to 1 hour per 8-hour period provided no operations are permitted that would cause a dilution of RCS boron concentration. This allowance is provided only for the initial criticality since there is no decay heat present.

APPLICABILITY

Two RHR loops are required to be OPERABLE, and one RHR loop must be in operation in MODE 6, with the water level < 23 ft above the top of the reactor vessel flange, to provide decay heat removal. Requirements for the RHR 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). RHR loop requirements in MODE 6 with the water level ≥ 23 ft are located in LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation - High Water Level." A Note to the Applicability precludes use of LCO 3.0.4 to permit entry into MODE 6 with water level < 23 ft above the top of the reactor vessel flange.

(continued)

## 3.0 TECHNICAL REQUIREMENT (TR) APPLICABILITY

| | |
|---|---|
| TR 3.0.4 (continued) | specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.<br><br>TR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.<br><br>Exceptions to this Requirement are stated in the individual Requirements. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to be entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time. |
| TR 3.0.5 | Equipment removed from service or declared inoperable to comply with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to TR 3.0.2 for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY. |
| TR 3.0.6 | When a supported system TR or LCO is not met solely due to a support system TR or LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system TR or LCO ACTIONS are required to be entered. This is an exception to TR 3.0.2 and LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Technical Specification 5.7.2.18, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the TR or LCO in which the loss of safety function exists are required to be entered.<br><br>When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with TR 3.0.2 and LCO 3.0.2. |

## 3.0 TECHNICAL SURVEILLANCE REQUIREMENT (TSR) APPLICABILITY

TSR 3.0.3 (continued)

When the Surveillance is performed within the delay period and the Surveillance is not met, the TR must immediately be declared not met, and the applicable Condition(s) must be entered.

TSR 3.0.4

Entry into a MODE or other specified condition in the Applicability of an TR shall not be made unless the TR's Surveillances have been met within their specified Frequency. This provision shall not prevent entry into MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit.

TSR 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

# TR 3.7 PLANT SYSTEMS

## TR 3.7.1 Steam Generator Pressure/Temperature Limitations

TR 3.7.1 The pressure of the reactor and secondary coolants in the Steam Generators shall be ≤ 200 psig.

APPLICABILITY: Whenever the temperature of the reactor or secondary coolant in any Steam Generator ≤ 70°F.

-----------------------------NOTE-----------------------------
While this TR is not met, decreasing the temperature of the coolant in the primary or secondary of any steam generator to ≤ 70°F is not permitted.
--------------------------------------------------------------

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|---|
| A. --------NOTE--------- All Required Actions must be completed whenever this Condition is entered. -------------------- | | |
| Steam Generator pressure not within limits. | A.1 Reduce pressure to ≤ 200 psig. | 30 minutes |
| | AND | |
| | A.2 Perform an engineering evaluation to determine the effect of the over-pressurization on the structural integrity of the Steam Generator. | Prior to increasing Steam Generator coolant temperatures to > 200°F. |
| | AND | |
| | | (continued) |

BASES

TRs

TR 3.0.4 (continued)

specified condition stated in that Applicability (e.g., Applicability desired to be entered) when the following exist:

a. Unit conditions are such that the requirements of the TR would not be met in the Applicability desired to be entered; and

b. Continued noncompliance with the TR requirements, if the Applicability were entered, would result in the unit being required to exit the Applicability desired to be entered to comply with the Required Actions.

Compliance with Required Actions that permit continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Actions. The provisions of this Requirement should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

The provisions of TR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of TR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

Exceptions to TR 3.0.4 are stated in the individual Requirements. Exceptions may apply to all the ACTIONS or to a specific Required Action of a Requirement.

Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by TSR 3.0.1. Therefore, changing MODES or other specified conditions while in an ACTIONS Condition, in compliance with TR 3.0.4 or where an exception

(continued)

BASES

TRs

TR 3.0.4 (continued)

to TR 3.0.4 is stated, is not a violation of TSR 3.0.1 or TSR 3.0.4 for those Surveillances that do not have to be performed due to the associated inoperable equipment. However, TSRs must be met to ensure OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected TR.

TR 3.0.4 is only applicable when entering MODE 4 from MODE 5, MODE 3 from MODE 4, MODE 2 from MODE 3, or MODE 1 from MODE 2. Furthermore, TR 3.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, 3, or 4. The requirements of TR 3.0.4 do not apply in MODES 5 and 6, or in other specified conditions of the Applicability (unless in MODE 1, 2, 3, or 4) because the ACTIONS of individual Requirements sufficiently define the remedial measures to be taken.

TR 3.0.5

TR 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The sole purpose of this Requirement is to provide an exception to TR 3.0.2 (e.g., to not comply with the applicable Required Action(s)) to allow the performance of TSRs to demonstrate:

a. The OPERABILITY of the equipment being returned to service; or

b. The OPERABILITY of other equipment.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the allowed TSRs. This requirement does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Actions and must be reopened to perform the TSRs.

(continued)

BASES

TSRs

TSR 3.0.4

TSR 3.0.4 establishes the requirement that all applicable TSRs must be met before entry into a MODE or other specified condition in the Applicability.

This Requirement ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit. However, in certain circumstances failing to meet an TSR will not result in TSR 3.0.4 restricting a MODE change or other specified condition change. When a system, subsystem, division, component, device, or variable is inoperable or outside its specified limits, the associated TSR(s) are not required to be performed per TSR 3.0.1, which state that surveillances do not have to be performed on inoperable equipment. When equipment is inoperable, TSR 3.0.4 does not apply to the associated TSR(s) since the requirement for the TSR(s) to be performed is removed. Therefore, failing to perform the Surveillance(s) within the specified Frequency does not result in an TSR 3.0.4 restriction to changing MODES or other specified conditions of the Applicability. However, since the TR is not met in this instance, TR 3.0.4 will govern any restrictions that may (or may not) apply to MODE or other specified condition changes.

The provisions of this Requirement should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before entering an associated MODE or other specified condition in the Applicability.

(continued)

BASES

TSRs

TSR 3.0.4 (continued)

The provisions of TSR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of TR 3.0.4 shall not prevent changes in MODES or other specified conditions in the Applicability that result from any unit shutdown.

The precise requirements for performance of TSRs are specified such that exceptions to TSR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the TSRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated TR prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the TR Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of TSR's annotation is found in Section 1.4, Frequency.

TSR 3.0.4 is only applicable when entering MODE 4 from MODE 5, MODE 3 from MODE 4, MODE 2 from MODE 3, or MODE 1 from MODE 2. Furthermore, TSR 3.0.4 is applicable when entering any other specified condition in the Applicability only while operating in MODE 1, 2, 3, or 4. The requirements of TSR 3.0.4 do not apply in MODES 5 and 6, or in other specified conditions of the Applicability (unless in MODE 1, 2, 3, or 4) because the ACTIONS of individual Requirements sufficiently define the remedial measures to be taken.

BASES (continued)

TR

TR 3.7.1 requires that the pressures on the primary and the secondary sides in the steam generator are kept at or below 200 psig when the temperature is less than or equal to 70°F. The pressure induced stress from the 200 psig pressure is low enough to be insignificant, even at temperatures at or below $RT_{NDT}$.

