

HANDOUTS

Industry Prioritization of Post Revision 2 Travelers

In order to ensure that all generic changes proposed by the Industry and reviewed by the NRC are processed in a timely and efficient manner, it is necessary to prioritize those changes. There are two criteria for prioritization: 1) benefit to operation or safety, and 2) number of plants that indicate they would adopt the change when approved.

PRIORITY RANKING

| Benefit \ Adoption | Significant Adoption | General Adoption | Minimal Adoption |
|--|----------------------|------------------|------------------|
| Large Benefit in Operation and / or Safety | | | Medium |
| Moderate Benefit in Operation and / or Safety | Medium | Medium | Medium |
| Minimal Benefit in Operation or Safety | Medium | | |

Each category used in the Table is discussed below.

Benefit Categories

- Large Benefit in Operation and / or Safety** This category of change would include items that provide substantial operational cost savings or significantly improves safety. Examples of this type of generic change for operational savings are implementation of Appendix J, Option B, the relaxation of shutdown containment closure in TSTF-51, and TSTF-360 improvements in batteries and D.C. distribution. An example of large benefit in safety is the clarifications of the Channel Calibration definition in TSTF-205. These changes are typically large, general changes in the ISTS. A general rule of thumb for "large benefit in operation" is that this type of change is expected to save a plant over \$100,000 over the life of the plant after adoption.
- Moderate Benefit in Operation and / or Safety** This category of change would include items that provide moderate operational cost savings or marginally improve safety. Examples of this type of generic change for operational savings are extended Completion Times and Surveillance Frequencies. An example of a marginal safety benefit would be providing an appropriate action when an LCO 3.0.3 entry and eventual unit shutdown would otherwise be required.
- Minimal Benefit in Operation or Safety** This category of change would include items that provide minimal operational cost savings or marginally improve safety. Examples of this type of generic change include clarifying existing Required Actions or Surveillances to make their intent clear, correcting usage errors in the ISTS, and making editorial changes to the ISTS NUREGs. These changes are important to maintain the ISTS and plant-specific ITS correct, complete, and consistent.

Industry Prioritization of Post Revision 2 Travelers

Adoption Categories

- Significant Adoption** This category of change represents generic changes for which a large fraction (approximately two-thirds, or more) of the plants to which the change is applicable have indicated a desire to adopt the change after approval.
- General Adoption** This category of change represents generic changes for which a majority of the plants to which the change is applicable have indicated a desire to adopt the change after approval.
- Minimal Adoption** This category of change represents generic changes for which a small fraction (approximately one-third, or less) of the plants to which the change is applicable have indicated a desire to adopt the change after approval.

Application of Priorities

In order to avoid a situation in which all resources are expended processing high priority changes, the Industry must assign the category sparingly. This may require changing the priority of a generic change under NRC consideration to "make way" for a higher priority change. It is expected that in an equilibrium condition and over a fiscal year, the Industry and the NRC will expend their available resources to address the high, medium, and low priority changes as resources are available.

Editorial and Bases-Only changes are not processed through the CLIPP process and will be given the priority "Edit / Bases."

Schedule

The Industry and the NRC will periodically review the list of pending travelers to assess the implementation of this priority process. The goal will be to resolve high priority changes within 6 months after receipt by the NRC, medium priority changes within 12 months, and low priority items within 18 months. The Industry and the NRC will work to ensure that no generic changes remain under NRC review for greater than 18 months.

ITS REVISION 2
Active TSTF Travelers Overview Report

| TSTF Number | Originator | Description | Marked on Revision 2 Pages? | Has SE Quality Justification? | Status |
|---------------------------|-------------------|---|-------------------------------------|--------------------------------------|--|
| Priority: 1)High | | | | | |
| TSTF-225, R. 2 | BWROG | Fuel movement with inoperable refueling equipment interlocks | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under TSTF Consideration |
| TSTF-359, R. 5 | CEOG | Increase Flexibility in MODE Restraints | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-373, R. 0 | CEOG | Increase CIV Completion Time from 4 Hours to 7 Days | <input type="checkbox"/> | <input checked="" type="checkbox"/> | NRC Requests Changes: TSTF Considering |
| TSTF-411, R. 0 | WOG | Surveillance Test Interval Extensions for Components of the Reactor Protection System | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| Count: 4 | | | | | |
| Priority: 2)Medium | | | | | |
| TSTF-226, R. 0 | BWROG | Fuel loading with control rods withdrawn or removed from defueled core cells | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-244, R. 0 | WOG | Correct invalid SR for Containment Isolation Valve Position | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-260, R. 0 | BWOG | Eliminate monthly position verification for automatic valves | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-294, R. 0 | BWOG | Modify the Note for the Rod Drop Time SR | <input type="checkbox"/> | <input type="checkbox"/> | NRC Requests Changes: TSTF Considering |
| TSTF-310, R. 0 | WOG | Changes to Table 3.3.1-1 | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-313, R. 1 | WOG | Eliminate Requirement for DG Start from "Standby Conditions" | <input type="checkbox"/> | <input type="checkbox"/> | Under TSTF Consideration |
| TSTF-320, R. 0 | BWROG | RPS Electric Power Monitoring Modes of Applicability | <input type="checkbox"/> | <input type="checkbox"/> | Reviewer Recommends Changes |
| TSTF-333, R. 1 | BWROG | Allowed performance time for testing Diesel Generators | <input type="checkbox"/> | <input type="checkbox"/> | NRC Rejects: TSTF Considering |

ITS REVISION 2
Active TSTF Travelers Overview Report

| TSTF Number | Originator | Description | Marked on Revision 2 Pages? | Has SE Quality Justification? | Status |
|--------------------|-------------------|--|-------------------------------------|--------------------------------------|-------------------------|
| TSTF-347, R. 0 | WOG | P-7 Surveillance | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-369, R. 0 | BWROG | Deletion of TS 5.6.4, Monthly Operating Report | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-370, R. 0 | WOG | Increase accumulator Completion Time from 1 hour to 24 hours | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-371, R. 0 | WOG | NIS Power Range Channel Daily SR TS Change to Address Low Power Decalibration | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-372, R. 0 | WOG | Addition of LCO 3.0.8, Inoperability of Non-Technical Specification Support System | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-374, R. 0 | WOG | Revision to TS 5.5.13 and associated TS Bases for Diesel Fuel Oil | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-403, R. 0 | BWROG | LCO 3.6.2.5 and 3.6.3.3 Applicability | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-404, R. 0 | BWROG | SDV Actions | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-406, R. 0 | CEOG | Predicting end-of-cycle MTC and deleting need for end-of-cycle MTC verification in all cases | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-407, R. 0 | CEOG | Extending ESFAS Subgroup Relay Test Intervals | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-408, R. 0 | CEOG | Relocation of LTOP EnableTemperature and PORV Lift Setting to the PTLR | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-409, R. 0 | CEOG | Containment Spray System Completion Time Extension | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-412, R. 0 | WOG | Provide Actions for One Steam Supply to Turbine Driven AFW/EFW Pump Inoperable | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Approved by the TSTF |

Count: 21

Priority: 3)Low

ITS REVISION 2
Active TSTF Travelers Overview Report

| TSTF Number | Originator | Description | Marked on Revision 2 Pages? | Has SE Quality Justification? | Status |
|-----------------------------|-------------------|---|-------------------------------------|--------------------------------------|--|
| TSTF-41, R. 0 | BWOG | Correct BWOG LCO 3.0.7 to refer to Special Exception LCOs | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-232, R. 0 | BWROG | Refuel Equipment Interlocks Applicability Change | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-254, R. 1 | BWOG | Extend Frequency of accumulated water checks for DG fuel oil. | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-296, R. 0 | BWROG | Revise LCO 3.10.5, Single CRD Removal - Refueling, to require a withdrawal block for all other rods | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-337, R. 0 | WOG | Revise LCO 3.5.5 for RCP seal injection flow resistance | <input type="checkbox"/> | <input type="checkbox"/> | NRC Requests Changes: TSTF Considering |
| TSTF-343, R. 0 | BWOG | Containment Structural Integrity | <input type="checkbox"/> | <input type="checkbox"/> | Reviewer Recommends Changes |
| TSTF-344, R. 0 | BWOG | 3.1.8 and 3.1.9 SR Frequency Change | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-345, R. 0 | BWOG | Add new Condition C for 3.2.1 Actions | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-410, R. 0 | CEOG | Relocation of Steam Generator Level - High Trip to the TRM | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| Count: 9 | | | | | |
| Priority: Edit/Bases | | | | | |
| TSTF-262, R. 1 | BWOG | 3.4.6, 3.4.7, and 3.4.8: Allow DHR/RHR/SDC pumps to be aligned for LPI | <input type="checkbox"/> | <input type="checkbox"/> | NRC Requests Changes: TSTF Considering |
| TSTF-354, R. 0 | BWROG | Operability of Turbine Stop Valve and Turbine Control Valve Fast Closure Bypass Trip Functions | <input type="checkbox"/> | <input type="checkbox"/> | Under NRC Consideration |
| TSTF-400, R. 0 | BWROG | Clarify SR on Bypass of DG Automatic Trips | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-401, R. 0 | WOG | Revise Incorrect Bases for Containment Air Temperature | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |

ITS REVISION 2
Active TSTF Travelers Overview Report

| TSTF Number | Originator | Description | Marked on Revision 2 Pages? | Has SE Quality Justification? | Status |
|------------------------|-------------------|---|--|--|-------------------------|
| TSTF-402, R. 0 | CEOG | Clarification of "Required Features" in 3.8.1 Actions | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |
| TSTF-405, R. 0 | BWROG | Remove Bases Reference to Hydrotest Requirement to Gag SRVs | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Under NRC Consideration |

Count: 6

Total Number of Travelers and Revisions: 40

TSTF-153

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Loops - MODE 3

LCO 3.4.5 [Two] RCS loops shall be OPERABLE and either:

- a. [Two] RCS loops shall be in operation when the Rod Control System is capable of rod withdrawal or
- b. One RCS loop shall be in operation when the Rod Control System is not capable of rod withdrawal.

- NOTE -

• be de-energized [Rev.1]
• not be in operation [TSF-153]

All reactor coolant pumps may be not in operation for ≤ 1 hour per 8 hour period provided:

- a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
- b. Core outlet temperature is maintained at least 10°F below saturation temperature.

APPLICABILITY: MODE 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|-----------------|
| A. One [required] RCS loop inoperable. | A.1 Restore required RCS loop to OPERABLE status. | 72 hours |
| B. Required Action and associated Completion Time of Condition A not met. | B.1 Be in MODE 4. | 12 hour |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.6 RCS Loops - MODE 4

LCO 3.4.6 Two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops shall be OPERABLE, and one loop shall be in operation.

- NOTES -

1. All reactor coolant pumps (RCPs) and RHR pumps may be (not in operation) for ≤ 1 hour per 8 hour period provided:
 - a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1, and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
2. No RCP shall be started with any RCS cold leg temperature ≤ [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR] unless the secondary side water temperature of each steam generator (SG) is ≤ [50]°F above each of the RCS cold leg temperatures.

- be deenergized [Rev.1]
- not be in operation [TSF-153]

APPLICABILITY: MODE 4.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|----------------------------------|--|-----------------|
| A. One required loop inoperable. | A.1 Initiate action to restore a second loop to OPERABLE status. <u>AND</u> | Immediately |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Loops - MODE 5, Loops Filled

LCO 3.4.7 One residual heat removal (RHR) loop shall be OPERABLE and in operation, and either:

- a. The non-operating RHR loop shall be OPERABLE or
- b. The secondary side water level of at least [two] steam generators (SGs) shall be \geq [17]%.

- NOTES -

• be de-energized [Rev. 1]
• not be in operation [TSIF-153]

- 1. The RHR pump of the loop in operation may be not in operation for \leq 1 hour per 8 hour period provided:
 - a. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1; and
 - b. Core outlet temperature is maintained at least 10°F below saturation temperature.
 - 2. One required RHR loop may be inoperable for up to 2 hours for surveillance testing provided that the other RHR loop is OPERABLE and in operation.
 - 3. No reactor coolant pump shall be started with one or more RCS cold leg temperatures \leq [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR] unless the secondary side water temperature of each SG is \leq [50]°F above each of the RCS cold leg temperatures.
 - 4. All RHR loops may be removed from operation during planned heatup to MODE 4 when at least one RCS loop is in operation.
-

APPLICABILITY: MODE 5 with RCS Loops Filled

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.8 RCS Loops - MODE 5, Loops Not Filled

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

- NOTES -

• be de-energized [Rev.1]
• not be in operation [TSTF-153]

1. All RHR pumps may be not in operation for ≤ 15 minutes when switching from one loop to another provided:
 - [a. The core outlet temperature is maintained $> 10^{\circ}\text{F}$ below saturation temperature,]
 - b. No operations are permitted that would cause introduction into the RCS, coolant with boron concentration less than required to meet the SDM of LCO 3.1.1, 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.

ACTIONS

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

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

3.5.2 ECCS - Operating

LCO 3.5.2 Two ECCS trains shall be OPERABLE.

- 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.

• declared inoperable [Rev.1]
pursuant to

2. In MODE 3, ECCS pumps may be made incapable of injecting to support transition into or from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," for up to 4 hours or until the temperature of all RCS cold legs exceeds [375°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR plus [25]°F], whichever comes first.]

• made incapable of injecting [TSTF-153]

is allowed [Rev. 1]

Rev. 1
TSTF-153
moved
Notes

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|--|-----------------|
| A. One or more trains inoperable. | 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. | 6 hours |
| | <u>AND</u> B.2 Be in MODE 4. | 12 hours |
| C. Less than 100% of the ECCS flow equivalent to a single OPERABLE ECCS train available. | C.1 Enter LCO 3.0.3. | Immediately |

3.9 REFUELING OPERATIONS

3.9.5 Residual Heat Removal (RHR) and Coolant Circulation - High Water Level

LCO 3.9.5 One RHR loop shall be OPERABLE and in operation.

• be removed from [Rev. 1]
• not be in [TSTF-153]

- NOTE -

The required RHR loop may be not in operation for ≤ 1 hour per 8 hour period, provided no operations are permitted that would cause introduction into the Reactor Coolant System, coolant with boron concentration less than that required to meet the minimum required boron concentration of LCO 3.9.1.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|-----------------------------------|--|-----------------|
| A. RHR loop requirements not met. | A.1 Suspend operations that would cause introduction into the RCS, coolant with boron concentration less than required to meet the boron concentration of LCO 3.9.1. | Immediately |
| | <u>AND</u> | |
| | A.2 Suspend loading irradiated fuel assemblies in the core. | Immediately |
| | <u>AND</u> | |
| | A.3 Initiate action to satisfy RHR loop requirements. | Immediately |
| | <u>AND</u> | |

BASES

APPLICABLE SAFETY ANALYSES (continued)

Failure to provide decay heat removal may result in challenges to a fission product barrier. The RCS loops are part of the primary success path that functions or actuates to prevent or mitigate a Design Basis Accident or transient that either assumes the failure of, or presents a challenge to, the integrity of a fission product barrier.

RCS Loops - MODE 3 satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least [two] RCS loops be OPERABLE. In MODE 3 with the Rod Control System capable of rod withdrawal, [two] RCS loops must be in operation. [Two] RCS loops are required to be in operation in MODE 3 with the Rod Control System capable of rod withdrawal due to the postulation of a power excursion because of an inadvertent control rod withdrawal. The required number of RCS loops in operation ensures that the Safety Limit criteria will be met for all of the postulated accidents.

When the Rod Control System is not capable of rod withdrawal, only one RCS loop in operation is necessary to ensure removal of decay heat from the core and homogenous boron concentration throughout the RCS. An additional RCS loop is required to be OPERABLE to ensure that safety analyses limits are met.

• be de-energized [Rev.1]

The Note permits all RCPs to not be in operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to perform tests that are designed to validate various accident analyses values. One of these tests is validation of the pump coastdown curve used as input to a number of accident analyses including a loss of flow accident. This test is generally performed in MODE 3 during the initial startup testing program, and as such should only be performed once. If, however, changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values of the coastdown curve must be revalidated by conducting the test again. Another test performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow.