APPLICABILITY

The operating requirements which must be observed to avoid a condition, which could lead to brittle failure, is not strictly limited to specific MODES. Hence, in general, Applicability should be at all times. However, in practice it is unlikely that these limits will be violated in the lower numbered MODES, due to the high operating temperature on the primary as well as the secondary side in the steam generators. Accordingly, the limits are most easily violated at low temperature, during shutdown and startup of the plant. Applicability can therefore conveniently be limited to whenever the temperature on the primary or the secondary side is at or below 70°F. A Note to the Applicability precludes use of TR 3.0.4 to permit decreasing the temperature of the coolant in the primary or secondary of any steam generator to ≤ 70°F while the pressure is > 200 psig.

ACTIONS

A.1, A.2, and A.3

With the combination of pressure and temperature not within limits, a reduction in pressure at or below 200 psig is required within 30 minutes. An engineering evaluation must be performed to determine the effect on the structural integrity of the pressure boundary. The evaluation must be finished and the conclusion made that no hazard exists, before the temperature is increased to more than 200°F. Condition A is modified by a Note which states that whenever Condition A is entered, all ACTIONS A.1 through A.3 must be completed.

(continued)

Disposition of NRC Technical Specification Open Item

TAC M76742-2

Open item - Page 3.3-19, Table 3.3.1-1, Items 16 d and f - TVA needs to determine if the values for Allowable Values and Trip Setpoint are a percentage of "full-power pressure."

Disposition

The attached Westinghouse Technical Specification certification page addresses this item. Function 16.d (Reactor Trip System Interlock P-9) Trip Setpoint and Allowable Value are expressed in percent of RTP, not "Full-Power Pressure". Function 16.f (Reactor Trip System Interlock, Turbine Impulse Pressure, P-13) Trip Setpoint and Allowable Value are expressed in percent of "Full-Power Pressure". The markup also indicates changes for Function 16.a. The indicated change is not applicable to Watts Bar since the NIS is Gammametrics equipment and not Westinghouse equipment. Therefore, the change is not incorporated.

Table 3.3.1-1 (page 5 of 9)
Reactor Trip System Instrumentation

| FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS | CONDITIONS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE | TRIP SETPOINT |
|---|---|---|---|---|---|---|
| 15. Safety Injection (SI) Input from Engineered Safety Feature Actuation System (ESFAS) | 1,2 | 2 trains | P | SR 3.3.1.13 | NA | NA |
| 16. Reactor Trip System Interlocks | | | | | | |
| a. Intermediate Range Neutron Flux, P-6 | 2(d) | 2 | R | SR 3.3.1.11<br>SR 3.3.1.12 | ≥ ~~[illegible]E-04% RTP~~ 0.6E-10 amps | ≥ ~~[illegible]-04% RTP~~ 1.6E-10 amps |
| b. Low Power Reactor Trips Block, P-7 | 1 | 1 per train | S | SR 3.3.1.11<br>SR 3.3.1.12 | NA | NA |
| c. Power Range Neutron Flux, P-8 | 1 | 4 | S | SR 3.3.1.11<br>SR 3.3.1.12 | ≤ 50.4% RTP | ≤ 48% RTP |
| d. Power Range Neutron Flux, P-9 | 1 | 4 | S | SR 3.3.1.11<br>SR 3.3.1.12 | ≤ 52.4% RTP ~~Full Power Pressure~~ | ≤ 50% RTP ~~Full Power Pressure~~ |
| e. Power Range Neutron Flux, P-10 | 1,2 | 4 | R | SR 3.3.1.11<br>SR 3.3.1.12 | ≥ 7.6% RTP and ≤ 12.4% RTP | ≥ 10% RTP |
| f. Turbine Impulse Pressure, P-13 | 1 | 2 | S | SR 3.3.1.10<br>SR 3.3.1.12 | ≤ 12.4% full-power pressure | ≤ 10% full-power pressure |

(continued)

(d) Below the P-6 (Intermediate Range Neutron Flux) interlocks.

Disposition of NRC Technical Specification Open Item

TAC M76742-3

Open item - Page 3.3-45, Table 3.3.3-1, Note (d) - TVA proposes additional exceptions or deviations to the Post Accident Monitoring (PAM) Containment Isolation Valve position indication than is currently allowed by their FSAR and the staff SER. TVA has not provided any justification for this deviation from the staff-approved Regulatory Guide 1.97 evaluation of the Watts Bar design.

Disposition

TVA provided a revised submittal April 21, 1995 to the NRC on conformance to the requirements of Regulatory Guide 1.97, Revision 2. This revised submittal provides justification for not having position indication for pressure relief valves that are also containment isolation valves. In addition, the revised technical specification pages are included.

Table 3.3.3-1 (page 2 of 2)
Post Accident Monitoring Instrumentation

| | FUNCTION | APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS | REQUIRED CHANNELS/TRAINS | CONDITION REFERENCED FROM REQUIRED ACTION E.1 |
|---|---|---|---|---|
| 26. | Auxiliary Building Passive Sump Level(j) | 1,2,3 | 2 | F |

(a) Below the P-10 (Power Range Neutron Flux) interlocks.
(b) Above the P-6 (Intermediate Range Neutron Flux) interlocks.
(c) Below the P-6 (Intermediate Range Neutron Flux) interlocks.
(d) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, pressure relief valve, or check valve with flow through the valve secured.
(e) A channel consists of two core exit thermocouples (CETs).
(f) The ICCM provides these functions on a plasma display.
(g) Regulatory Guide 1.97, non-Type A, Category 1 Variables.
(h) This function is displayed on the ICCM plasma display and digital panel meters.
(i) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.
(j) Watts Bar specific (not required by Regulatory Guide 1.97) non-Type A Category 1 variable.

BASES

LCO

11. Containment Isolation Valve Position (continued)

normally active CIV is known to be closed and deactivated, position indication is not needed to determine status. Therefore, the position indication for valves in this state is not required to be OPERABLE.

A Note to the Required Channels states that the Function is not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, pressure relief valve, or check valve with flow through the valve secured.

12. Containment Radiation (High Range)

Containment Radiation is provided to monitor for the potential of significant radiation releases and to provide release assessment for use by operators in determining the need to invoke site emergency plans.

Containment radiation level is also used to determine if a loss of reactor coolant or secondary coolant has occurred.

13. Containment Hydrogen Concentration

Hydrogen Monitors, a non-Type A Category 1 variable, are provided to detect high hydrogen concentration conditions that represent a potential for containment breach from a hydrogen explosion. This variable is also important in verifying the adequacy of mitigating actions.

Hydrogen concentration is also used to determine whether or not to start the hydrogen ignitors and/or recombiners. Containment hydrogen instrumentation consists of two trains on separate power supplies with a range of 0-10% (by volume) hydrogen concentration.

(continued)

Disposition of NRC Technical Specification Open Item

TAC M76742-4

Open item - Page 3.3-60, Table 3.3.7-1, Item 2, "Control Room Radiation, Control Room Air Intakes" - The allowable value is designated as [TBD]; a value needs to be provided.

Disposition

The attached markups indicate the changes necessary to address this item. This information is based on a recent TVA calculation.

A similar calculation was performed for the Containment Purge Exhaust Radiation monitors. Markup pages are included for your review.