[TSF-153]

• de-energizing [Rev.1]

[TSF-153]

The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits the stopping of the pumps in order to perform this test and validate the assumed analysis values. As with the validation of the pump coastdown curve, this test should be performed only once unless the flow characteristics of the RCS are changed. The 1 hour time period specified is adequate to perform the desired tests, and operating experience has

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.6 RCS Loops - MODE 4

BASES

BACKGROUND In MODE 4, the primary function of the reactor coolant is the removal of decay heat and the transfer of this heat to either the steam generator (SG) secondary side coolant or the component cooling water via the residual heat removal (RHR) heat exchangers. The secondary function of the reactor coolant is to act as a carrier for soluble neutron poison, boric acid.

The reactor coolant is circulated through [four] RCS loops connected in parallel to the reactor vessel, each loop containing an SG, a reactor coolant pump (RCP), and appropriate flow, pressure, level, and temperature instrumentation for control, protection, and indication. The RCPs circulate the coolant through the reactor vessel and SGs at a sufficient rate to ensure proper heat transfer and to prevent boric acid stratification.

In MODE 4, either RCPs or RHR loops can be used to provide forced circulation. The intent of this LCO is to provide forced flow from at least one RCP or one RHR loop for decay heat removal and transport. The flow provided by one RCP loop or RHR loop is adequate for decay heat removal. The other intent of this LCO is to require that two paths be available to provide redundancy for decay heat removal.

APPLICABLE SAFETY ANALYSES In MODE 4, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RCS and RHR loops provide this circulation.

RCS Loops - MODE 4 satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO The purpose of this LCO is to require that at least two loops be OPERABLE in MODE 4 and that one of these loops be in operation. The LCO allows the two loops that are required to be OPERABLE to consist of any combination of RCS loops and RHR loops. Any one loop in operation provides enough flow to remove the decay heat from the core with forced circulation. An additional loop is required to be OPERABLE to provide redundancy for heat removal.

. be de-energized [Rev.1]

Note 1 permits all RCPs or RHR pumps to not be in operation for ≤ 1 hour per 8 hour period. The purpose of the Note is to permit tests that are designed to validate various accident analyses values. One of

[TSTF-153]

BASES

LCO (continued)

the tests performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits the stopping of the pumps in order to perform this test and validate the assumed analysis values. If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values must be revalidated by conducting the test again. The 1 hour time period is adequate to perform the test, and operating experience has shown that boron stratification is not a problem during this short period with no forced flow.

de-energizing [Rev.1]

[TSIF-153]

Utilization of Note 1 is permitted provided the following conditions are met along with any other conditions imposed by initial startup test procedures:

- a. No operations are permitted that would dilute the RCS boron concentration with coolant with boron concentrations less than required to meet SDM of LCO 3.1.1, therefore maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure SDM is maintained is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation and
- b. Core outlet temperature is maintained at least 10°F below saturation temperature, so that no vapor bubble may form and possibly cause a natural circulation flow obstruction.

Note 2 requires that the secondary side water temperature of each SG be \leq [50]°F above each of the RCS cold leg temperatures before the start of an RCP with any RCS cold leg temperature \leq [275°F] [Low Temperature Overpressure Protection (LTOP) arming temperature specified in the PTLR]. This restraint is to prevent a low temperature overpressure event due to a thermal transient when an RCP is started.

An OPERABLE RCS loop comprises an OPERABLE RCP and an OPERABLE SG in accordance with the Steam Generator Tube Surveillance Program, which has the minimum water level specified in SR 3.4.6.2.

Similarly for the RHR System, an OPERABLE RHR loop comprises an OPERABLE RHR pump capable of providing forced flow to an OPERABLE RHR heat exchanger. RCPs and RHR pumps are

BASES

APPLICABLE
SAFETY
ANALYSES

In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation.

RCS Loops - MODE 5 (Loops Filled) satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO

The purpose of this LCO is to require that at least one of the RHR loops be OPERABLE and in operation with an additional RHR loop OPERABLE or two SGs with secondary side water level \geq [17]%. One RHR loop provides sufficient forced circulation to perform the safety functions of the reactor coolant under these conditions. An additional RHR loop is required to be OPERABLE to meet single failure considerations. However, if the standby RHR loop is not OPERABLE, an acceptable alternate method is two SGs with their secondary side water levels \geq [17]%. Should the operating RHR loop fail, the SGs could be used to remove the decay heat via natural circulation.

• be de-energized [Rev.1]

Note 1 permits all RHR pumps to not be in operation \leq 1 hour per 8 hour period. The purpose of the Note is to permit tests designed to validate various accident analyses values. One of the tests performed during the startup testing program is the validation of rod drop times during cold conditions, both with and without flow. The no flow test may be performed in MODE 3, 4, or 5 and requires that the pumps be stopped for a short period of time. The Note permits stopping of the pumps in order [TSTF-153] to perform this test and validate the assumed analysis values. If changes are made to the RCS that would cause a change to the flow characteristics of the RCS, the input values must be revalidated by conducting the test again. The 1 hour time period is adequate to perform the test, and operating experience has shown that boron stratification is not likely during this short period with no forced flow.

• de-energizing [Rev.1]

Utilization of Note 1 is permitted provided the following conditions are met, along with any other conditions imposed by initial startup test procedures:

- a. No operations are permitted that would dilute the RCS boron concentration with coolant with boron concentrations less than required to meet SDM of LCO 3.1.1, therefore maintaining the margin to criticality. Boron reduction with coolant at boron concentrations less than required to assure SDM is maintained is prohibited because a uniform concentration distribution throughout the RCS cannot be ensured when in natural circulation and

B 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.8 RCS Loops - MODE 5, Loops Not Filled

BASES

BACKGROUND In MODE 5 with the RCS loops not filled, the primary function of the reactor coolant is the removal of decay heat generated in the fuel, and the transfer of this heat to the component cooling water via the residual heat removal (RHR) heat exchangers. The steam generators (SGs) are not available as a heat sink when the loops are not filled. The secondary function of the reactor coolant is to act as a carrier for the soluble neutron poison, boric acid.

In MODE 5 with loops not filled, only RHR pumps can be used for coolant circulation. The number of pumps in operation can vary to suit the operational needs. The intent of this LCO is to provide forced flow from at least one RHR pump for decay heat removal and transport and to require that two paths be available to provide redundancy for heat removal.

APPLICABLE SAFETY ANALYSES In MODE 5, RCS circulation is considered in the determination of the time available for mitigation of the accidental boron dilution event. The RHR loops provide this circulation. The flow provided by one RHR loop is adequate for heat removal and for boron mixing.

RCS loops in MODE 5 (loops not filled) satisfies Criterion 4 of 10 CFR 50.36(c)(2)(ii).

LCO The purpose of this LCO is to require that at least two RHR loops be OPERABLE and one of these loops be in operation. An OPERABLE loop is one that has the capability of transferring heat from the reactor coolant at a controlled rate. Heat cannot be removed via the RHR System unless forced flow is used. A minimum of one running RHR pump meets the LCO requirement for one loop in operation. An additional RHR loop is required to be OPERABLE to meet single failure considerations.

[TSF-153]

Note 1 permits all RHR pumps to not be in operation 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 $> 10^\circ\text{F}$ below saturation temperature]. The Note prohibits boron dilution with coolant at boron concentrations less than required to assure SDM of LCO 3.1.1 is maintained or draining operations when RHR forced flow is stopped.

. be de-energized [Rev.1]

BASES

LCO (continued)

includes the piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an SI signal and automatically transferring suction to the containment sump.

During an event requiring ECCS actuation, a flow path is required to provide an abundant supply of water from the RWST to the RCS via the ECCS pumps and their respective supply headers to each of the four cold leg injection nozzles. In the long term, this flow path may be switched to take its supply from the containment sump and to supply its flow to the RCS hot and cold legs.

The flow path for each train must maintain its designed independence to ensure that no single failure can disable both ECCS trains.

As indicated in Note 1, the ^[TSTF-153]SI flow paths 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.

As indicated in Note 2, ^{? TSTF}operation in MODE 3 with ECCS trains made incapable of injecting in order to facilitate entry into or exit from the Applicability of LCO 3.4.12, "Low Temperature Overpressure Protection (LTOP) System," is necessary for plants with an LTOP arming temperature at or near the MODE 3 boundary temperature of 350°F. LCO 3.4.12 requires that certain pumps be rendered incapable of injecting at and below the LTOP arming temperature. When this temperature is at or near the MODE 3 boundary temperature, time is needed to make pumps incapable of injecting prior to entering the LTOP Applicability, and provide time to restore the inoperable pumps to OPERABLE status on exiting the LTOP Applicability.

TSTF-153 moved these paragraphs from Applicability to LCO

? TSTF

pursuant to [Rev.1]

inoperable [Rev.1]

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.

BASES

LCO (continued)

- b. Mixing of borated coolant to minimize the possibility of criticality, and
- c. Indication of reactor coolant temperature.

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

be removed from service
[Rev. 1]

[TSF-153]

APPLICABILITY

One RHR loop must be OPERABLE and in operation in MODE 6, with the water level \geq 23 ft above the top of the reactor vessel flange, to provide decay heat removal. The 23 ft water level was selected because it corresponds to the 23 ft requirement established for fuel movement in LCO 3.9.7, "Refueling Cavity Water Level." 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 3.9.6, "Residual Heat Removal (RHR) and Coolant Circulation - Low Water Level."

ACTIONS

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

A.1

If RHR loop requirements are not met, there will be no forced circulation to provide mixing to establish uniform boron concentrations. Suspending positive reactivity additions that could result in failure to meet the

TSTF-116

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|--|
| SR 3.4.13.1 | <p style="text-align: center;">- NOTE -</p> <p>Not required to be performed in MODE 3 or 4 until 12 hours of steady state operation.</p> <p>Verify RCS Operational leakage is within limits by performance of RCS water inventory balance.</p> | 72 hours |
| SR 3.4.13.2 | Verify steam generator tube integrity is in accordance with the Steam Generator Tube Surveillance Program. | In accordance with the Steam Generator Tube Surveillance Program |

after establishment

BASES

SURVEILLANCE REQUIREMENTS (continued)

*Changes
made to
Bases
discussion
of Note*

The RCS water inventory balance must be met with the reactor at steady state operating conditions. Therefore, a Note is added allowing that this SR is not required to be performed until 12 hours after establishing steady state operation. The 12 hour allowance provides sufficient time to collect and process all necessary data after stable plant conditions are established.

Steady state operation is required to perform a proper inventory balance since calculations during maneuvering are not useful. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment sump level. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. These leakage detection systems are specified in LCO 3.4.15, "RCS Leakage Detection Instrumentation."

The 72 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage detection in the prevention of accidents.

SR 3.4.13.2

This SR provides the means necessary to determine SG OPERABILITY in an operational MODE. The requirement to demonstrate SG tube integrity in accordance with the Steam Generator Tube Surveillance Program emphasizes the importance of SG tube integrity, even though this Surveillance cannot be performed at normal operating conditions.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 30.
 2. Regulatory Guide 1.45, May 1973.
 3. FSAR, Section [15].
-

TSTF-116, Rev. 2-

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | FREQUENCY |
|---|--|
| <p>SR 3.4.13.1</p> <p>-----NOTE----- Not required to be performed in MODE 3 or 4 until 12 hours of steady state operation.</p> <p><i>after establishment</i></p> <p>Perform RCS water inventory balance.</p> | <p>NOTE Only required to be performed during steady state operation</p> <p>72 hours</p> |
| <p>SR 3.4.13.2</p> <p>Verify steam generator tube integrity is in accordance with the Steam Generator Tube Surveillance Program.</p> | <p>In accordance with the Steam Generator Tube Surveillance Program</p> |

BASES

ACTIONS

B.1 and B.2 (continued)

acting on the RCPB are much lower, and further deterioration is much less likely.

SURVEILLANCE
REQUIREMENTS

SR 3.4.13.1

Verifying RCS LEAKAGE to be within the LCO limits ensures the integrity of the RCPB is maintained. Pressure boundary LEAKAGE would at first appear as unidentified LEAKAGE and can only be positively identified by inspection. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. Unidentified LEAKAGE and identified LEAKAGE are determined by performance of an RCS water inventory balance. Primary to secondary LEAKAGE is also measured by performance of an RCS water inventory balance in conjunction with effluent monitoring within the secondary steam and feedwater systems.

a Note is added stating that

Insert 2

The RCS water inventory balance must be met with the reactor at steady state operating conditions and near operating pressure. Therefore, this SR is not required to be performed in MODES 3 and 4 until 12 hours of steady state operation near operating pressure have been established.

after establishing

*The 12 hour
balance provides
sufficient time to
conduct an process
all necessary
data after
steady state
is established*

Steady state operation ^{since} is required to perform a proper inventory balance; calculations during maneuvering are not useful and a Note requires the surveillance to be met when steady state is established. For RCS operational LEAKAGE determination by water inventory balance, steady state is defined as stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows.

An early warning of pressure boundary LEAKAGE or unidentified LEAKAGE is provided by the automatic systems that monitor the containment atmosphere radioactivity and the containment sump level. It should be noted that LEAKAGE past seals and gaskets is not pressure boundary LEAKAGE. These leakage detection systems are specified in LCO 3.4.15, "RCS Leakage Detection Instrumentation."

The 72 hour Frequency is a reasonable interval to trend LEAKAGE and recognizes the importance of early leakage

(continued)

TSTF-360

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 The Train A and Train B DC electrical power subsystems shall be OPERABLE.

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

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|---------------------|
| A. One [or two] battery charger[s] on one train] inoperable. | A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage. | 2 hours |
| | <u>AND</u> | |
| | A.2 Verify battery float current \leq [2] amps. | Once per [12] hours |
| | <u>AND</u> | |
| | A.3 Restore battery charger[s] to OPERABLE status. | 7 days |
| [B. One [or two] batter[y][ies] on one train] inoperable. | B.1 Restore batter[y][ies] to OPERABLE status. | [2] hours] |
| C. One DC electrical power subsystem inoperable for reasons other than Condition A [or B]. | C.1 Restore DC electrical power subsystem to OPERABLE status. | [2] hours |
| D. Required Action and Associated Completion Time not met. | D.1 Be in MODE 3. | 6 hours |
| | <u>AND</u> | |
| | D.2 Be in MODE 5. | 36 hours |

*any further
ISUREG
Editorial*

SURVEILLANCE REQUIREMENTS

| SURVEILLANCE | | FREQUENCY |
|--------------|---|--|
| SR 3.8.4.1 | Verify battery terminal voltage is greater than or equal to the minimum established float voltage. | 7 days |
| SR 3.8.4.2 | <p>Verify each battery charger supplies \geq [400] amps at greater than or equal to the minimum established float voltage for \geq [8] hours.</p> <p><u>OR</u></p> <p>Verify each battery charger can recharge the battery to the fully charged state within [24] hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.</p> | [18] months |
| SR 3.8.4.3 | <p>-----</p> <p style="text-align: center;">- NOTES -</p> <p>1. The modified performance discharge test in SR 3.8.6.6 may be performed in lieu of SR 3.8.4.3.</p> <p>2. This Surveillance shall not normally be performed in MODE 1, 2, 3, or 4. However, portions of the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.</p> <p>-----</p> <p>Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test.</p> | <p>[TSTF-283] ←</p> <p>[18] months</p> |

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 [DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown."]

[One DC electrical power subsystem shall be OPERABLE.]

TSTF-204

- REVIEWER'S NOTE -

This second option above applies for plants having a pre-ITS licensing basis (CTS) for electrical power requirements during shutdown conditions that required only one DC electrical power subsystem to be OPERABLE. Action A the bracketed optional wording in Condition B are also eliminated for this case. The first option above is adopted for plants that have a licensing basis (CTS) requiring the same level of DC electrical power subsystem support as is required for power operating conditions.

APPLICABILITY: MODES 5 and 6,
During movement of [recently] irradiated fuel assemblies.

[TSTF-91]

ACTIONS

- NOTE -

LCO 3.0.3 is not applicable.