Table 3.3.6-1 (page 1 of 1)
Containment Vent Isolation Instrumentation

| | FUNCTION | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|
| 1. | Manual Initiation | 2 | SR 3.3.6.6 | NA |
| 2. | Automatic Actuation Logic and Actuation Relays | 2 trains | SR 3.3.6.2<br>SR 3.3.6.3<br>SR 3.3.6.5 | NA |
| 3. | Containment Purge Exhaust Radiation Monitors | 2 | SR 3.3.6.1<br>SR 3.3.6.4<br>SR 3.3.6.7 | ~~≤ TBD~~<br>$\leq 1.95 \times 10^{-3}$ µCi/cc (3133 cpm) |
| 4. | Safety Injection | Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 1, for all initiation functions and requirements. | | |

BASES

LCO

2. Automatic Actuation Logic and Actuation Relays (continued)

MODES and specified conditions for the containment vent isolation portion of the SI Function is different and less restrictive than those for the SI role. If one or more of the SI Functions becomes inoperable in such a manner that only the Containment Vent Isolation Function is affected, the Conditions applicable to the SI Functions need not be entered. The less restrictive Actions specified for inoperability of the Containment Vent Isolation Functions specify sufficient compensatory measures for this case.

3. Containment Radiation

The LCO specifies two required channels of radiation monitors to ensure that the radiation monitoring instrumentation necessary to initiate Containment Vent Isolation remains OPERABLE.

For sampling systems, channel OPERABILITY involves more than OPERABILITY of the channel electronics. OPERABILITY may also require correct valve lineups and sample pump operation, as well as detector OPERABILITY, if these supporting features are necessary for trip to occur under the conditions assumed by the safety analyses.

Only the Allowable Value is specified for the Containment Purge Exhaust Radiation Monitors in the LCO. The allowable value is based on expected concentrations for a small break LOCA, which is more restrictive than 10 CFR 100 limits. ~~The Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis in order to account for instrument uncertainties appropriate to the trip function.~~ ~~The limit is based on References 4, 5, and 6~~ 3 The actual nominal Trip Setpoint is normally still more conservative than that required by the Allowable Value. If the ~~measured~~ setpoint does not exceed the Allowable Value, the radiation monitor is considered OPERABLE. 95-002

SE 2/2/95

(continued)

Table 3.3.7-1 (page 1 of 1)
CREVS Actuation Instrumentation

| | FUNCTION | REQUIRED CHANNELS | SURVEILLANCE REQUIREMENTS | ALLOWABLE VALUE |
|---|---|---|---|---|
| 1. | Manual Initiation | 2 trains | SR 3.3.7.3 | NA |
| 2. | Control Room Radiation Control Room Air Intakes | 2 | SR 3.3.7.1<br>SR 3.3.7.2<br>SR 3.3.7.4 | ~~≤ [TBD] mR/hr~~<br>≤ 5.77x10⁻⁴ μCi/cc (20199 cpm) |
| 3. | Safety Injection | Refer to LCO 3.3.2, "ESFAS Instrumentation," Function 1, for all initiation functions and requirements. | | |

BASES

LCO

2. Control Room Radiation (continued)

For sampling systems, channel OPERABILITY involves more than OPERABILITY of channel electronics. OPERABILITY may also require correct valve lineups, sample pump operation, and filter motor operation, as well as detector OPERABILITY, if these supporting features are necessary for trip to occur under the conditions assumed by the safety analyses.

Only the Allowable Value is specified for the Control Room Air Intake Radiation Monitors in the LCO. The Allowable Value specified is more conservative than the analytical limit assumed in the safety analysis in order to account for instrument uncertainties appropriate to the trip function. The actual nominal Trip Setpoint is normally still more conservative than that required by the Allowable Value. If the ~~measured~~ setpoint does not exceed the Allowable Value, the radiation monitor is considered OPERABLE.

The allowable Value is based on 10CFR50, Appendix A, Criterion 19 exposure limits considering the most limiting accident, which has been determined to be a steam generator tube rupture event. This event is more limiting than a ~~tube rupture~~ fuel handling accident event or a LOCA.

~~The limit is based on exposures 1, 2 and 3 2~~

3. Safety Injection

Refer to LCO 3.3.2, Function 1, for all initiating Functions and requirements.

APPLICABILITY

The CREVS Functions must be OPERABLE in MODES 1, 2, 3, 4, and during movement of irradiated fuel assemblies. The Functions must also be OPERABLE in MODES 5 and 6 when required for a waste gas decay tank rupture accident, to ensure a habitable environment for the control room operators.

(continued)

Disposition of NRC Technical Specification Open Item

TAC M76742-5

Open item - Page 3.6-37, SR 3.6.13.4 - TVA proposes an entirely different surveillance requirement (SR) and frequency interval for the Divider Barrier Seal than is currently specified in NUREG-1431. TVA has not provided any supporting data or appropriate justifications for the staff to review to determine the acceptability of this new, and possibly generic, SR.

Disposition

TVA provided the attached FSAR justification and the reports referenced in the justification. Further NRC and TVA review identified that the proposed TS change was warranted but did not accurately meet the intent of the vendor recommendations. The attached revised TS and Bases pages accurately reflect the vendor recommendations for surveillance testing of the divider barrier seal.

# FSAR & T/S CHANGE JUSTIFICATION

1048 S00 PKG

BACKGROUND:

The Divider Barrier Seal was originally tested after being exposed to accident temperature and radiation conditions utilizing a simple membrane pressure test up to 30 psi and tensile strength (pull) test. (Ref. Presray Test Report #2 and Addendum #1, Contract # 77K64-821732). This testing established the seal's initial integrity to withstand an accident, and along with pressure testing at 60 psi during every outage, verifies the continued integrity of the sealing system.

Damage has occurred to the Divider Barrier Seal under some of the hold down clamps as documented in WBPER910217 R3. Specifically, the 1/2" clamp bolts were over-torqued due to an engineering oversight that failed to reduce the torque of 43 ft-lb's specified by note 7 of TVA drawing 44W290-1 for the metal to EPDM rubber clamp interface. This torque is that which is required to obtain standard bolt preload for a 1/2" bolt in a metal to metal joint and produced enough force on the seal material to cause seal damage ranging from compression marks to 2" long splits under some of the clamps.

In order to adequately test the effects of this damage on the seal system, a more elaborate test type was required. The resulting test rig and procedure was designed to test a specimen under accident temperature and pressure conditions in a configuration emulating actual plant as-constructed installation (Reference Presray test report TR17361-1 "Divider Barrier Seal LOCA and Burst Test Report", Contract No. 92NNB44399C). The test specimens were sections of seal removed from WBN Unit 1 containment that were heat aged and irradiated to 40 year normal operation plus accident integrated doses to conservatively represent the material properties that would exist following a design basis accident at the end of a 40 year plant life. Testing has demonstrated that the seal will develop small leakage paths at the split locations during accident conditions and that the compression marks do not create leakage paths during accident conditions. Testing also showed that the splits will not propagate unless there is a greater than 1/8 inch split under a clamp which is fastening a part of the seal with the pigtail stitching removed.

The only locations which would not have the pigtail stitching intact are the field joint locations along the seal which were vulcanized together during original construction, and the splice locations for the replacement seal sections where the test specimens were removed. The seal under the replacement seal section clamps were inspected for damage during the repair work (Reference Presray repair procedure PR16550 Rev. B, "Procedure For Cold Bonding Divider Barrier Seal Splice Joints", Contract No. 92NNB44399C). The seal under the clamps near the vulcanized field splice joints will be inspected, with any unacceptable damage repaired in accordance with the above repair procedure as required by the above mentioned PER.

Calculation EPM-HVG-013094 has evaluated leakage paths for the other damage conditions and determined that leakage created by this damage is insignificant with respect to the allowable leakage area assumed in the containment analysis.

CONCLUSION:

Test results from the new tests, along with the bypass analysis and required inspections/repair, adequately demonstrate the divider barrier seal's ability to perform its safety function during a 40 year plant life. The original 60 psi test is no longer needed to verify the seal material integrity since seal aging has been accounted for in the test.

The 60 psi test will be replaced with a test that is required to monitor the integrity of the adhesive utilized for the cold bond repair method as referenced above. The adhesive could not be heat aged because prolonged exposure to the elevated temperatures required for heat aging the seal material was destructive to the adhesive. It should be noted that the cold bond repair configuration has been tested under accident temperature and pressure conditions after seal material exposure to 40 year plus accident integrated doses (Reference Presray test report TR16550-1, "Divider Barrier Seal Splice Procedure Test Report", Contract No. 92NNB44399C).

FSAR CHANGE PKG NO. 1048

1048 S00 PKG

3.8.3.5.9 Penetrations Through the Divider Barrier

Canal Gate and Control Rod Drive (CRD) Missile Shield

Loading combinations 1 through 7 in Table 3.8.3-1 were examined. During the original design (construction permit) phase with calculated values of LOCA pressure load increased by 40%, the controlling load combination is "Abnormal/Severe Environmental." See Table 3.8.3-2.

Reactor Coolant Pump and Lower Compartment Access Hatches

Loading combinations 1 through 7 in Table 3.8.3-1 were examined. During the original design (construction permit) phase with calculated values of LOCA pressure load increased by 40%, the controlling load combination is "Abnormal/Severe Environmental."

Escape Hatch

Loading combinations 1 through 7 in Table 3.8.3-1 were examined. During the original design (construction permit) phase with calculated values of LOCA pressure load increased by 40%, the controlling load combination is "Abnormal/Severe Environmental."

3.8.3.5.10 Personnel Access Doors in Crane Wall

Allowable stresses for noncollapsible members for load combinations used for the various parts are given in Table 3.8.3-3. Normal load conditions are shown for mechanical members only. Loads on structural members during normal conditions are negligible and therefore are not shown on Table 3.8.3-3. For normal load conditions, factors of safety for mechanical parts are 5 to 1 on ultimate. For limiting conditions such as an OBE or SSE for mechanical and structural members and a pipe rupture accident for structural members only, stresses do not exceed 0.9 yield. Pipe rupture accidents apply to structural members only, since forces from jets and missiles are taken by the structural frame.

For collapsible members during a pipe rupture accident, stresses exceed yield and members are plastically deformed. Plastic deformation of energy absorbing members does not affect the sealing integrity of the doors.

3.8.3.5.11 Seals Between Upper and Lower Compartments

Under normal and earthquake conditions, there are no loads on the seals. However, the seals are subject to radiation, as outlined previously, during normal operating conditions. ~~Under accident conditions, the stress in the flexible fabric does not exceed 0.33 ultimate. Strength of the fabric material under normal and accident conditions was determined by laboratory test.~~

Revise

The seal has been tested under accident pressures and temperatures after undergoing heat aging to 40 years equivalent age, and irradiation to 40 years normal operation plus accident integrated doses in order to qualify it for the life of the plant.

1048 S00 PKG

Escape Hatches in Elevation 756.63 Floor

ASTM standards were used for all material specifications and certified mill test reports were provided by the contractor for materials used for all load carrying members.

3.8.3.6.2 Quality Control

Concrete

The quality control requirements were essentially the same as in Section 3.8.1.6.2. Some concrete did not meet specification requirements. This was evaluated and documented in Reference (2). Results have been documented in affected calculation packages and drawings.

Personnel Access Doors in Crane Wall, Escape Hatches in Elevation 756.63 Floor

Design by TVA and erection by TVA were in accordance with TVA's quality assurance program. Design and fabrication by the contractor were in accordance with the contractor's quality assurance program which was reviewed and approved by TVA's design engineers. The contractor's quality assurance program covers the criteria in Appendix B of 10 CFR 50. Fabrication procedures such as welding and nondestructive testing were included in Appendices to the contractor's quality assurance program.

ASTM standards were used for the material specifications and certified mill test reports were provided by the contractor for materials used for the load carrying members.

Seals Between Upper and Lower Compartments

The flexible elastomer coated fabric used for seals was certified by a qualified rubber technologist as being adequate for the normal and accident conditions. In addition, certified mill test reports were provided by the contractor for materials used for the load carrying members.

Testing of the seals in place under accident conditions is not feasible; therefore, laboratory testing was necessary. The flexible seal material was tested by the Presray Corporation under contract with TVA. Testing was performed with radiation.

Revise

The seal has been tested by the original seal supplier under contract with TVA. The test was designed to evaluate seal specimens under simulated accident temperature and pressure conditions in a configuration emulating actual plant as-constructed installation. The test specimens, which were fabricated from seal material removed from WBN's Unit 1 Containment, were heat aged to 40 years equivalent age, and irradiated to 40 years normal operation plus accident integrated doses prior to testing. This testing process represented the material properties that would exist following a design basis accident at the end of a 40 year plant life.

temperature, and pressure conditions, as listed previously, for accident conditions. After exposure to accident conditions for temperature and radiation, the tensile strength of the material was sufficient to provide a factor of safety of not less than 3 to 1 for the load produced by accident pressure. delete

3.8.3.6.3 Construction Technique

No unusual construction procedures were employed in the construction of the interior structures.

Seals Between Upper and Lower Compartments

On periodic unit shutdowns, visual inspections of the seals are to be made. Parts inspected are to include all bolted connections, clamp bars, metal to fabric joints, and the elastomer-coated fabric. The seals are to be replaced if they show any evidence of deterioration.

Escape Hatches in Elevation 756.63 Floor

Periodic visual inspections of the hatch covers are to be made. Parts inspected during the visual inspection are to include all bolted connections, structural members for paint deterioration, latching mechanisms, hinges, limit switches, and elastomer seals.

The escape latch seals are to be carefully inspected for cracks, blemishes, or any other indications of deterioration of the elastomer and for properly seating at the sealing surfaces.

3.8.3.6.4 Ice Condenser

Structural steels for ice condenser components are selected from the various steels listed in the AISC Specification or Code. When materials such as steel sheets, stainless steel or nonferrous metals are required and are not obtainable in the AISC Code, these materials are chosen from ASTM Specifications. Proprietary materials such as insulating materials, gaskets and adhesives are listed with the manufacturers' name on the component drawings.

Material certifications for chemical analysis and tensile properties were required with testing procedure and acceptance standards meeting the AISC or ASTM requirements.

Because the concept of nonductile fracture of ferritic steel is not a part of the AISC Code,

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.6.13.4 | Verify, by peel test on three specimens for each replacement seal repair location, that the length of peel for at least two of the test specimens is less than or equal to 1 inch. | Prior to initial fuel loading for joints made prior to fuel loading<br><br>AND<br><br>18 months for the first two refueling outages after fabrication of any joint<br><br>AND<br><br>18 months thereafter for a fabricated splice joint, if any of the three test specimens peel length is > 1/2 inch<br><br>OR<br><br>36 months thereafter for a fabricated splice joint, if all three associated test specimens peel length is ≤ 1/2 inch |

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.13.2 (continued)

resilient materials in the seals must be opened and inspected at least once every 10 years to provide assurance that the seal material has not aged to the point of degraded performance. The Frequency of 10 years is based on the known resiliency of the materials used for seals, the fact that the openings have not been opened (to cause wear), and operating experience that confirms that the seals inspected at this Frequency have been found to be acceptable.