[TSTF-36]

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| [A. One [or two] battery charger[s on one train] inoperable. <u>AND</u> | A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage. <u>AND</u> | 2 hours |

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|--|
| <p>The redundant train battery and charger[s] OPERABLE.</p> | <p>A.2 Verify battery float current ≤ [2] amps.</p> <p><u>AND</u></p> <p>A.3 Restore battery charger[s] to OPERABLE status.</p> | <p>Once per [12] hours</p> <p>7 days]</p> |
| <p>→ B. One [or more] required DC electrical power subsystem[s] inoperable [for reasons other than Condition A. <i>ETSTF-360</i>]</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition A not met].</p> | <p>B. <i>[Rev. 1]</i> .1 Declare affected required feature(s) inoperable.</p> <p><u>OR</u></p> <p>B.2.1 Suspend CORE ALTERATIONS.</p> <p><u>AND</u></p> <p>B.2.2 Suspend movement of → [recently] irradiated fuel assemblies.</p> <p><u>AND</u></p> <p>→ B.2.3 Suspend operations involving positive reactivity additions that could result in loss of required SDM or boron concentration.</p> <p><u>AND</u></p> <p>B.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.</p> | <p>Immediately</p> <p>Immediately</p> <p>Immediately</p> <p>Immediately</p> <p>Immediately</p> |

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Parameters

(2) - TSTF-365

- REVIEWER'S NOTE -

Licensees must implement a program, as specified in Specification 5.5.17, to monitor battery parameters that is based on the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice For Maintenance, Testing, And Replacement Of Vented Lead-Acid Batteries For Stationary Applications."

LCO 3.8.6 Battery parameters for Train A and Train B batteries shall be within limits.

APPLICABILITY: When associated DC electrical power subsystems are required to be OPERABLE.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each battery.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|-----------------|
| A. One [or two] batter[y][ies on one train] with one or more battery cells float voltage < [2.07] V. | A.1 Perform SR 3.8.4.1. | 2 hours |
| | <u>AND</u> | |
| | A.2 Perform SR 3.8.6.1. | 2 hours |
| | <u>AND</u> | |
| | A.3 Restore affected cell voltage \geq [2.07] V. | 24 hours |
| B. One [or two] batter[y][ies on one train] with float current > [2] amps. | B.1 Perform SR 3.8.4.1. | 2 hours |
| | <u>AND</u> | |
| | B.2 Restore battery float current to \leq [2] amps. | [12] hours |

*inserts
pg. 4*

ACTIONS (continued)

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|--|---|---|
| <p>----- - NOTE - Required Action C.2 shall be completed if electrolyte level was below the top of plates. -----</p> | <p><i>note was full width [TSTF-360]</i> - NOTE - Required Actions C.1 and C.2 are only applicable if electrolyte level was below the top of plates. -----</p> | |
| <p>C. One [or two] batter[y][ies on one train] with one or more cells electrolyte level less than minimum established design limits.</p> | <p>C.1 Restore electrolyte level to above top of plates. [TSTF-360]</p> <p><u>AND</u></p> <p>C.2 Verify no evidence of leakage.</p> <p><u>AND</u></p> <p>C.3 Restore electrolyte level to greater than or equal to minimum established design limits.</p> | <p>8 hours</p> <p>12 hours</p> <p>31 days</p> |
| <p>D. One [or two] batter[y][ies on one train] with pilot cell electrolyte temperature less than minimum established design limits.</p> | <p>D.1 Restore battery pilot cell temperature to greater than or equal to minimum established design limits</p> | <p>12 hours</p> |
| <p>E. One or more batteries in redundant trains with battery parameters not within limits.</p> | <p>E.1 Restore battery parameters for batteries in one train to within limits.</p> | <p>2 hours</p> |

SURVEILLANCE REQUIREMENTS (continued)

| SURVEILLANCE | FREQUENCY |
|---|---|
| SR 3.8.6.5 Verify each battery connected cell voltage is $\geq [2.07]$ V. | 92 days |
| SR 3.8.6.6 ----- - NOTE - 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. ----- Verify battery capacity is $\geq [80\%]$ of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test. | NOTE: TSTF-283 added this to all other SRs normally but this one. TSTF-8 deleted this statement when it was SR 3.8.4.8. TSFF-360 moved this SR to 3.8.6.6 60 months AND 12 months when battery shows degradation, or has reached [85]% of the expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached [85]% of the expected life with capacity $\geq 100\%$ of manufacturer's rating |

However, portions of ~~this~~ the Surveillance may be performed to reestablish OPERABILITY provided an assessment determines the safety of the plant is maintained or enhanced.

[TSTF-283, Rev.3]

5.5 Programs and Manuals

5.5.16 Containment Leakage Rate Testing Program (continued)

- e. The provisions of SR 3.0.3 are applicable to the Containment Leakage Rate Testing Program.
- f. Nothing in these Technical Specifications shall be construed to modify the testing Frequencies required by 10 CFR 50, Appendix J.

5.5.17 Battery Monitoring and Maintenance Program

This Program provides for battery restoration and maintenance, based on [the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," or of the battery manufacturer] including the following:

→ not in TSIF-360

- a. Actions to restore battery cells with float voltage < [2.13] V, and
 - b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.
-

BASES

BACKGROUND (continued)

Each 125/250 VDC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is located in an area separated physically and electrically from the other subsystem to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant Class 1E subsystems, such as batteries, battery chargers, or distribution panels.

Each battery has adequate storage capacity to meet the duty cycle(s) discussed in the FSAR, Chapter [8] (Ref 4). The battery is designed with additional capacity above that required by the design duty cycle to allow for temperature variations and other factors.

The batteries for Train A and Train B DC electrical power subsystems are sized to produce required capacity at 80% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand. The minimum design voltage limit is 105/210 V.

The battery cells are of flooded lead acid construction with a nominal specific gravity of [1.215]. This specific gravity corresponds to an open circuit battery voltage of approximately 120 V for a [58] cell battery (i.e., cell voltage of [2.065] volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. Once fully charged with its open circuit voltage \geq [2.065] Vpc, the battery cell will maintain its capacity for [30] days without further charging per manufacturer's instructions. Optimal long term performance however, is obtained by maintaining a float voltage [2.20 to 2.25] Vpc. This provides adequate over-potential, which limits the formation of lead sulfate and self discharge. The nominal float voltage of [2.22] Vpc corresponds to a total float voltage output of [128.8] V for a [58] cell battery as discussed in the FSAR, Chapter [8] (Ref. 4). TSTF-360
not in table

Each Train A and Train B DC electrical power subsystem battery charger has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient excess capacity to restore the battery from the design minimum charge to its fully charged state within 24 hours while supplying normal steady state loads discussed in the FSAR, Chapter [8] (Ref. 4).

TSTF-360



The battery charger is normally in the float-charge mode. Float-charge is the condition in which the charger is supplying the connected loads and the battery cells are receiving adequate current to optimally charge the

BASES

ACTIONS (continued)

Required Action A.3 limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The 7 day Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.

B.1

- REVIEWER'S NOTE -

The 2 hour Completion Times of Required Actions B.1 and C.1 are in brackets. Any licensee wishing to request a longer Completion Time will need to demonstrate that the longer Completion Time is appropriate for the plant in accordance with the guidance in Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications."

Condition B represents one train with one [or two] batter[y][ies] inoperable. With one [or two] batter[y][ies] inoperable, the DC bus is being supplied by the OPERABLE battery charger[s]. Any event that results in a loss of the AC bus supporting the battery charger[s] will also result in loss of DC to that train. Recovery of the AC bus, especially if it is due to a loss of offsite power, will be hampered by the fact that many of the components necessary for the recovery (e.g., diesel generator control and field flash, AC load shed and diesel generator output circuit breakers, etc.) likely rely upon the batter[y][ies]. In addition the energization transients of any DC loads that are beyond the capability of the battery charger[s] and normally require the assistance of the batter[y][ies] will not be able to be brought online. The [2] hour limit allows sufficient time to effect restoration of an inoperable battery given that the majority of the conditions that lead to battery inoperability (e.g., loss of battery charger, battery cell voltage less than [2.07] V, etc.) are identified in Specifications 3.8.4, 3.8.5, and 3.8.6 together with additional specific completion times.

*not caps in TSTR 360
(should be)*

C.1

Condition C represents one train with a loss of ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for complete loss of DC power to the affected train. The 2 hour limit is

BASES

ACTIONS (continued)

consistent with the allowed time for an inoperable DC distribution system train.