SR 3.6.13.3

Verification, by visual inspection, after each opening of a personnel access door or equipment hatch that it has been closed makes the operator aware of the importance of closing it and thereby provides additional assurance that divider barrier integrity is maintained while in applicable MODES.

SR 3.6.13.4

The divider barrier seal can be field spliced for repair purposes utilizing a cold bond procedure rather than the original field splice technique of vulcanization. However, the cold bond adhesive, which works in conjunction with a bolt array to splice the field joint, could not be heat aged to 40 years plant life prior to acceptability testing. Prolonged exposure to the elevated temperatures required for heat aging the seal material was destructive to the adhesive. The seal material was heat aged to 40 years equivalent age and the entire joint assembly was irradiated to 40 year normal operation plus accident integrated dose. Conducting periodic peel tests on the test specimens provides assurance that the adhesive has not degraded in the containment environment. The Frequencies of 18 months for the first two outages after fabrication of the joint, followed by 18 months if the peel lengths greater than 1/2" and 36 months if the peel length is less than or equal to 1/2" is based upon the original vendor's recommendation which is based upon baseline examination of the strength of the adhesive. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

Disposition of NRC Technical Specification Open Item

TAC M76742-6

Open item - Page 3.7-23, LCO 3.7.10, Condition D - TVA proposes an entirely new condition for two Control Room Ventilation Systems inoperable in MODES 1-4 during a tornado warning. TVA has not provide any justification for this deviation from General Design Criteria (GDC) 2 and 19 for the staff to review to determine the acceptability of this new plant specific condition.

Disposition

The attached FSAR change pages that which are included in FSAR Amendment 89 indicate that the system is intended to be isolated during a tornado warning. This is necessary since the system cannot withstand a tornado without closing these dampers (exception to GDC 2). This is acceptable because the dose to the inhabitants is maintained within GDC 19 criteria since a LOCA is not postulated to occur concurrent with a tornado. Therefore, the Technical Specification and associated Bases should remain as they are currently presented in the Updated Proof and Review Version.

effective, economic and transparent radiation shield, as well as a reliable cooling medium for removal of decay heat. The boric acid concentration in the water is sufficient to preclude criticality.

The associated fuel handling structures may be generally divided into three areas: the refueling cavity and refueling canal which are flooded only during plant shutdown for refueling, the spent fuel storage area which is kept full of water and is always accessible to operating personnel, and the new fuel storage vault which is separate and protected for dry storage. The refueling canal and the transfer canal are connected by a fuel transfer tube. This tube is fitted with a blind flange on the refueling canal end and a gate valve on the transfer canal end. The blind flange is in place except during refueling to ensure containment integrity. Fuel is carried through the tube on an underwater transfer car.

Fuel is moved between the reactor vessel and the refueling canal by the manipulator crane. A rod cluster control changing fixture is located on the refueling canal wall for transferring control elements from one fuel assembly to another.

The lifting arm at either end of the fuel transfer tube is used to pivot a fuel assembly. Before entering the transfer tube the lifting arm pivots a fuel assembly to the horizontal position for passage through the transfer tube. After the transfer car transports the fuel assembly through the tube, the lifting arm at that end of the tube pivots the assembly to a vertical position so that it can be lifted out of the upender frame.

In the spent fuel storage area, spent fuel assemblies are moved about by the spent fuel pit bridge hoist. When lifting spent fuel assemblies, the hoist uses a long-handled tool to assure that sufficient radiation shielding is maintained. A shorter tool is used to handle new fuel assemblies with the Auxiliary Building crane, but the new fuel elevator must be used to lower the assembly to a depth at which the spent fuel pit bridge crane using the long-handled tool, can place the new fuel assembly into the upending device.

Decay heat, generated by the spent fuel assemblies in the spent fuel pit, is removed by the spent fuel pit cooling system.

9.1.4.2.1 Refueling Procedure

Core alterations or handling of irradiated fuel will be suspended during a tornado warning.

The refueling operation follows a detailed procedure which provides a safe, efficient refueling operation. Prior to initiating refueling operations the reactor coolant system is borated and cooled down to refueling shutdown conditions as specified in the Technical Specifications. Criticality protection for refueling operations, including a requirement for periodic checks of boron concentration, is specified in the Technical Specifications.

The following significant points are assured by the refueling procedure:

1. The refueling water and the reactor coolant contains approximately 2000

# 9.4 AIR CONDITIONING, HEATING, COOLING, AND VENTILATION SYSTEMS

## 9.4.1 Control Room Area Ventilation System

### 9.4.1.1 Design Bases

The Control Building heating, ventilating, air-conditioning, and air cleanup systems are designed to maintain temperature and humidity conditions throughout the building for the protection, operation, and maintenance and testing of plant controls, and for the safe, uninterrupted occupancy of the main control room habitability system (MCRHS) area during an accident and the subsequent recovery period. Refer to Section 6.4 for further information regarding control room habitability and definition of MCRHS area. The main control room habitability zone (MCRHZ) is designed to maintain a positive pressure relative to the outdoors and to the adjacent areas at all times, except during a tornado warning, to minimize air inleakage.

The Control Building air-conditioned spaces are maintained in the range of 60°F minimum to 104°F maximum temperature during all modes of operation. The main control room (MCR) temperature and humidity controls are set at 75°F and 50% relative humidity, respectively, for comfort of the operators and protection of instruments during normal operation.

The Control Building outside air intakes are provided with radiation monitors, and smoke detectors. Indicators are provided with the radiation monitors. MCR common annunciation is provided. Isolation of the MCRHZ occurs automatically upon the actuation of a safety injection signal from either unit or upon indication of high radiation, or smoke concentrations in the outside air supply stream to the building. Tornado dampers close the air intakes manually during a tornado warning to protect the MCRHZ air conditioning equipment.

Upon receipt of a signal for MCRHS area isolation, Control Room Isolation (CRI), the following conditions are automatically implemented:

1. The Control Building emergency air cleanup fans operate to recirculate a portion of the MCRHS area air-conditioning system return air through the cleanup trains composed of HEPA filters and charcoal adsorbers.

2. The Control Building emergency pressurizing air supply fan operates to supply a reduced stream of outside air to the MCR air-conditioning system to maintain the MCRHZ pressurized relative to outside and the adjacent areas This fresh air is routed through the emergency air cleanup trains.

3. The control room electrical board rooms (ERB) air handling units continue to draw outside air to maintain the lower floor spaces at atmospheric pressure.

4. The exhaust fan in the toilet rooms is stopped, and double isolation dampers are closed.

5. The spreading room supply and exhaust fans are stopped and the operating battery room exhaust fan continues to run.

6. Double isolation dampers in the spreading room supply duct and isolation dampers in the exhaust duct close.

7. The Auxiliary Building El. 757 shutdown board rooms pressurizing air supply fans are automatically de-energized.

8. Double isolation valves close to isolate the normal pressurizing supply to the MCRHZ.

MCRHZ isolation may be accomplished manually at any time by the control room operators.

The following building air-conditioning and ventilating system components are each provided with two 100% capacity units. Each meets the single failure criterion, and automatic switchover is assured if one of the units fails. These systems include the:

1. MCR air-conditioning system, water chillers, air handling units, and piping.

2. Control Building emergency air cleanup supply fans and filter assemblies.

3. Control Building emergency pressurizing air supply fans.

The EBR air conditioning system is provided with two 100% capacity package water chillers and four 50% capacity air handling units with associated piping, valves, and controls. This system meets the single failure criterion, and automatic switchover is assured if one of the components fails.

Double isolation dampers are provided in the exhaust ducts from the toilet and locker rooms exhaust fan at elevation 755 to the outdoors, in the normal pressurizing fresh air supply duct to the MCR, and in the supply duct from the spreading room supply fan. Two existing isolation valves, 0-FCV-31-36 and 0-FCV-31-37, in the fresh air supply duct to the spreading room remain closed and the outlet is blanked off.

Fresh air for control room emergency pressurizing is taken from the outdoors from either of two intakes. One is the emergency air intake, located on the east end of the Control Building roof at elevation 775 and the other is connected to the fresh air intake on the roof at the west end of the Control Building. Both intakes are isolated during a tornado warning. ← ADD

All essential air-conditioning equipment, ventilating equipment, isolation dampers, and ducts are designed to withstand the safe shutdown earthquake (SSE). Nonessential components are seismically designed to the extent that they will not affect system operation if they should fail due to a seismic event. All air-conditioning and essential ventilating equipment are protected from the effects of a design basis tornado (Section 3.3.2), by isolation dampers located at all external openings to the Control Building. A concrete hood located over the air intake provides additional protection from the effects of tornado generated missiles.

All air conditioning equipment necessary to ensure main control room habitability in the event of a flood is located in the Auxiliary and Control Buildings at elevations where the equipment remains functional during flooding up to the design basis flood elevation. The EBR air conditioning system is not required during a flood.

Dampers used to isolate the MCR habitability area from the outside and from portions of the ventilation systems serving other areas of the Control Building are low leakage type dampers. They are heavy-duty dampers provided with resilient seals along the blade edges. These dampers close following detection of high levels of radiation, concentrations of smoke, or receipt of an isolation signal. Refer to Section 6.4 for further information regarding damper leakage.

9.4.1.3 Safety Evaluation

The Control Building air-conditioning systems are engineered safety features (ESF). Each pair of full-capacity (one redundant) water chillers and each redundant set of air handling units are served from separate trains of the emergency power system and from coordinated separate loops of the ERCW. The failure modes and effects analysis presented in Table 9.4-7 verifies the capability of the system to maintain acceptable environmental conditions within the Control Building during any mode of system operation following any single active failure.

All MCR equipment operates normally at an ambient temperature of 75°F. Abnormal excursions of short duration (8 hours or less) to 104°F maximum and 60°F minimum may occur without adverse effects on the equipment. At sustained temperatures above 104°F or below 60°F, failure rates for control room equipment may tend to rise somewhat and some instrumentation inaccuracies may arise. The full-capacity air-conditioning system redundancy discussed above, however, reduces the probability of over-temperature operations to acceptably small values. Loss of ventilation problems are discussed further in Section 3.11.4.

The air cleanup equipment installed to purify air supplied to the MCR habitability zone during emergencies is classified as an ESF air cleanup system. Good general agreement with Regulatory Guide 1.52 standards for air cleanup equipment is achieved. Details on this compliance are given in Table 6.5-4.

Each of the Control Building emergency air cleanup units consists of a bank of HEPA filter cells and a bank of carbon absorber modules. Test connections and appropriate instrumentation are also provided for each air cleanup unit. For further details refer to Section 6.4.4.

One Control Building air-conditioning system filter bank is provided on the air intake on each of the system air handling units. Each filter cell is rated for an initial resistance of 0.40 inch water gauge when clean, and filtering media should be replaced with new media upon an increase in resistance to 1.0 inch water gauge.

For discussions on radioactivity dose levels and detection of airborne contaminants, refer to Section 12.4 and 12.3.4.

PD The only heating, ventilating, and air conditioning required in the Control Building in the event of a flood above plant grade is for the elevation 755.0 rooms, including the MCR. The equipment used for this function includes the MCR air handling units, and

Tornado dampers isolate the outside air intakes for a tornado warning during normal operation or Control Room Isolation (CRI). The loss of MCRHZ pressurization during this time will not result in contaminated air leaking into the MCRHZ since a LOCA is not postulated concurrent with a tornado.

Disposition of NRC Technical Specification Open Item

TAC M76742-7

Open item - Page 3.8-8; SR 3.8.1.7; Page 3.8-11, SR 3.8.1.12; Page 3.8-13, SR 3.8.1.15; and Page 3.8-16, SR 3.8.1.21 - TVA proposes to delete the upper voltage and frequency limits on the no-load diesel generator (DG) SRs in accordance with generic change package WOG-36. The staff has not fully accepted WOG-36 and is pursuing a resolution with the Owner's Groups and Watts Bar.

Disposition

TVA has coordinated with the NRC and other utilities implementing the new Standard Technical Specifications regarding WOG-36. TVA provided WOG-36 Revision 1 (new traveler WSTS-5, attached) to the WOG in late 1994. This revision has been presented to the NRC and, we understood, found reasonable. TVA requests that the attached WSTS-5 (old WOG-36 Revision 1) be approved for implementation at Watts Bar. The pages indicating the changes are attached. Please note that the material added to the Bases required placing more text on some pages not affected by the change in order to assure that the total pages in Section 3.8.1 remained the same. The replacement pages for Bases 3.8.1 are provided in Enclosure 4.

# WOG STANDARD TECHNICAL SPECIFICATION CHANGE TRAVELER

WOG DISTRIBUTION:

(circle originator)

TRAVELER NO: WSTS-5 *

DATE ISSUED: 4-18-95 *

WOG APPROVAL DATE: ____

DATE PROVIDED TO NEI: ____

OTHER OG CONCUR DATE: ____

DATE PROVIDED TO NRC: ____

Lee Bush - (708) 746-2084 X2890 Fax X3892
Jack Stringfellow - (205) 877-7037 Fax 7885
Mark Flaherty - (716) 724-8512 Fax 8405
Randy Hamilton - (512) 972-7628 Fax 8298
~~John Vorees - (615) 365-8819 Fax 8000~~
Chris Morgan 615-365-3830

INDUSTRY DISTRIBUTION: NEI

Jim Eaton - (202) 872-1280 Fax 785-1898
(coordinator)

DESCRIPTION OF PROPOSED CHANGE(S):

See Attached

* Replaces WOG-36 R1 approved in December 1994

INDUSTRY/NRC DISPOSITION

APPROVED ____ DISAPPROVED ____ APPROVED WITH COMMENTS ____

REVIEWER: ____ ____ (date)

UTILITY/NRC BRANCH: ____ PHONE: ____

INCORPORATED INTO NUREG: ____ (date) REV NO. ____

REVIEWER COMMENTS:

## Insert A

and other no-load fast starts are performed while

## Insert B

After DG fast start from standby conditions the DG achieves steady state voltage ≥ [3740] V and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.

## Insert C

Verify after DG fast start from standby conditions that the DG achieves steady state voltage ≥ [3740] V and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.

## Insert D

The minimum voltage and frequency stated in the SR are those necessary to ensure the DG can accept DBA loading while maintaining acceptable voltage and frequency levels. Stable operation at the nominal voltage and frequency values is also essential to establishing DG OPERABILITY, but a time constraint is not imposed. This is because a typical DG will experience a period of voltage and frequency oscillations prior to reaching steady state operation if these oscillations are not dampened out by load application. This period may extend beyond the [10] second acceptance criteria and could be a cause for failing the SR. In lieu of a time constraint in the SR, [licensees] will monitor and trend the actual time to reach steady state operation as a means of ensuring there is no voltage regulator or governor degradation which could cause a DG to become inoperable.