If one of the required DC electrical power subsystems is inoperable for reasons other than Condition A or B (e.g., inoperable battery charger and associated inoperable battery), the remaining DC electrical power subsystem has the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst- case single failure could, however, result in the loss of minimum necessary DC electrical subsystems to mitigate a worst case accident, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

D.1 and D.2

If the inoperable DC electrical power subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

[TSTF-360]

SURVEILLANCE
REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the battery chargers, which support the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery and maintain the battery in a fully charged state while supplying the continuous steady state loads of the associated DC subsystem. On float charge, battery cells will receive adequate current to optimally charge the battery. The voltage requirements are based on the nominal design voltage of the battery and are consistent with the minimum float voltage established by the battery manufacturer ([2.20] Vpc or [127.6] V at the battery terminals). This voltage maintains the battery plates in a condition that supports maintaining the grid life (expected to be approximately 20 years). The

[TSTF-360]

BASES

SURVEILLANCE REQUIREMENTS (continued)

7 day Frequency is consistent with manufacturer recommendations and IEEE-450 (Ref. 8).

SR 3.8.4.2

This SR verifies the design capacity of the battery chargers. According to Regulatory Guide 1.32 (Ref. 9), the battery charger supply is recommended to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensure that these requirements can be satisfied.

This SR provides two options. One option requires that each battery charger be capable of supplying [400] amps at the minimum established float voltage for [8] hours. The ampere requirements are based on the output rating of the chargers. The voltage requirements are based on the charger voltage level after a response to a loss of AC power. The time period [if] sufficient for the charger temperature to have stabilized and to have been maintained for at least [2] hours.

[TSTF-360]

is

least

[TSTF-360]

The other option requires that each battery charger be capable of recharging the battery after a service test coincident with supplying the largest coincident demands of the various continuous steady state loads (irrespective of the status of the plant during which these demands occur). This level of loading may not normally be available following the battery service test and will need to be supplemented with additional loads. The duration for this test may be longer than the charger sizing criteria since the battery recharge is affected by float voltage, temperature, and the exponential decay in charging current. The battery is recharged when the measured charging current is \leq [2] amps.

[TSTF-360]

and

The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these [18 month] intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

SR 3.8.4.3

A battery service test is a special test of the battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical

look at
page B 3.8-56
in TSTF-360

BASES

SURVEILLANCE REQUIREMENTS (continued)

power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4.

The Surveillance Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 9) and Regulatory Guide 1.129 (Ref. 10), which state that the battery service test should be performed during refueling operations, or at some other outage, with intervals between tests not to exceed [18 months].

This SR is modified by two Notes. Note 1 allows the performance of a modified performance discharge test in lieu of a service test.

The reason for Note 2 is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or on-site system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.

[TSTF-283]

REFERENCES

1. 10 CFR.50, Appendix A, GDC 17.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-[1978].
4. FSAR, Chapter [8].
5. FSAR, Chapter [6].
6. FSAR, Chapter [15].

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.5 DC Sources - Shutdown

BASES

BACKGROUND A description of the DC sources is provided in the Bases for LCO 3.8.4, "DC Sources - Operating."

APPLICABLE SAFETY ANALYSES The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter [6] (Ref. 1) and Chapter [15] (Ref. 2), assume that Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators, emergency auxiliaries, and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum DC electrical power sources during MODES 5 and 6 and during movement of [recently] irradiated fuel assemblies ensures that:

TSF-51

- a. The unit can be maintained in the shutdown or refueling condition for extended periods,
- b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status, and
- c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident [involving handling recently irradiated fuel. Due to radioactive decay, DC electrical power is only required to mitigate fuel handling accidents involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [] days)].

TSF-51

TSF-204 { In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES [1,2,3, and 4] have no specific analyses in MODES [5 and 6] because the energy contained

BASES

APPLICABLE SAFETY ANALYSES (continued)

within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

TSTF-204

The shutdown Technical Specification requirements are designed to ensure that the unit has the capability to mitigate the consequences of certain postulated accidents. Worst case Design Basis Accidents which are analyzed for operating MODES are generally viewed not to be a significant concern during shutdown MODES due to the lower energies involved. The Technical specifications therefore require a lesser complement of electrical equipment to be available during shutdown than is required during operating MODES. More recent work completed on the potential risks associated with shutdown, however, have found significant risk associated with certain shutdown evolutions. As a result, in addition to the requirements established in the Technical Specifications, the industry has adopted NUMARC 91-06, "Guidelines for Industry Actions to Assess Shutdown Management," as an Industry initiative to manage shutdown tasks and associated electrical support to maintain risk at an acceptable low level. This may require the availability of additional equipment beyond that required by the shutdown Technical Specifications.

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

LCO

The DC electrical power subsystems, [each required] [the required] [subsystem consisting of two batteries, one battery charger per battery, and the corresponding control equipment and interconnecting cabling within [one] the train, [are] [is] required to be OPERABLE to support [required] [one] train[s] of the distribution systems required OPERABLE by LCO 3.8.10, "Distribution Systems - Shutdown."] This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents [involving handling recently irradiated fuel]).

TSTF-S1

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 5 and 6, and during movement of [recently] irradiated fuel assemblies, provide assurance that:

L TSTF-S1

BASES

APPLICABILITY (continued)

- a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core,
- b. Required features needed to mitigate a fuel handling accident [involving handling recently irradiated fuel (i.e., fuel that has occupied part of a critical reactor core within the previous [] days)] are available, *TSTF-51*
- c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available, and
- d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The DC electrical power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.4.

ACTIONS

TSTF-36

LCO 3.0.3 is not applicable while in MODE 5 or 6. However, since irradiated fuel assembly movement can occur in MODE 1, 2, 3, or 4, the ACTIONS have been modified by a Note stating that LCO 3.0.3 is not applicable. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operations. Entering LCO 3.0.3, while in MODE 1, 2, 3, or 4 would require the unit to be shutdown unnecessarily.

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

- REVIEWER'S NOTE -

ACTION A is included only when plant-specific implementation of LCO 3.8.5 includes the potential to require both trains of the DC System to be OPERABLE. If plant-specific implementation results in LCO 3.8.5 requiring only one train(s) of the DC System to be OPERABLE, then ACTION A is omitted and ACTION B is renumbered as ACTION A.

*editorial
"s" is in TSTF-360*

Condition A represents one train with one [or two] battery chargers inoperable (e.g., the voltage limit of SR 3.8.4.1 is not maintained). The ACTIONS provide a tiered response that focuses on returning the battery to the fully charged state and restoring a fully qualified charger to OPERABLE status in a reasonable time period. Required Action A.1 requires that the battery terminal voltage be restored to greater than or

BASES

ACTIONS (continued)

equal to the minimum established float voltage within 2 hours. This time provides for returning the inoperable charger to OPERABLE status or providing an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage. Restoring the battery terminal voltage to greater than or equal to the minimum established float voltage provides good assurance that, within [12] hours, the battery will be restored to its fully charged condition (Required Action A.2) from any discharge that might have occurred due to the charger inoperability.

- REVIEWER'S NOTE -

A plant that cannot meet the 12-hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).

A discharged battery having terminal voltage of at least the minimum established float voltage indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within [12] hours, *avoiding a premature shutdown with its own attendant risk.* [TSIF-360]

If established battery terminal float voltage cannot be restored to greater than or equal to the minimum established float voltage within 2 hours, and the charger is not operating in the current-limiting modes, a faulty charger is indicated. A faulty charger that is incapable of maintaining established battery terminal float voltage does not provide assurance that it can revert to and operate properly in the current limit modes that is necessary during the recovery period following a battery discharge event that the DC system is designed for.

If the charger is operating in the current limit mode after 2 hours that is an indication that the battery is partially discharged and its capacity margins will be reduced. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within [12] hours (Required Action A.2).

BASES

ACTIONS (continued)

Required Action A.2 requires that the battery float current be verified as less than or equal to [2] amps. This indicates that, if the battery had been discharged as the result of the inoperable battery charger, it has now been fully recharged. If at the expiration of the initial [12] hour period the battery float current is not less than or equal to [2] amps this indicates there may be additional battery problems and the battery must be declared inoperable.

Required Action A.3 limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g. balance of plant non-Class 1E battery charger). The 7 day Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.