WSTS-5

(Old WOG-36 Rev 1)

This justification applies to all OG NURECS. Insert A

C.1 The 6 month SR for DG fast start ~~is performed during power operation. Therefore, the DG is normally~~ not connected to the shutdown bus. When voltage and frequency are established within the specified limits, the time response is checked to ensure the 10 second requirement is met. The limits currently specified is ± 10% for voltage and ± 2% for frequency. The upper limit is unnecessarily conservative for an unloaded DG. These limits are the recovery criteria for step loading identified in RG 1.9, R3 (C1.4). Under actual loss of offsite power conditions, the DG would connect to the deenergized shutdown bus and the voltage and frequency would experience an immediate drop as load was picked up at t=0 (breaker closing). This load would limit the overshoot that would be experienced by an unloaded DG. In the unloaded case, the voltage and frequency would continue to rise until the governor made a correction. The voltage and frequency would then converge upon the established limits. The recovery period would take longer, however, in the unloaded case and is not necessarily indicative of the actual loss of offsite power condition. Requiring an upper limit may result in a failed surveillance at the 6 month interval that would otherwise be acceptable if the DG were operating under conditions which more closely approximated the design basis requirements performed at the 18 month intervals.

SURVEILLANCE REQUIREMENTS (continued)

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.8.1.7 | -------------------NOTE------------------- All DG starts may be preceded by an engine prelube period. ------------------------------------------ Verify each DG starts from standby condition and achieves in ≤ [10] seconds, voltage ≥ [3740] V ~~and ≤ [4580] V~~, and frequency ≥ [58.8] Hz ~~and ≤ [61.2] Hz~~. Insert C | 184 days |
| SR 3.8.1.8 | -------------------NOTES------------------- 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Credit may be taken for unplanned events that satisfy this SR. ------------------------------------------ Verify [automatic [and] manual] transfer of AC power sources from the normal offsite circuit to each alternate [required] offsite circuit. | [18 months] |

WSTS-5

(continued)

WSTS-5



SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.8.1.12 ------------------NOTES------------------<br>1. All DG starts may be preceded by prelube period.<br>2. This Surveillance shall not be performed in MODE 1 or 2.<br>3. Credit may be taken for unplanned events that satisfy this SR.<br>-----------------------------------------------------<br>Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:<br>a. In ≤ [10] seconds after auto-start and during tests, achieves voltage ≥ [3740] V and ~~≤ [4580] V~~; frequency ≥ [58.8 Hz.<br>Insert B ^ b. ~~In ≤ [10] seconds after auto-start and during tests, achieves frequency ≥ [58.8] Hz and ≤ [61.2] Hz~~;<br>c. Operates for ≥ 5 minutes;<br>d. Permanently connected loads remain energized from the offsite power system; and<br>e. Emergency loads are energized [or auto-connected through the automatic load sequencer] to the offsite power system. | [18 months] |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.14 | ------------------NOTES------------------<br>1. Momentary transients outside the load and power factor ranges do not invalidate this test.<br><br>2. This Surveillance shall not be performed in MODE 1 or 2.<br><br>3. Credit may be taken for unplanned events that satisfy this SR.<br>-----------------------------------------<br><br>Verify each DG operating at a power factor ≤ [0.9] operates for ≥ 24 hours:<br><br>a. For ≥ [2] hours loaded ≥ [5250] kW and ≤ [5500] kW; and<br><br>b. For the remaining hours of the test loaded ≥ [4500] kW and ≤ [5000] kW. | [18 months] |
| SR 3.8.1.15 | ------------------NOTES------------------<br>1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ [2] hours loaded ≥ [4500] kW and ≤ [5000] kW.<br><br>Momentary transients outside of load range do not invalidate this test.<br><br>2. All DG starts may be preceded by an engine prelube period.<br>-----------------------------------------<br><br>Verify each DG starts and achieves, in ≤ [10] seconds, voltage ≥ [3740] V, and ~~≤ [4580] V and~~ frequency ≥ [58.8] Hz ~~and ≤ [61.2] Hz~~. Insert C | [18 months] |

(continued)

WSTS-5



SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.19 | (continued)<br>2. energizes auto-connected emergency loads through load sequencer,<br>3. achieves steady state voltage:<br>≥ [3740] V and ≤ [4580] V,<br>4. achieves steady state frequency:<br>≥ [58.8] Hz and ≤ [61.2] Hz, and<br>5. supplies permanently connected [and auto-connected] emergency loads for ≥ 5 minutes. | |
| SR 3.8.1.20 | -------------------NOTE-------------------<br>All DG starts may be preceded by an engine prelube period.<br>------------------------------------------<br>Verify when started simultaneously from standby condition, each DG achieves, in ≤ [10] seconds, voltage ≥ [3744] V and ~~≤ [4576] V~~, and frequency ≥ [58.8] Hz ~~and ≤ [61.2] Hz~~.<br>Insert C | 10 years |

WSTS - 5

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

This SR is modified by three Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Note 3 acknowledges that credit may be taken for unplanned events that satisfy this SR.

SR 3.8.1.12

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time ([10] seconds) from the design basis actuation signal (LOCA signal) and operates for ≥ 5 minutes. Insert D The 5 minute period provides sufficient time to demonstrate stability. SR 3.8.1.12.d and SR 3.8.1.12.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on an ESF signal without loss of offsite power.

The requirement to verify the connection of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of [18 months] takes into consideration unit conditions required to perform the Surveillance and is

(continued)

WSTS-5

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.14 (continued)

possible, testing must be performed using a power factor of ≤ [0.9]. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(3), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This Surveillance is modified by three Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. Note 3 acknowledges that credit may be taken for unplanned events that satisfy this SR.

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within [10] seconds. [Insert D] The [10] second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.19

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates the DG operation, as discussed in the Bases for SR 3.8.1.11, during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of [18 months] takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of [18 months].

This SR is modified by three Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations for DGs. The reason for Note 2 is that the performance of the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Note 3 acknowledges that credit may be taken for unplanned events that satisfy this SR.

SR 3.8.1.20

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper speed within the specified time when the DGs are started simultaneously.

TP Insert D

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.7 | Verify for an actual or simulated loss of offsite power each DG starts from standby condition and achieves in ≤ 10 seconds, voltage ≥ 6800 V, and frequency ≥ 58.8 Hz. Verify after DG fast start from standby conditions that the DG achieves steady state voltage ≥ 6800 V and ≤ 7260 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. | 184 days |
| SR 3.8.1.8 | -------------------NOTE-------------------- This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. ------------------------------------------<br><br>Verify automatic and manual transfer of each 6.9 kV shutdown board power supply from the normal offsite circuit to each alternate offsite circuit. | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.12 | ------------------NOTE------------------<br>This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.<br>---------------------------------------- | |
| | Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and:<br><br>a. In ≤ 10 seconds after auto-start and during tests, achieves voltage ≥ 6800 V and frequency ≥ 58.8 Hz;<br><br>b. After DG fast start from standby conditions the DG achieves steady state voltage ≥ 6800 V and ≤ 7260 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.<br><br>c. Operates for ≥ 5 minutes;<br><br>d. Permanently connected loads remain energized from the offsite power system; and<br><br>e. Emergency loads are energized from the offsite power system. | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.15 | -------------------NOTE-------------------<br>This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ 2 hours loaded ≥ 3960 kW and ≤ 4400 kW.<br><br>Momentary transients outside of load range do not invalidate this test.<br>------------------------------------------<br><br>Verify each DG starts and achieves, in ≤ 10 seconds, voltage ≥ 6800 V, and frequency ≥ 58.8 Hz. Verify after DG fast start from standby conditions that the DG achieves steady state voltage ≥ 6800 V and ≤ 7260 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. | 18 months |
| SR 3.8.1.16 | -------------------NOTE-------------------<br>This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR.<br>------------------------------------------<br><br>Verify each DG:<br><br>a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power;<br><br>b. Transfers loads to offsite power source; and<br><br>c. Returns to ready-to-load operation. | 18 months |