B.1, B.2.1, B.2.2, B.2.3, and B.2.4

TSTF-204 If two trains are required by LCO 3.8.10, the remaining train with DC power available may be capable of supporting sufficient systems to allow continuation of CORE ALTERATIONS and fuel movement *[recently] irradiated* *TSTF-SI* ~~involving handling recently irradiated fuel~~ *TSTF-204* By allowing the option to declare required features inoperable with the associated DC power source(s) *TSTF-SI* inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCO ACTIONS. In many instances this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of [recently] irradiated fuel *TSTF-SI* assemblies, and operations involving positive reactivity additions) that could result in failure to meet the minimum SDM or boron concentration limit is required to assure continued safe operation. Introduction of coolant inventory must be from sources that have a boron concentration greater than that what would be required in the RCS for minimum SDM or refueling boron concentration. This may result in an overall reduction in RCS boron concentration, but provides acceptable margin to maintaining subcritical operation. Introduction of temperature changes including temperature increases when operating with a positive MTC must also be evaluated to ensure they do not result in a loss of required SDM.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.6 Battery Parameters

BASES

BACKGROUND

This LCO delineates the limits on battery float current as well as electrolyte temperature, level, and float voltage for the DC power subsystem batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.8.4, "DC Sources - Operating," and LCO 3.8.5, "DC Sources - Shutdown." In addition to the limitations of this Specification, the [licensee controlled program] also implements a program specified in Specification 5.5.17 for monitoring various battery parameters that is based on the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice For Maintenance, Testing, And Replacement Of Vented Lead-Acid Batteries For Stationary Applications" (Ref. 1).

[TSF-360]

The battery cells are of flooded lead acid construction with a nominal specific gravity of [1.215]. This specific gravity corresponds to an open circuit battery voltage of approximately 120 V for [58] cell battery (i.e., cell voltage of [2.065] volts per cell (Vpc)). The open circuit voltage is the voltage maintained when there is no charging or discharging. Once fully charged with its open circuit voltage \geq [2.065] Vpc, the battery cell will maintain its capacity for [30] days without further charging per manufacturer's instructions. Optimal long term performance however, is obtained by maintaining a float voltage [2.20 to 2.25] Vpc. This provides adequate over-potential which limits the formation of lead sulfate and self discharge. The nominal float voltage of [2.22] Vpc corresponds to a total float voltage output of [128.8] V for a [58] cell battery as discussed in the FSAR, Chapter [8] (Ref. 2).

APPLICABLE
SAFETY
ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 1) and Chapter [15] (Ref. 2), assume Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the DGs, emergency auxiliaries, and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining at least one train of DC sources OPERABLE during accident conditions, in the event of:

- a. An assumed loss of all offsite AC power or all onsite AC power and

BASES

ACTIONS (continued)

B.1 and B.2

One or more batteries in one train with float > [2] amps indicates that a partial discharge of the battery capacity has occurred. This may be due to a temporary loss of a battery charger or possibly due to one or more battery cells in a low voltage condition reflecting some loss of capacity. Within 2 hours verification of the required battery charger OPERABILITY is made by monitoring the battery terminal voltage. If the terminal voltage is found to be less than the minimum established float voltage there are two possibilities, the battery charger is inoperable or is operating in the current limit mode. Condition A addresses charger inoperability. If the charger is operating in the current limit mode after 2 hours that is an indication that the battery has been substantially discharged and likely cannot perform its required design functions. The time to return the battery to its fully charged condition in this case is a function of the battery charger capacity, the amount of loads on the associated DC system, the amount of the previous discharge, and the recharge characteristic of the battery. The charge time can be extensive, and there is not adequate assurance that it can be recharged within [12] hours (Required Action B.2). The battery must therefore be declared inoperable.

If the float voltage is found to be satisfactory but there are one or more battery cells with float voltage less than [2.07] V, the associated "OR" statement in Condition F is applicable and the battery must be declared inoperable immediately. If float voltage is satisfactory and there are no cells less than [2.07] V there is good assurance that, within [12] hours, the battery will be restored to its fully charged condition (Required Action B.2) from any discharge that might have occurred due to a temporary loss of the battery charger.

[SR-360]

- REVIEWER'S NOTE -

A plant that cannot meet the 12-hour Completion Time due to an inherent battery charging characteristic can propose an alternate time equal to 2 hours plus the time experienced to accomplish the exponential charging current portion of the battery charge profile following the service test (SR 3.8.4.3).

A discharged battery with float voltage (the charger setpoint) across its terminals indicates that the battery is on the exponential charging current portion (the second part) of its recharge cycle. The time to return a battery to its fully charged state under this condition is simply a function

BASES

ACTIONS (continued)

of the amount of the previous discharge and the recharge characteristic of the battery. Thus there is good assurance of fully recharging the battery within [12] hours, avoiding a premature shutdown with its own attendant risk.

If the condition is due to one or more cells in a low voltage condition but still greater than [2.07] V and float voltage is found to be satisfactory, this is not indication of a substantially discharged battery and [12] hours is a reasonable time prior to declaring the battery inoperable.

Since Required Action B.1 only specifies "perform," a failure of SR 3.8.4.1 acceptance criteria does not result in the Required Action not met. However, if SR 3.8.4.1 is failed, the appropriate Condition(s), depending on the cause of the failure, is entered.

C.1, C.2, and C.3

With one or more batteries in one train with one or more cells electrolyte level above the top of the plates, but below the minimum established design limits, the battery still retains sufficient capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of electrolyte level not met. Within 31 days the minimum established design limits for electrolyte level must be re-established.

With electrolyte level below the top of the plates there is a potential for dryout and plate degradation. Required Actions C.1 and C.2 address this potential (as well as provisions in Specification 5.5.17, Battery Monitoring and Maintenance Program). They are modified by a note that indicates they are only applicable if electrolyte level is below the top of the plates. Within 8 hours level is required to be restored to above the top of the plates. The Required Action C.2 requirement to verify that there is no leakage by visual inspection and the Specification 5.5.17.b item to initiate action to equalize and test in accordance with manufacturer's recommendation are taken from Annex D of IEEE Standard 450-1995 (Ref. 1). They are performed following the restoration of the electrolyte level to above the top of the plates. Based on the results of the manufacturer's recommended testing the batter[y][ies] may have to be declared inoperable and the affected cell[s] replaced.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.6.6

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.6.6; however, only the modified performance discharge test may be used to satisfy the battery service test requirements of SR 3.8.4.3.

A modified discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test.

It may consist of just two rates; for instance the one minute rate for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test must remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 3) and IEEE-485 (Ref. 4). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery rate of deterioration is increasing, even if there is ample capacity to meet the load requirements. Furthermore, the battery is sized to meet the assumed duty cycle loads when the battery design capacity reaches this [80]% limit.

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery

BASES

SURVEILLANCE REQUIREMENTS (continued)

shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity $\geq 100\%$ of the manufacturer's ratings. Degradation is indicated, according to IEEE-450 (Ref. 3), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is $\geq [10\%]$ below the manufacturer's rating. These Frequencies are consistent with the recommendations in IEEE-450 (Ref. 3).

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. This restriction from normally performing the Surveillance in MODE 1 or 2 is further amplified to allow portions of the Surveillance to be performed for the purpose of reestablishing OPERABILITY (e.g. post work testing following corrective maintenance, corrective modification, deficient or incomplete surveillance testing, and other unanticipated OPERABILITY concerns) provided an assessment determines plant safety is maintained or enhanced. This assessment shall, as a minimum, consider the potential outcomes and transients associated with a failed partial Surveillance, a successful partial Surveillance, and a perturbation of the offsite or onsite system when they are tied together or operated independently for the partial Surveillance; as well as the operator procedures available to cope with these outcomes. These shall be measured against the avoided risk of a plant shutdown and startup to determine that plant safety is maintained or enhanced when portions of the Surveillance are performed in MODE 1 or 2. Risk insights or deterministic methods may be used for the assessment.

[TSTF-283]

- REFERENCES
- 3 4. FSAR, Chapter [6].
 - 4 2. FSAR, Chapter [15].
 - ① ② IEEE-450-[1995].
 - 5 4. IEEE-485-[1983], June 1983

INSERT 3.8.6 has IEEE 450 as Ref. 1 - TSTF-360 did not revise References

? - This was the way specified in Rev. 1. Should since 1983 be deleted?.