(continued)

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | | FREQUENCY |
|---|---|---|
| SR 3.8.1.21 | Verify when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, voltage ≥ 6800 V and frequency ≥ 58.8 Hz. Verify after DG fast start from standby conditions that the DG achieves steady state voltage ≥ 6800 V and ≤ 7260 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. | 10 years |

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

2) Post corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

SR 3.8.1.12

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time (10 seconds) from the design basis actuation signal (LOCA signal) and operates for ≥ 5 minutes. The minimum voltage and frequency stated in the SR are those necessary to ensure the DG can accept DBA loading while maintaining acceptable voltage and frequency levels. Stable operation at the nominal voltage and frequency values is also essential to establishing DG OPERABILITY, but a time constraint is not imposed. This is because a typical DG will experience a period of voltage and frequency oscillations prior to reaching steady state operation if these oscillations are not dampened out by load application. This period may extend beyond the 10 second acceptance criteria and could be a cause for failing the SR. In lieu of a time constraint in the SR, WBN will monitor and trend the actual time to reach steady state operation as a means of ensuring there is no voltage regulator or governor degradation which could cause a DG to become inoperable. The 5 minute period provides sufficient time to demonstrate stability. SR 3.8.1.12.d and SR 3.8.1.12.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on an ESF signal without loss of offsite power.

The requirement to verify the connection of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.14 (continued)

1) Unexpected operational events which cause the equipment to perform the function specified by this Surveillance, for which adequate documentation of the required performance is available; and

2) Post corrective maintenance testing that requires performance of this Surveillance in order to restore the component to OPERABLE, provided the maintenance was required, or performed in conjunction with maintenance required to maintain OPERABILITY or reliability.

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within 10 seconds. The minimum voltage and frequency stated in the SR are those necessary to ensure the DG can accept DBA loading while maintaining acceptable voltage and frequency levels. Stable operation at the nominal voltage and frequency values is also essential to establishing DG OPERABILITY, but a time constraint is not imposed. This is because a typical DG will experience a period of voltage and frequency oscillations prior to reaching steady state operation if these oscillations are not dampened out by load application. This period may extend beyond the 10 second acceptance criteria and could be a cause for failing the SR. In lieu of a time constraint in the SR, WBN will monitor and trend the actual time to reach steady state operation as a means of ensuring there is no voltage regulator or governor degradation which could cause a DG to become inoperable. The 10 second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3), Table 1.

The DG engines for WBN have an oil circulation and soakback system that operates continuously to preclude the need for a prelube and warmup when a DG is started from standby.

This SR is modified by a Note to ensure that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least 2 hours at full load conditions

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.21 (continued)

proper speed within the specified time when the DGs are started simultaneously. The minimum voltage and frequency stated in the SR are those necessary to ensure the DG can accept DBA loading while maintaining acceptable voltage and frequency levels. Stable operation at the nominal voltage and frequency values is also essential to establishing DG OPERABILITY, but a time constraint is not imposed. This is because a typical DG will experience a period of voltage and frequency oscillations prior to reaching steady state operation if these oscillations are not dampened out by load application. This period may extend beyond the 10 second acceptance criteria and could be a cause for failing the SR. In lieu of a time constraint in the SR, WBN will monitor and trend the actual time to reach steady state operation as a means of ensuring there is no voltage regulator or governor degradation which could cause a DG to become inoperable.

The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3), Table 1.

For the purpose of this testing, the DGs shall be started from standby conditions, that is, with the engine coolant and oil being continuously circulated and temperature maintained consistent with manufacturer recommendations. The DG engines for WBN have an oil circulation and soakback system that operates continuously to preclude the need for a prelube and warmup when a DG is started from standby.

Diesel Generator Test Schedule

The DG test schedule (Table 3.8.1-1) implements the recommendations of Revision 3 to Regulatory Guide 1.9 (Ref. 3). The purpose of this test schedule is to provide timely test data to establish a confidence level associated with the goal to maintain DG reliability > 0.975 per demand.

According to Regulatory Guide 1.9, Revision 3 (Ref. 3), each DG should be tested at least once every 31 days. Whenever a DG has experienced 4 or more valid failures in the last 25 valid tests, the maximum time between tests is reduced to 7 days. Four failures in 25 valid tests is a failure rate of 0.16, or the threshold of acceptable DG performance, and hence may be an early indication of the degradation of DG reliability. When considered in the light of a long history of tests, however, 4 failures in the last 25 valid tests may only be a statistically probable distribution of random events. Increasing the test Frequency will allow for a more timely accumulation of additional test data upon which to base judgment of the reliability of the DG. The increased

(continued)

Disposition of NRC Technical Specification Open Item

TAC M76742-8

Open item - Page 5.0-33, TS 5.9.6, "Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR)" - The format and content of the specification conform to NUREG-1431. Specification use is pending approval of the WCAP Topical Report necessary to implement this specification.

Disposition

Issuance of final draft Technical Specifications is not dependent on approval of the WCAP. This section will be revised after approval of the WCAP and prior to receipt of the operating license. Note that TVA has recently submitted to the NRC by letter dated March 29, 1995, Revision 3 to the WBN PTLR and has requested Staff review of the supporting Westinghouse Topical Report, WCAP-14040.

Disposition of NRC Technical Specification Open Item

TAC M76742-9

Open item - Pages B 3.0-5 and B 3.0-6, LCO 3.0.4; Pages B 3.0-13 and B 3.0-14, SR 3.0.4; and various other pages and TS - TVA needs to make the appropriate changes to implement the changes made in Item 1 above.

Disposition

This item is addressed under TAC Item TAC M76742-1.

Disposition of NRC Technical Specification Open Item

TAC M76742-10

Open item - Page B 3.3-3, LCO 3.3.1, Background Field Transmitters or Sensors - TVA needs to determine if the sentence describing transmitter and sensor operability should read either "when its 'as found' calibration data..." or "when its 'as found' drift data and 'as left' calibration data...."

Disposition

The evaluation of the OPERABILITY of each transmitter or sensor is done using the "as found calibration data". Therefore, the sentence should read as follows.

The OPERABILITY of each transmitter or sensor can be evaluated when its "as found" calibration data are compared against its documented acceptance criteria.

This wording is consistent with the wording currently contained in the Updated Proof and Review Technical Specifications.

Disposition of NRC Technical Specification Open Item

TAC M76742-11

Open item - Page B 3.3-63, LCO 3.3.1, References - The brackets around Reference 9 need to be removed or reference deleted due to nonapplicability to Watts Bar.

Disposition

The evaluation of the applicability of WCAP-10271 and supplements to Watts Bar has been completed. The changes to any Technical Specifications as a result of the evaluation are attached.