③
2. FSAR, Chapter [8].

not in TSTF-360

Required Action Notes

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Specific Activity

LCO 3.4.7 The specific activity of the reactor coolant shall be limited to DOSE EQUIVALENT I-131 specific activity $\leq [0.2] \mu\text{Ci/gm}$.

APPLICABILITY: MODE 1,
MODES 2 and 3 with any main steam line not isolated.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-------------------------|
| <p>A. Reactor coolant specific activity $> [0.2] \mu\text{Ci/gm}$ and $\leq 4.0 \mu\text{Ci/gm}$ DOSE EQUIVALENT I-131.</p> | <p>----- - NOTE - LCO 3.0.4 is not applicable. -----</p> | <p>Once per 4 hours</p> |
| | <p>A.1 Determine DOSE EQUIVALENT I-131.</p> | |
| | <p><u>AND</u></p> <p>A.2 Restore DOSE EQUIVALENT I-131 to within limits.</p> | |
| <p>B. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>Reactor Coolant specific activity $> [4.0] \mu\text{Ci/gm}$ Dose EQUIVALENT I-131.</p> | <p>B.1 Determine DOSE EQUIVALENT I-131.</p> | <p>Once per 4 hours</p> |
| | <p><u>AND</u></p> | |
| | <p>B.2.1 Isolate all main steam lines.</p> | <p>12 hours</p> |
| | <p><u>OR</u></p> <p>B.2.2.1 Be in MODE 3.</p> <p><u>AND</u></p> | <p>12 hours</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.7 RCS Specific Activity

LCO 3.4.7 The specific activity of the reactor coolant shall be limited to DOSE EQUIVALENT I-131 specific activity $\leq [0.2] \mu\text{Ci/gm}$.

APPLICABILITY: MODE 1,
MODES 2 and 3 with any main steam line not isolated.

ACTIONS

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--|
| <p>A. Reactor coolant specific activity $> [0.2] \mu\text{Ci/gm}$ and $\leq 4.0 \mu\text{Ci/gm}$ DOSE EQUIVALENT I-131.</p> | <p style="text-align: center;">-----NOTE----- LCO 3.0.4 is not applicable. -----</p> <p>A.1 Determine DOSE EQUIVALENT I-131.</p> <p><u>AND</u></p> <p>A.2 Restore DOSE EQUIVALENT I-131 to within limits.</p> | <p>Once per 4 hours</p> <p>48 hours</p> |
| <p>B. Required Action and associated Completion Time of Condition A not met.</p> <p><u>OR</u></p> <p>Reactor Coolant specific activity $> [4.0] \mu\text{Ci/gm}$ Dose EQUIVALENT I-131.</p> | <p>B.1 Determine DOSE EQUIVALENT I-131.</p> <p><u>AND</u></p> <p>B.2.1 Isolate all main steam lines.</p> <p><u>OR</u></p> | <p>Once per 4 hours</p> <p>12 hours</p> <p>(continued)</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.5 The leakage from each RCS PIV shall be within limit.

APPLICABILITY: MODES 1 and 2,
MODE 3, except valves in the residual heat removal (RHR) shutdown cooling flow path when in, or during the transition to or from, the shutdown cooling mode of operation.

ACTIONS

- NOTES -

1. Separate Condition entry is allowed for each flow path.
2. Enter applicable Conditions and Required Actions for systems made inoperable by PIVs.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| <p>A. One or more flow paths with leakage from one or more RCS PIVs not within limit.</p> | <p style="text-align: center;">----- - NOTE - -----</p> <p>Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.5.1 and be in the reactor coolant pressure boundary [or the high pressure portion of the system].</p> <p style="text-align: center;">-----</p> <p>A.1 Isolate the high pressure portion of the affected system from the low pressure portion by use of one closed manual, de-activated automatic, or check valve.</p> <p><u>AND</u></p> | <p>4 hours</p> |

3.4 REACTOR COOLANT SYSTEM (RCS)

3.4.5 RCS Pressure Isolation Valve (PIV) Leakage

LCO 3.4.5 The leakage from each RCS PIV shall be within limit.

APPLICABILITY: MODES 1 and 2.
MODE 3, except valves in the residual heat removal (RHR) shutdown cooling flow path when in, or during the transition to or from, the shutdown cooling mode of operation.

ACTIONS

-----NOTES-----

1. Separate Condition entry is allowed for each flow path.
 2. Enter applicable Conditions and Required Actions for systems made inoperable by PIVs.
-

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|---|--------------------|
| <p>A. One or more flow paths with leakage from one or more RCS PIVs not within limit.</p> | <p>-----NOTE----- Each valve used to satisfy Required Action A.1 and Required Action A.2 must have been verified to meet SR 3.4.5.1 and be in the reactor coolant pressure boundary [or the high pressure portion of the system]. -----</p> | <p>(continued)</p> |

3.3 INSTRUMENTATION

3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation

LCO 3.3.4.2 Two channels per trip system for each ATWS-RPT instrumentation Function listed below shall be OPERABLE:

- a. Reactor Vessel Water Level - Low Low, Level 2 and
- b. Reactor Steam Dome Pressure - High.

APPLICABILITY: MODE 1.

ACTIONS

- NOTE -

Separate Condition entry is allowed for each channel.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|---|--|-----------------|
| A. One or more channels inoperable. | A.1 Restore channel to OPERABLE status. | 14 days |
| | <p><u>OR</u></p> <p>A.2</p> <p style="text-align: center;">----- - NOTE - Not applicable if inoperable channel is the result of an inoperable breaker. -----</p> <p>Place channel in trip.</p> | |
| B. One Function with ATWS-RPT trip capability not maintained. | B.1 Restore ATWS-RPT trip capability. | 72 hours |

3.3 INSTRUMENTATION

3.3.4.2 Anticipated Transient Without Scram Recirculation Pump Trip
(ATWS-RPT) Instrumentation

LCO 3.3.4.2 Two channels per trip system for each ATWS-RPT instrumentation Function listed below shall be OPERABLE:

- a. Reactor Vessel Water Level—Low Low, Level 2; and
- b. Reactor Steam Dome Pressure—High.

APPLICABILITY: MODE 1.

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each channel.

| CONDITION | REQUIRED ACTION | COMPLETION TIME |
|-------------------------------------|---|-----------------|
| A. One or more channels inoperable. | A.1 Restore channel to OPERABLE status. | 14 days |
| | <p><u>OR</u></p> <p>A.2 -----NOTE----- Not applicable if inoperable channel is the result of an inoperable breaker.</p> <hr/> <p>Place channel in trip.</p> | |

(continued)

Section 1.4 Change

1.0 USE AND APPLICATION

1.4 Frequency

PURPOSE The purpose of this section is to define the proper use and application of Frequency requirements.

DESCRIPTION Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.

The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR as well as certain Notes in the Surveillance column that modify performance requirements.

Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction.

EXAMPLES The following examples illustrate the various ways that Frequencies are specified. In these examples, the Applicability of the LCO (LCO not shown) is MODES 1, 2, and 3.

(continued)

1.0 USE AND APPLICATION

1.4 Frequency

| | |
|---------|--|
| PURPOSE | The purpose of this section is to define the proper use and application of Frequency requirements. |
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| DESCRIPTION | Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated LCO. An understanding of the correct application of the specified Frequency is necessary for compliance with the SR. |
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The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0.2, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR, as well as certain Notes in the Surveillance column that modify performance requirements.

Sometimes special situations dictate when the requirements of a Surveillance are to be met. They are "otherwise stated" conditions allowed by SR 3.0.1. They may be stated as clarifying Notes in the Surveillance, as part of the Surveillances, or both.

Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With an SR satisfied, SR 3.0.4 imposes no restriction.

The use of "met" or "performed" in these instances conveys specific meanings. A Surveillance is "met" only when the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met." "Performance" refers only to the requirement to specifically determine the ability to meet the acceptance criteria.

Some Surveillances contain notes that modify the Frequency of performance or the conditions during which the acceptance criteria must be satisfied. For these Surveillances, the MODE-entry restrictions of SR 3.0.4 may not apply. Such a Surveillance is not required to be performed prior to entering a MODE or other specified condition in the Applicability of the associated LCO if any of the following three conditions are satisfied: